THE THANET GAS PIPELINE PHASES I AND II (MONKTON PARISH), 1982

D.R.J. PERKINS and SONIA CHADWICK HAWKES

In July 1982, the British Gas Corporation commenced work on a gas pipeline designed to improve supplies to the Isle of Thanet. The course followed was closely parallel to that of the pipe laid in 1971, during which operation the Monkton Jutish cemetery was discovered. (Fig. 1)[1] Mindful of this, the Gas Corporation contacted the Kent Archaeological Rescue Unit who passed the matter to Dr. Frank Jenkins, F.S.A., on whose instructions the writer carried out a watching brief and rescue excavations. The Thanet District Council's Viking Training Centre provided funds and an excavation team for the work, supplemented by members of the Thanet Archaeological Unit. Thanks are due to the Gas Corporation and their contractors, Messrs. J. Murphy and Sons Ltd., for co-operating with the excavation team in every way possible.

The pipeline commenced at the Gore Street pressure-reducing station going north to cross under the A253, 250 m. east of the junction with the B2046. Turning east, it accompanies the road until recrossing under it 230 m. east of the junction with the B2047. From a point 70 m. west of the junction with Millers Lane, the pipeline diverged from the road so as to miss the Monkton roundabout and the part-filled chalk pit east of it. Crossing the road between the roundabout and the B2047, the pipeline rejoined the A253 obliquely to run parallel and 30 m. south of the road to the end of the phase (Fig. 2).

As a first stage, topsoil was removed in a band 10 m. wide along the course of the pipeline, a trench to accommodate the pipe, 0.70 m. wide, by 1.50 m. deep, being cut down the centre of this. The geology thus revealed was fairly uniform whatever the changes in level. It

[1] S.C. Hawkes, 'The Anglo-Saxon Cemetery at Monkton, Thanet', *Arch. Cant.*, lxxxix (1974), 49–89.

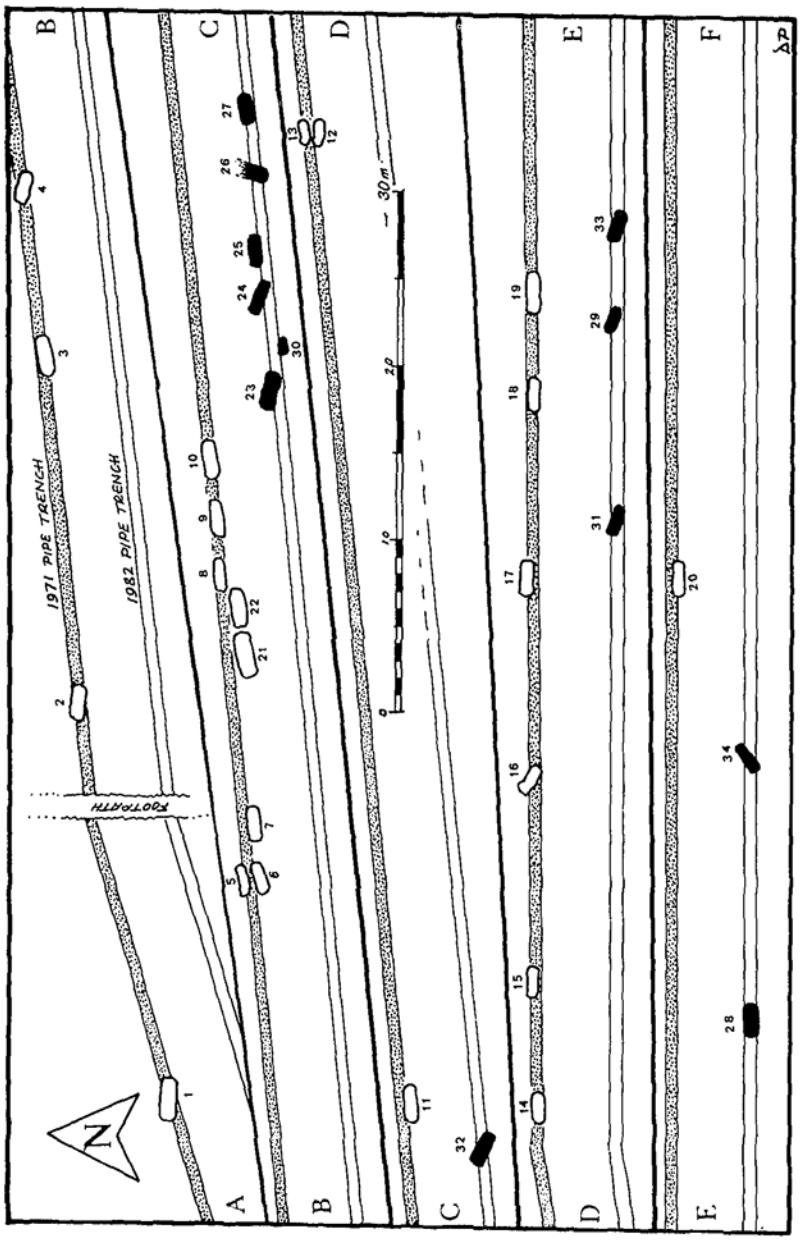


Fig. 1. Anglo-Saxon Graves found on the Gas Pipelines at Monkton.

consisted of brown loam to a depth constantly varying between 5 cm. and 1.5 m. Beneath this was the surface of the Upper Chalk, deeply pitted with solution hollows.

The excavation team took advantage of a delay of seven days, between topsoil removal and trenching, to examine the course of the pipeline, the results being given with the letters A to M on Fig. 2 as positional reference.

Points 'A' to 'B', nothing observed. At 'B', a Roman *follis* of Constantine, CONSTANTIVS NOBIL C, GENIO POPVLI ROMA, Trier mint mark ITR. Between 'B' and 'C', a few waste flakes of flint and medieval sherds.

At point 'C', sherds in medieval Tyler Hill fabric, and the head of a bronze stud. It retained a fragment of a central iron pin, and was pierced and decorated with an engraved leaf pattern, (Fig. 3, no.1). Two chance finds made in this vicinity may well be mentioned here. In 1977, an Anglo-Saxon iron spearhead conforming to Swanton's C2 type[2] was found by workmen cutting footings for a silo at N.G.R. TR 277652 (Fig. 3, no. 2). A small Late Bronze Age hoard, or perhaps part of a hoard, was found by metal detector in 1981 at N.G.R. TR 27726550. The hoard consisted of a rim-piece from a tiny bronze vessel, a socketed axe, a fragment from the blade and part of the tang of a sword (Fig. 3, no. 3). A cast of the axe was obtained by the writer, but the finder would not allow the material to be sent for expert examination.

From points 'C' to 'D', a few small sherds in Romano-British fabrics. By point 'D', the surface of the Upper Chalk had dropped to

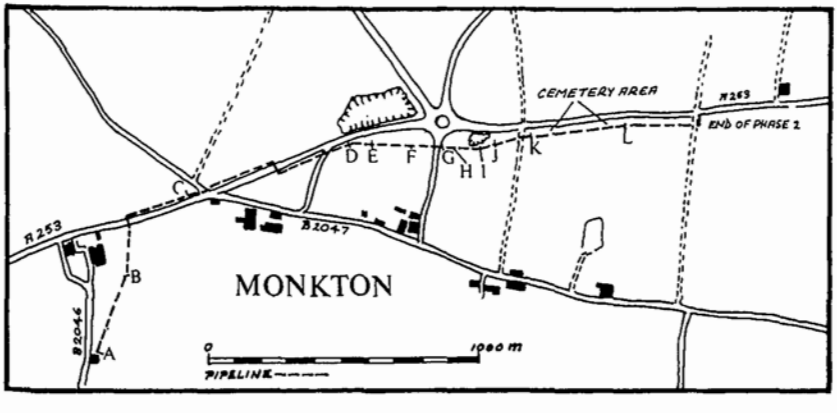


Fig. 2. Monkton: Site of the Gas Pipeline.

[2] M.J. Swanton, *A Corpus of Pagon Anglo-Saxon Spear Types*, BAR 4, 1974, 51–5.

a depth of 1.5 m. At 'E', it disappeared for 40 m., the overburden becoming brickearth; it then rose and to the end of Phase II was never more than 0.70 m. below modern land surface.

Point 'F', here the trench sectioned two flat-bottomed pits with vertical sides; they were 1.20 m. deep, by 3.20 m. and 1.10 m. wide, respectively.

On both sides of the road joining the roundabout with Monkton, Point 'G', the trench cut a group of pits or ditches. From the up-cast chalk rubble fill of these features were obtained fragments of the upper stone of a rotary quern in Niedermending lava, the grinding surface having a pecked finish. The spoil-heap also yielded Belgic and Romano-British sherds as follows: Canterbury sandy ware, (Fig. 4, no. 1). Belgic grog-tempered wares, (Fig. 4, nos. 2–4), of which no. 4 is a two-handled flagon copying Hofheim imports. As a group this material can be assigned a range, *c.* A.D. 65–85.[3]

Point 'H', an in-filled ditch of truncated V-section was cut by the pipe trench. It was 1 m. wide by 1.40 m. deep, with a fill of brown loam.

Point 'I', an in-filled ditch as 'H' above.

Point 'J', here the trench cut a ditch of semi-circular section, which was about 1 m. wide with brown loam fill. A pit of oval plan was discovered about 2 m. east of a ditch and 1.50 m. south of the pipe trench. It was 2.50 m. long by 1.60 m. wide, and 0.96 m. deep, with vertical sides and a flat bottom. The stratified fill of chalk rubble and loam yielded marine shells, animal bone, and sherds of Saxo-Norman pottery: Canterbury sandy ware. *c.* A.D. 1080–1150, (Fig. 4, no. 5).

Point 'K', here the trench cut a feature of bowl-shaped section. It was 6 m. across and 1.05 m. deep at the centre, where a small pit or post-hole extended down for 0.30 m. The fill of the whole was brown loam.

Point 'L', an in-filled ditch of truncated V-section, much as 'H' and 'I' above.

Between the last two features, 'K' and 'L', twelve graves were found and excavated (Fig. 2). They are here described in detail, and are numbered consecutively from those discovered in 1971 (Fig. 1). All depths given are from the surface produced by the removal of topsoil. (*c.* 0.40 m.). Grave structures are according to C. Hogarth's classification.[4]

D.R.J.P.

[3] The writer is indebted to Mr. Richard J. Pollard, for giving an opinion on this material.

[4] A.C. Hogarth, 'Structural Features in Anglo-Saxon Graves', *Arch. Journ.*, cxxx (1973), 104–19.

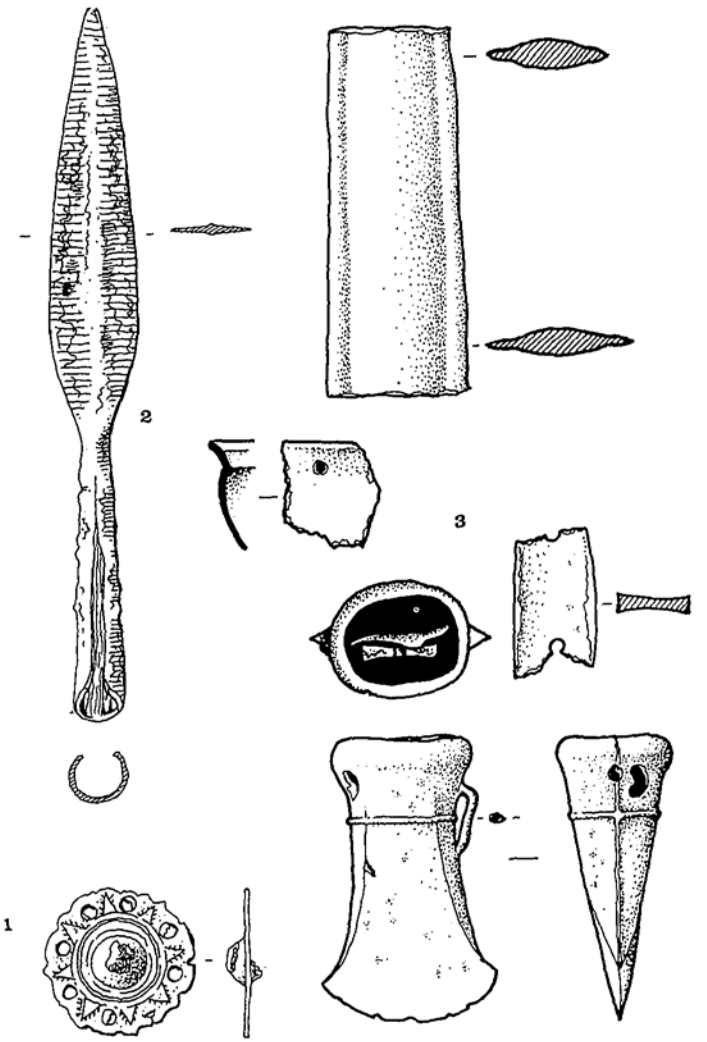


Fig. 3. Monkton: Miscellaneous Finds (Scale: $\frac{1}{2}$, no. 2, $\frac{1}{4}$).

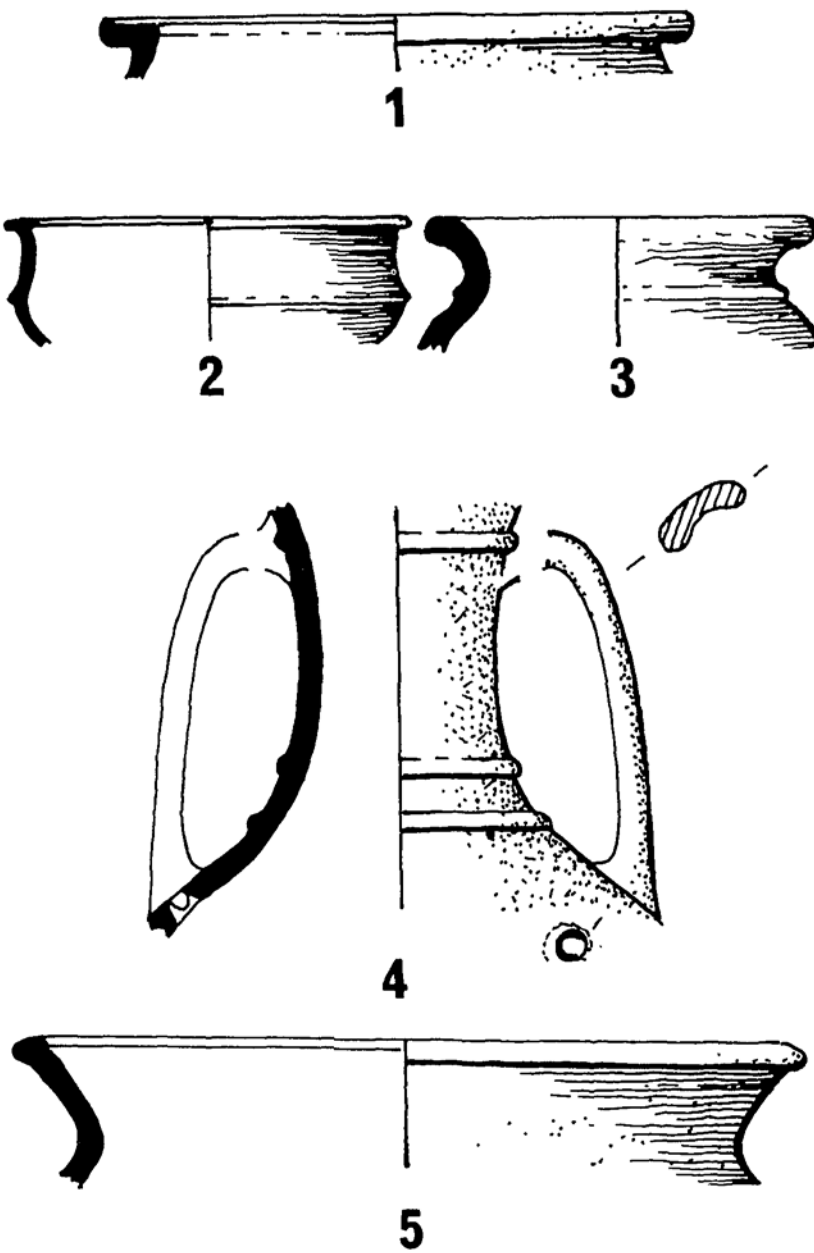


Fig. 4. Monkton: Coarse Pottery (Scale: ¼)

GRAVE 23

Length 2.55 m., width 1.95 m., depth 1.27 m. Orientated E–W head west 290°. The fill of brown loam had been truncated by topsoil clearance. Skeletal remains, in poor condition, were those of an adult female, supine, hands crossed at waist.

Grave Goods (Fig. 7)

1. Amber bead, amongst skull fragments disturbed by bulldozer.
2. Silver square-headed brooch, at right side of neck.
3. Group of three amber beads, above right shoulder.
4. Bronze ring adapted as a châtelaine (probably suspension ring of bowl), at left side of waist.
5. Iron knife, at left side of waist.
6. Iron object (not illustrated), on throat.
7. Bronze buckle, on left side of hip.
8. Five strands of gold wire, on skull.
9. Bead of opaque yellow glass, in front of skull.
10–27. Amber beads, on lower part of chest.

The skull of this burial had been hit by the bulldozer blade. An amber bead (1) was found among skull fragments on the surface. Other elements of a head-dress additional to (8) and (9) may have been lost.

GRAVE 24

Length 2.32 m., width 1 m., depth 0.25 m. Orientated E–W, 300°. Presumed to be a grave from configuration. No skeletal material; several minute fragments of iron, and a scrap of polythene in fill; so presumably robbed in recent times.

GRAVE 25

Length 1.70 m., width 0.80 m., depth 0.32 m. Orientated E–W, 270°. Disturbed, objects fragmentary and at all levels, one tooth found.

Grave Goods (Fig. 7)

1. Fragment of iron knife.
2, 3 and 4. Iron fragments.

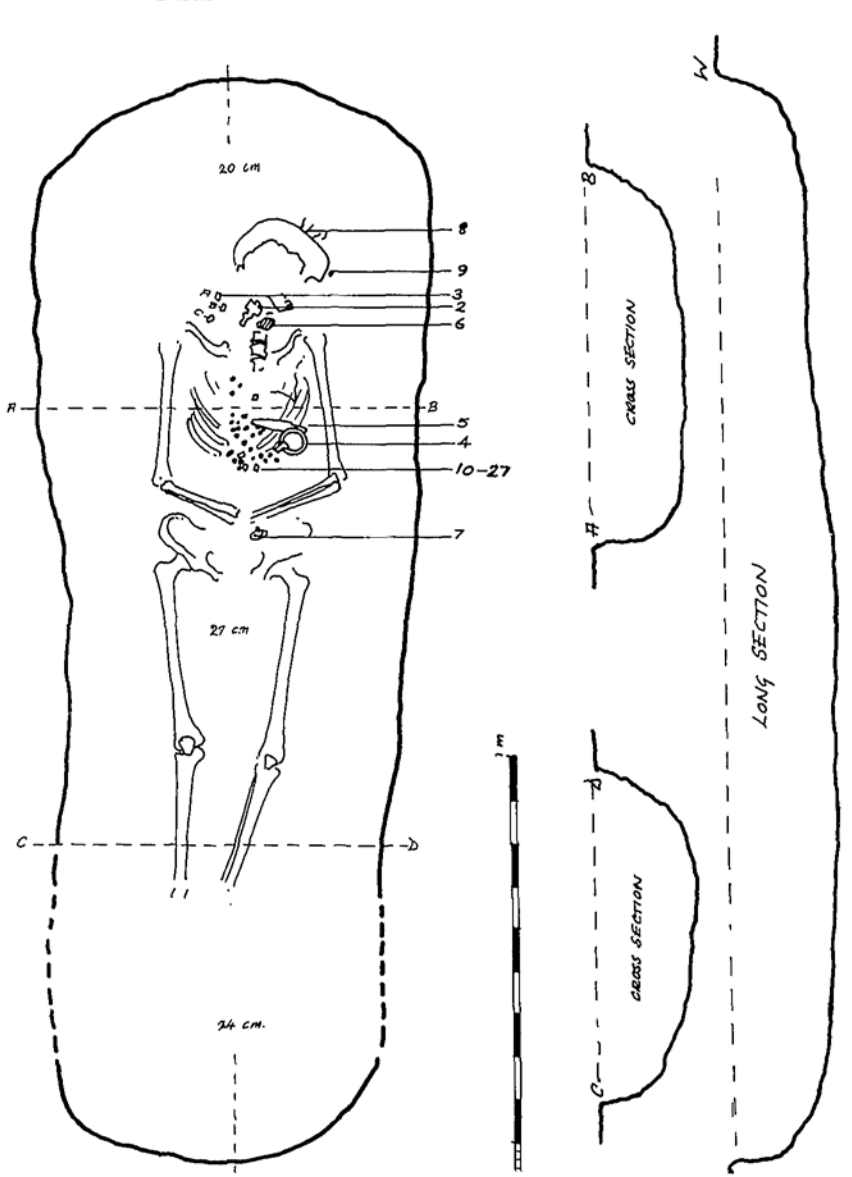


Fig. 5. Monkton: Grave 23 – Plan and Sections. (8: Gold threads; 9: Small beads; 3: Amber beads; 2: Square-headed brooch; 6: Iron object; 5: Iron knife; 4: Bronze ring; 10: Bead scatter; 7: Bronze buckle.)

5. Object of wood and iron (part of spearhead socket).
6. Small bronze buckle.
7. Iron spearhead of Swanton's series E1.
8. Small bronze ring (not a finger-ring).

GRAVE 26

At the foot this grave was sunk into chalk and was 0.75 m. wide by 0.12 m. deep. The floor of the grave then rose gradually to meet the natural chalk surface. Above this, evidence was lost through truncation by plough or bulldozer. Orientation: N–S, head north, 20°. Two slots had been cut into the floor of the grave, parallel to the sides and extending beyond the grave at each corner of the foot. Their configuration suggests that they were to accommodate the bearer arms of a bier. This is an hitherto unencountered grave structure, Class 1. d 2.

Skeletal remains were of an adult male, supine; only the long bones of legs, right arm, and left hand present.

Grave Goods (Fig. 8)

1. Iron shield-grip fragment, at proximal end of right femur.
2. Silver stud, lying between sword and grave wall.
3. End of an iron tang, probably from sword, at centre chest.
4. Sword-blade, at left side, parallel to body, from shoulder to mid thigh.
5. Bronze buckle, between left knee and grave wall.
6 and 7. Shield-boss fragments, on right elbow and left shoulder.
8. Shield-grip fragment, lying diagonally above proximal end of right femur.
9 and 10. Iron objects, possibly tools.
11. Whetstone, by left hand on sword blade.
12. Gold bracteate, beneath the sword-blade and in association with bones of left hand.
13. Bronze disc, associated with shield-boss fragment no. 6.
14. Stud head, at left side chest.

Damage to this grave was not sustained during the 1982 pipeline operation. The position of the bronze buckle and shield-grip arm indicates plough damage, since the objects have been pushed south and buried, whereas the pipeline bulldozers work east and west.

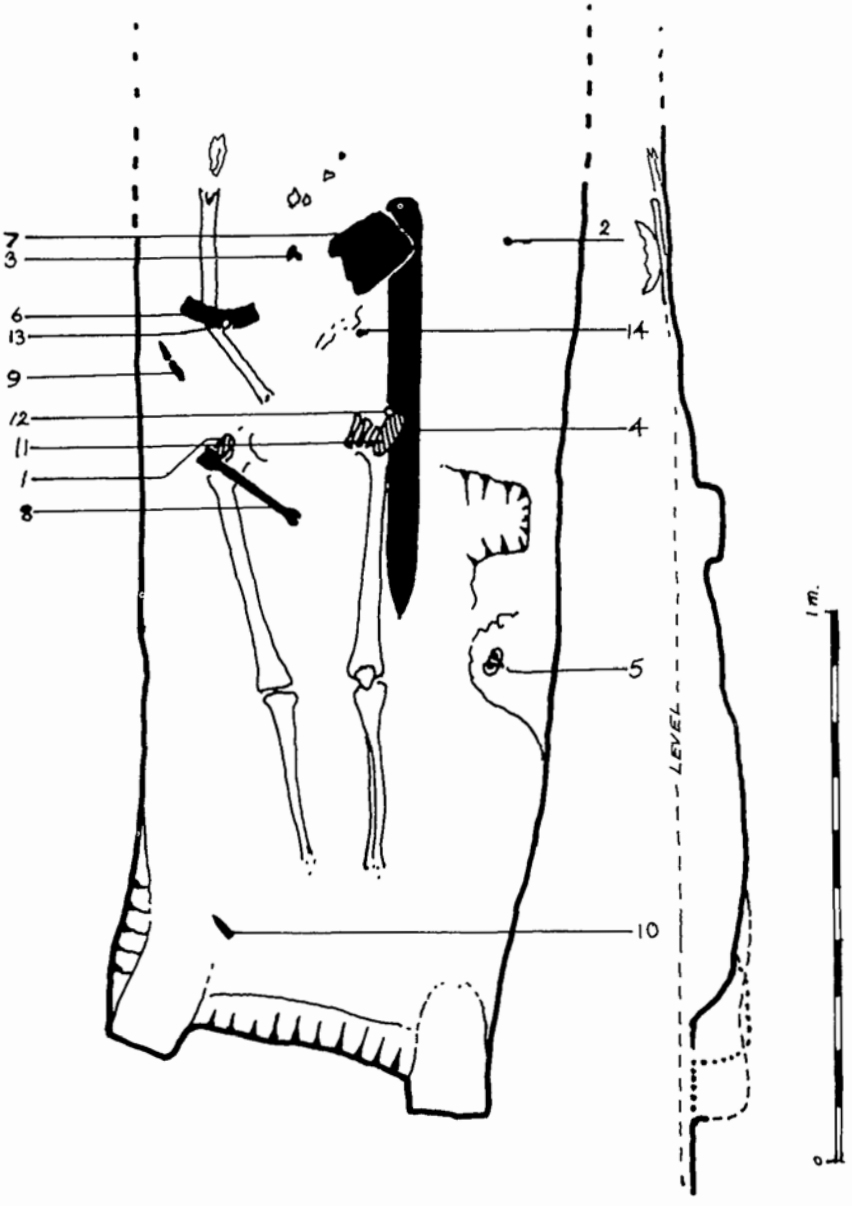


Fig. 6. Monkton Grave 26 – Plan and Section. (1: Shield-grip fragments; 2: Silver stud; 3: Iron tang; 4: Sword; 5: Bronze buckle; 6–7: Shield-boss fragments; 8: Shield-grip fragments; 9–10: Iron nails; 11: Whetstone; 12: Gold bracteate; 13: Bronze disc; 14: Silver stud.)

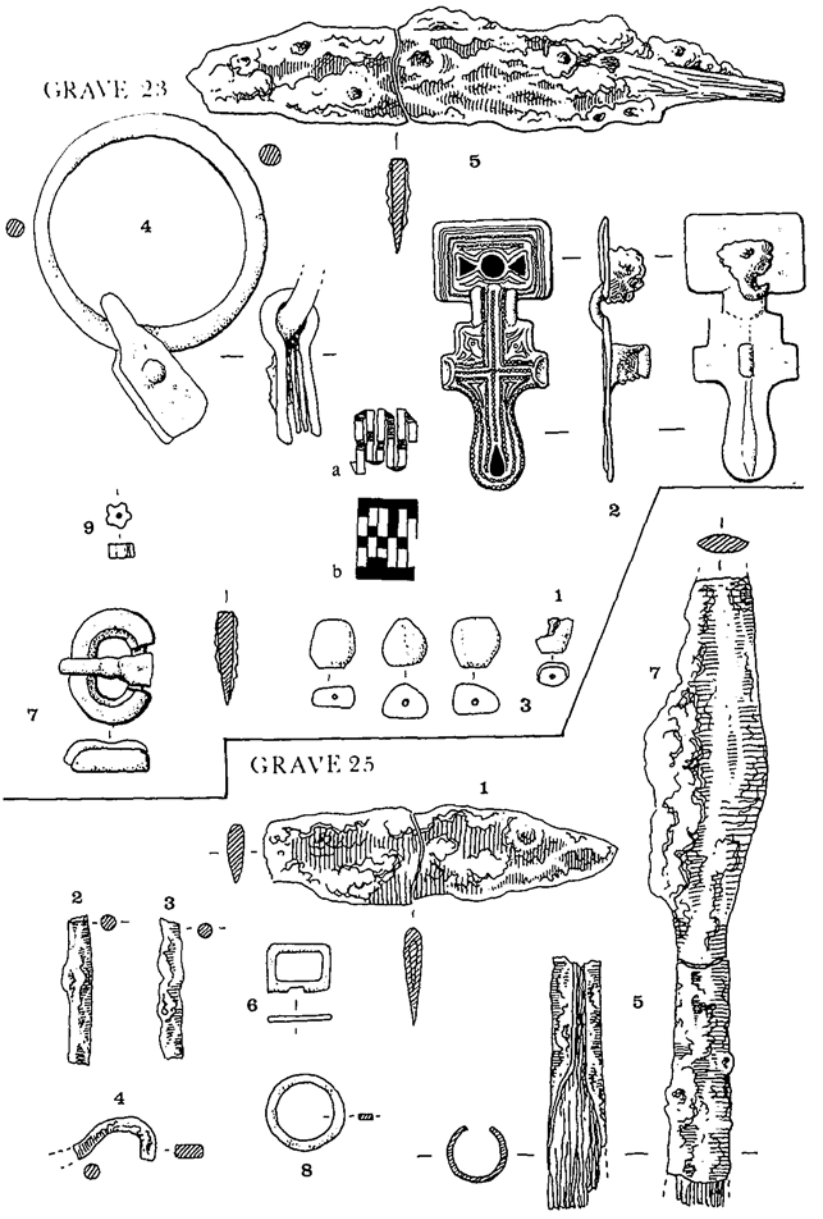


Fig. 7. Monkton: Objects from Graves 23 and 25 (Scale: $\frac{1}{2}$).

GRAVE 27

Length 1.85 m., width 0.50 m., depth 0.30 m. Orientated E–W, 260°. Grave has ledges at head and foot, depth 0.20 m., class 1. b4. Skeletal remains in friable condition were those of an adult male, supine, left arm flexed.

Grave Goods (Fig. 9)

1. Iron shield-boss with bronze studs above skull (crushed by plough or bulldozer).
2. Iron shield-grip fragments, lying diagonally across and to left of skull.
3. Iron fragment with wood trace, (socket of spearhead or spear ferrule), at left side of skull.
4. Iron knife, at left side of waist.

The position of the iron fragments (2) and (3) would seem to indicate disturbance, probably by the plough.

GRAVE 28

Length 1.80 m., depth 0.20 m., width could not be assessed as the outline was broken by solution hollows. Orientated E–W. A few small bone fragments on floor of grave.

GRAVE 29

The floor of this grave was above the chalk surface and no firm outline could be established because of bulldozer damage. Only a skull and femur were found, these giving an approximate orientation of E–W, head west, 280°.

GRAVE 30

This well cut recess in the chalk was assumed to be the grave of a child from the evidence of minute bone fragments on the floor. Length 0.80 m., width 0.40 m., depth 0.17 m. Orientated E–W, 270°.

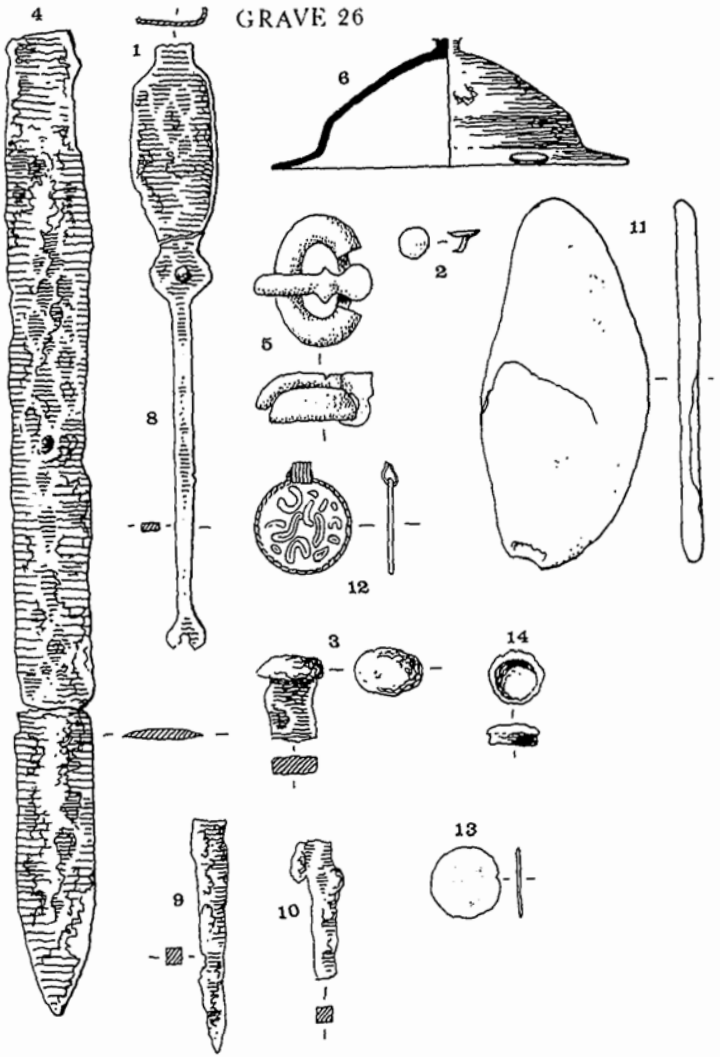


Fig. 8. Monkton: Grave 26 (Scale: $\frac{1}{2}$, except nos. 4 ($\frac{1}{6}$), 1, 6 and 8 ($\frac{1}{4}$).

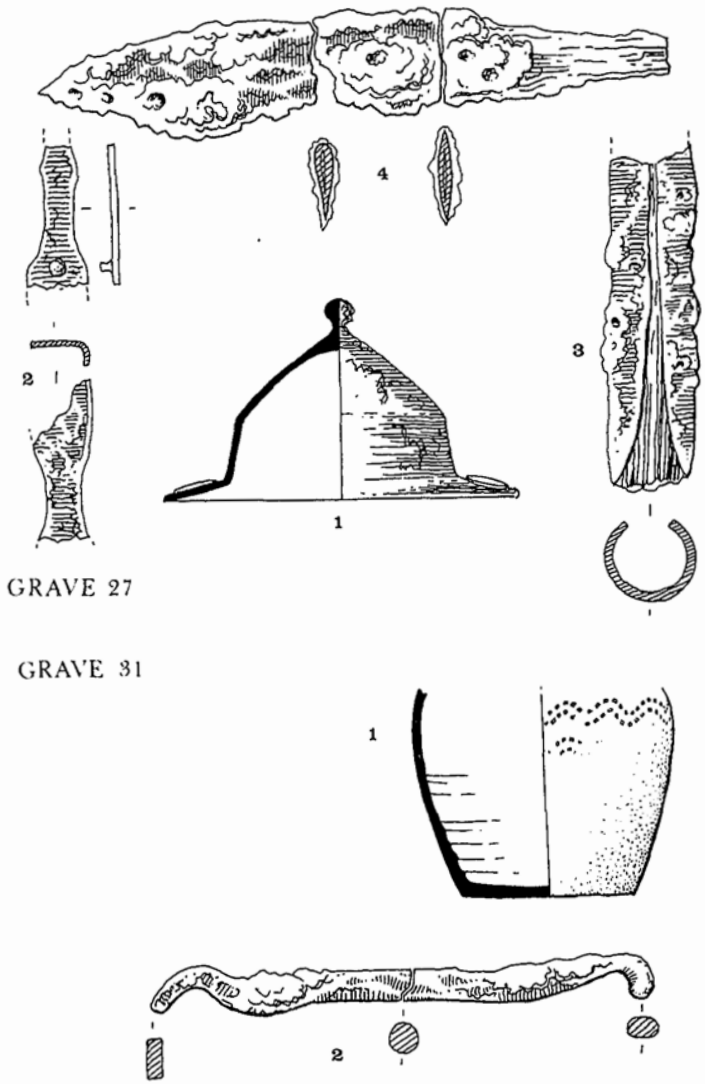


Fig. 9. Monkton: Grave 27 (Scale: nos. 1 and 2 ($\frac{1}{1}$), nos. 3 and 4 ($\frac{1}{2}$); Grave 31 (Scale: no. 1 ($\frac{1}{1}$), no. 2 ($\frac{1}{2}$).

GRAVE 31

Length 1.90 m., width 0.55 m., depth 0.14 m., (there was a depression under the pot at foot of grave, depth 0.18 m.). Orientated E–W, head west, 275°.

Skeletal remains in very poor condition were those of an adult, supine, legs and right arm flexed.

Grave Goods (Fig. 9)

1. Frankish bottle vase (damaged), below feet.
2. Iron object, probably a purse-mount, at left side waist.

The small pit beneath the bottle vase had the appearance of being cut so as to accommodate it.

GRAVE 32

Length 2.10 m., width 0.80 m., depth 0.14 m. Orientated E–W, head west, 290°.

Only a tooth and fragmentary long bones of leg survived.

Grave Goods (Fig. 10)

1 to 10. Amber beads (not illustrated).
11 to 12. Iron clamps, composed of twin plates riveted at either end (nos. 3 and 5).
13. Iron looped-staple (no. 4).

The positioning of objects (11), (12) and (13) suggests that they were originally component parts of a larger object, perhaps a wooden board.

GRAVE 33A

Length 1.70 m., width 0.50 m., depth 0.16 m. The floor of the grave appeared to be recessed so as to accept the skull. Orientated E–W, head west, 270°.

Very friable skeletal remains of an adult, supine, arms bent and hands crossed.

Grave Goods (Fig. 10)

1, 3–5. Amethyst beads.
2 and 8. Flat beads of white shell.

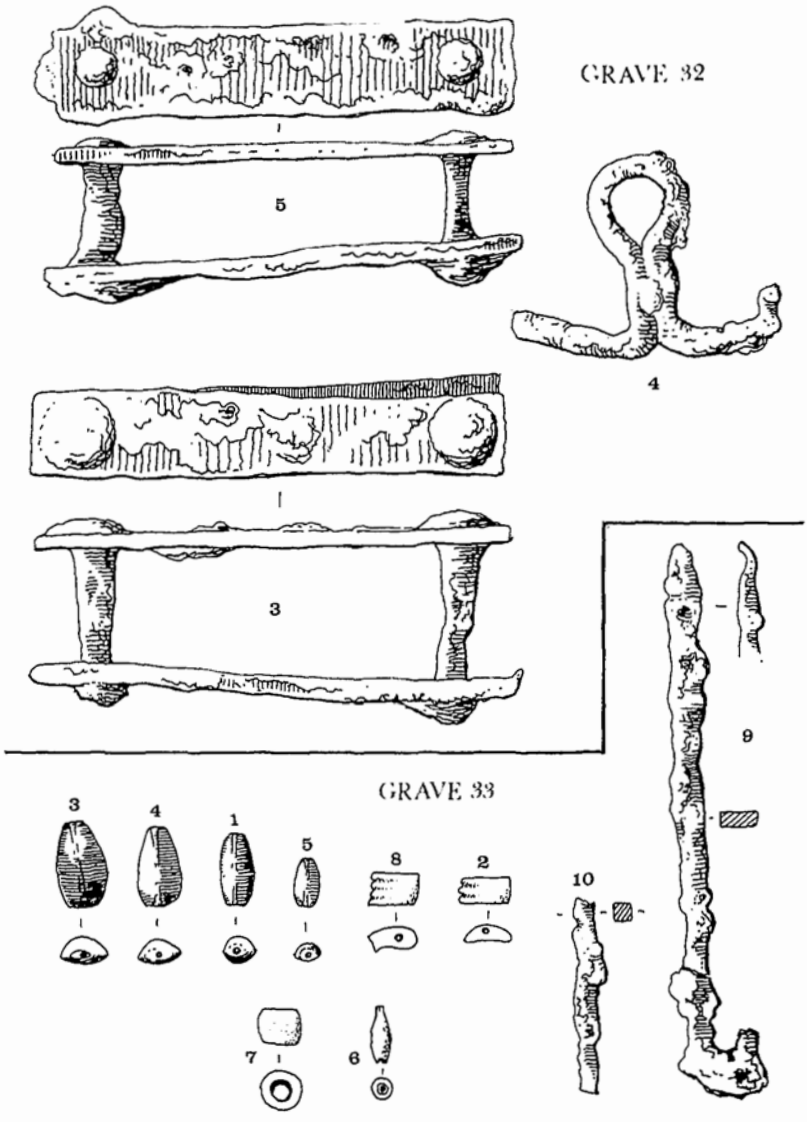


Fig. 10. Monkton: Objects from Graves 32 and 33 (Scale: $\frac{1}{2}$).

6. Bead of black glass or jet.
7. Bead of opaque yellow glass.
9. Iron key, between proximal ends of femurs.
10. Iron fragment, below (9).

GRAVE 33B

Unrelated human skeletal material (hand and forearm) in soil above skull of Grave 33A.

GRAVE 34

Length 1.80 m., width 0.58 m., depth 0.24 m. Grave had 'beam slots' cut into sides, these were arranged in three pairs, Class 1, b, 3. Orientated E–W, head west, 240°.

Skeletal remains consisted of fragments of both femurs and both tibias; in width these suggest an adult.

None of the graves cut into chalk possessed a flat floor, and no coffin traces were observed. All were very shallow by comparison with those recently excavated in the Ozingell cemetery, where an average depth of *c.* 0.78 m. obtained. With the exception of Grave 34, it is felt that all were originally cut through a much deeper overburden, now denuded by erosion and downhill drift. This process bringing them into contact with the plough where they will soon be lost through attrition.

D.R.J.P. and S.C.H.

FURTHER REMARKS ON THE MONKTON ANGLO-SAXON CEMETERY

GENERAL OBSERVATIONS

In 1971, the first gas pipeline to be cut through this cemetery exposed some extremely important and interesting graves, twenty-two in number, belonging to a large burial-ground which had extended from east to west over the downland, alongside the old Dunstrete, for at least 300 m.[5] The 1982 pipe-trench, cut just 5 m. south of and parallel

[5] Sonia Chadwick Hawkes, A.C. Hogarth and C.B. Denston, 'The Anglo-Saxon Cemetery at Monkton, Thanet: Report on the Rescue Excavations of May/June 1971', *Arch. Cant.*, lxxxix (1974), 49–89.

to the previous one (Fig. 1), intersected only a further twelve graves, in the centre and eastern part of the site, but they confirm and amplify previous impressions. Though they afforded no further evidence of fifth-century cremation on the site, the datable inhumations again range in period from the early sixth century until well into the seventh, and they include individuals of high status both early and later in the site's history. In the 1971 sample, it was noticeable that the sixth-century burials, nos. 5, 7, 21 and 22, occurred only near the centre of the cemetery, in a bunch towards the middle of trench-sector B–C on the present plan (Fig. 1). It is, therefore, interesting that the sixth-century burials found in 1982, nos. 23–27 and probably 32, are also in the central area, in the easterly part of the same sector of trench. This thickening up of the distribution of early inhumations confirms in the most satisfactory way that, at least in the northern part of the Monkton cemetery, we have evidence of a nuclear lay-out and an apparent horizontal stratigraphy in the order of burial, with seventh-century burials spreading out to east and west of the old centre. Such apparent regularity is by no means typical of all Anglo-Saxon cemeteries. At Finglesham, for example, seventh-century burials impinged seriously on the ground around and between the sixth-century founder graves, and their chronology is confused by what appear to be family groupings.[6] It is of course too soon to say anything further in detail about organisation of burial at Monkton, but seventh-century burials do not at present appear to intrude on the old nucleus of the cemetery. Graves definitely of the later period found in 1971 were 12 (late sixth or seventh), 14, 18 and 19, all of which lay east of the sixth-century graves, and 3, with the famous composite brooch, which lay to the west. In the 1982 trench, it is curious to find no recognized burials west of Grave 23, though the fine spearhead of Swanton's group E4 found in topsoil spoil in 1982 at N.G.R. TR 288654,[7] dates from the seventh century and could well have come either from the sword-grave 1 found in 1971 or a later male burial which was destroyed without record in 1982. However, several seventh-century burials were found on the east side of the cemetery in 1982, and these, nos. 31, 33 and 34, form a loose group with the seventh-century burials of 1971, nos. 14, 18 and 19. Probably the unfurnished graves in the same areas belong to this same late period.

[6] Sonia Chadwick Hawkes, 'Finglesham. A Cemetery in East Kent', in (Ed.) James Campbell, *The Anglo-Saxons* (1982), 24–5.

[7] D.R.J. Perkins, 'The Thanet Gas Pipeline, Phase III, 1983', forthcoming, 4, fig. 4, no. 10; M.J. Swanton, *The Spearheads of the Anglo-Saxon Settlements* (1973), 87–91.

It will be noticed that the late burials at Monkton tend to be set wide apart from each other and this suggests that they may originally have been covered by barrows. Small barrows are frequently referred to in the older literature about Anglo-Saxon cemeteries on Thanet and elsewhere in east Kent. Though most have now been ploughed flat, it is possible to recognise them where they had penannular ditches,[8] and even where they did not, the plan of a totally excavated cemetery can be made to reveal them. Guy Grainger's painstaking 'nearest-neighbour' analysis of the distribution of graves at Finglesham has shown the presence of many likely barrows, not just in the seventh century, when they were commonest, but also for leading males in the sixth.[9] The original presence of barrows explains the curiously irregular and dispersed pattern of burial at Finglesham, as contrasted for example with St. Peter's,[10] and could also explain the big gaps in the grave distributions at Monkton. Whether they might also explain the shallowness of the graves today is more problematic, since it is obvious that few of the sixth-century graves can have had mounds over them. However, two of the shallowest, that of the rich male in Grave 26 and the female in Grave 32, could certainly have been covered with barrows up to 5 m. in diameter.[11]

[8] A.C. Hogarth, 'Structural Features in Anglo-Saxon Graves', *Arch. Journ.*, cxxx (1973), 113, fig. 8; B. Philp, 'The Anglo-Saxon Cemetery at Polhill, Dunton Green, Kent', *Excavations in West Kent, 1960–1970* (1973), fig. 50, Pls. XIXA and B; Sonia Chadwick Hawkes 'Orientation at Finglesham: Sunrise Dating of Death and Burial in an Anglo-Saxon Cemetery in east Kent', *Arch. Cant.*, xcii (1979), 48, fig. 1. These ditched graves now show up regularly in aerial photographs of Kentish Anglo-Saxon cemeteries, and where excavated have been shown to be phenomena of the later seventh century. Whether they exist at Monkton has yet to be ascertained.

[9] Grainger, forthcoming in the final report of the Finglesham cemetery, in which barrows are given a major write-up. Meanwhile, see Hawkes, *op. cit.* (1982), fig. 1, which shows the author's own version of the barrow distribution, based on methods pioneered by Grainger. The fact that his final version may differ slightly in detail indicates that sometimes it may not be possible to determine which of two candidates originally lay under a barrow. However, in most cases the barrow-graves are very obvious from their relationship to surrounding burials and, usually, but not invariably, from their richer grave-goods.

[10] Hogarth, *op. cit.*, fig. 4. At St. Peter's, apart from the graves with penannular ditches, which occur in distinct groups at the edges, the grave lay-out is generally too tight and economical to allow for more than a few exceptional graves with unditched barrows over them. The plan shows a marked contrast in burial custom to that at Finglesham and what begins to appear at Monkton.

[11] Barrows of this dimension are inferred for some of the leading sixth-century males at Finglesham. Hawkes, *op. cit.* (1982), fig. 1.

THE FINDS

For reasons beyond the control of both excavator and County Museums Service, the grave-goods have not yet been conserved, which makes definite description and comment impossible. However, the Conservator, Mrs. Esther Cameron, very kindly arranged for some work to be done on the more important non-ferrous objects, Appendix II, p. 113, and this and the excavator's good drawings make it possible to attempt some evaluation of the date and status of the graves and their contents.

Grave 26

This was clearly the most important male burial excavated. Not only is he likely to have been under a small barrow, but what remained of his grave showed unusual structural features, apparently sockets for 12 cm. beams which had functioned as longitudinal and horizontal supports for a bier or coffin (Fig. 6). Amongst the Franks, exceptionally large coffins or grave-chambers often show traces of transverse supports,[12] and they are beginning to be found on Thanet,[13] but thus far the Grave 26 arrangement seems unique.

The man's weapons have been badly damaged by plough and bulldozer, and a *spearhead* by the skull may well have been lost.

His *sword*, though broken, survives, lying at his left side from shoulder to thigh as if it had been worn on a baldric rather than a waist-belt.[14] The silver studs (Fig. 8, nos. 2 and 14), too small to have belonged to the shield, might have been rivets belonging to the sword harness. The sword itself seems not to have had silver fitments, however: its pommel survives (Fig. 8, no. 3) and is without embellishment. This sword from Monkton was thus of lesser status than contemporary swords such as the ring-hilted swords from Finglesham Grave 204, for example,[15] and Faversham.[16]

The *shield-fittings* are scattered in fragments from right hip to left shoulder, so the original position is uncertain. However, enough

[12] To quote one of the most obvious cases, H. Roosens and J. Alenus-Lecerf, 'Sépultures mérovingiennes au "Vieux Cimetière" d'Arlon', *Archaeologia Belgica*, lxxxviii (1965), fig. 3 and *passim*; Hogarth, *op. cit.* (1973), 112, n. 5.

[13] Apart from the one case, referred to in the previous note, at St. Peter's, Guy Grainger excavated others, as yet unpublished, at Ozingell.

[14] On the wearing of the sword, and positions of swords in graves, see H.R. Ellis Davidson, *The Sword in Anglo-Saxon England* (1962), 93–6.

[15] Hawkes, *op. cit.* (1982), fig. 3; Wilfried Menghin, *Das Schwert im frühen Mittelalter* (1983), no. 52, 222.

[16] Vera I. Evison, 'The Dover Ring-sword and other Sword-rings and Beads', *Archaeologia*, ci (1967), fig. 6, a-b; Menghin, *op. cit.*, no. 53, 222.

remains to show that we have a boss of Frankish type, with particularly low convex dome and sloping waist, thus of Hinz type A2,[17] which normally occurs in burials belonging to the first third of the sixth century.[18] The Monkton boss (Fig. 8, nos. 6, 8) resembles that from Finglesham Grave 204, the burial of which can be dated by its distinctive associations to *c.* 520/30.[19] As befits the aristocratic status of its owner, the Finglesham boss had silver-plated rivets, whereas the Monkton boss had bronze-faced rivets, probably tinned in imitation. In this respect, it resembles another similar, contemporary boss from Worthy Park, Kingsworthy, Hants., Grave 49, the burial of another modestly prosperous but not top-class owner.[20] The long grip which originally spanned the shield-board is typical of Frankish bosses of the first half of the sixth century, and their imitations in Kent and the rest of southern England. When complete, the Monkton grip must have measured *c.* 52 cm., and the diameter of the shield-board will not have exceeded this by more than a couple of centimetres. It is possible to state this with fair confidence because of evidence from other sites where find-circumstances allowed shield-diameters to be calculated within a high degree of accuracy: at Finglesham the five sixth-century shields found measured between 45 and 59 cm.; at Worthy Park the range was between *c.* 40 and 53 cm.[21] These small circular Anglo-Saxon shields were clearly meant to be used very actively, not for static defence, but to parry blows and, by means of the heavy iron boss, to inflict injury during hand-to-hand fighting. Very probably their size was tailored to individual needs and strengths because in a long fight the weight of the shield must have been a critical factor.

The bronze *buckle* with its particular form of unemphatic shield-on-tongue (Fig. 8, no. 5), is a common type in Frankish and Alamannic cemeteries on the Continent, where it is generally dated early in the sixth century.[22] There are many from Kentish graves, including such famous female burials as Bifrons 41 and 42, and Sarre

[17] H. Hinz, *Das Fränkische Gräberfeld von Eick . . . Kreis Moers* (1971), 28 ff.

[18] Hermann Ament, *Fränkische Adelsgräber von Flonheim in Rheinhessen*, Graves 1 and 5, Tafn. 2 and 11; Renate Pirling, *Das Römisch-Fränkische Gräberfeld von Krefeld-Gellep, 1960–1963*, Grave 1782, Taf. 45; Grave 1812, Taf. 55; René Joffroy, *Le Cimetière de Lavoye, nécropole mérovingienne*, Pl. 32, Grave 319, to cite only a few of the most important occurrences.

[19] Hawkes, *op. cit.* (1982).

[20] Swanton, *op. cit.*, fig. 85, c.

[21] Figures from Guy Grainger forthcoming, in the reports on these two cemeteries.

[22] Kurt Böhner, *Die Fränkischen Altertümer des Trierer Landes* (1958), Abb. 1b; and later literature discussed in Patrick Périn, *La Datation des Tombes mérovingiennes* (1980), *passim*.

4,[23] which most scholars nowadays date within the second quarter of the sixth century.[24] They are rarer outside Kent, but there is a nice parallel for the Monkton buckle in Grave 30, at Worthy Park, which was associated with a button brooch of the early sixth century.[25]

The *whetstone*, (Fig. 8, no. 11) presumably carried in a pouch at the man's left hip (Fig. 6), represents a relatively uncommon ingredient in Anglo-Saxon male graves. Some years ago now S.E. Ellis published the results of a major research programme on the petrology and provenance of Anglo-Saxon honestones, and Vera Evison followed on with an archaeological survey of the evidence.[26] Considering how essential they must have been for sharpening all kinds of iron weapons and tools, and how relatively many hone fragments have been found on Anglo-Saxon settlement-sites, it is remarkable how few whetstones have been found buried as grave-goods. For Kent, we have only two unassociated examples from Bifrons, two from Dover (Buckland) Grave 162, and another unassociated occurrence in the Horton Kirby, South Darenth, cemetery in west Kent.[27] All except one of the Bifrons hones, which seems to have been an import from the Frankish area of the Continent, appear to have been derived from the local Kentish Rag. According to David Moore in the Department of Mineralogy of the British Museum (Natural History), who kindly thin-sectioned and examined the Monkton hone, it, too, is likely to have come from a local source. He writes: 'The rock is an ostrocod-bearing glauconite calc-arenite. The mineralogy and texture are not typical, however, of the Kentish Rag which is well known as a Roman hone. Nevertheless, the mineralogy and palaeontology are typical of rocks of that type and age. I feel therefore that your specimen was almost certainly collected in Kent.' Unlike the large decorated whetstones from the Sutton Hoo ship-

[23] Best figured in Egil Bakka, *On the Beginnings of Salin's Style I in England* (1958), fig. 53.

[24] Sonia Chadwick Hawkes, 'Bifrons Grave 41' in Günther Haseloff's *Die Germanischen Tierornamentik der Völkerwanderungszeit: Studien zur Salin's Stil I* (1981); Sonia Chadwick Hawkes and Mark Pollard, 'The gold Bracteates from sixth-century Anglo-Saxon Graves in Kent', *Frühmittelalterliche Studien*, xv (1981), 350–1; Egil Bakka, 'Scandinavian-type gold Bracteates in Kentish and continental Grave-finds' in (Ed.) Vera Evison, *Angles, Saxons and Jutes: Essays presented to J.N.L. Myres* (1981), 11–38.

[25] Richard Avent and Vera I. Evison, 'Anglo-Saxon Button Brooches', *Archaeologia*, cvii (1982), Pl. XVI, 32.3.

[26] S.E. Ellis, 'The Petrography and Provenance of Anglo-Saxon and medieval English Honestones with Notes on some other Hones', *Bulletin of the British Museum (Natural History)*, Mineralogy, vol. 2, no. 3 (1969), 135–87; Vera I. Evison, 'Pagan Saxon Whetstones', *Antiq. Journ.*, lv (1975), 70–85.

[27] Evison (1975), *op. cit.*, 75.

burial, Lovedon Hill and elsewhere,[28] and the plain but very long whetstone from Uncleby, Yorks.,[29] which are all regarded as objects of ritual and ceremony, the Monkton hone looks very functional and ordinary. However, the gold bracteate found alongside it, apparently in the same pouch, is far from ordinary in the context of a male burial, and being itself amuletic, causes one to wonder whether even such an apparently commonplace whetstone as ours from Monkton may have been an object of superstition or veneration. The situation at Monkton certainly strengthens Vera Evison's argument for ritual in connection with the burial of at least some whetstones. One theory is that they symbolised thunderbolts and formed part of the cult of the sky god Thunor.[30]

The gold *bracteate* (Fig. 8, no. 12; Plate I) is a unique find in a man's grave, others from burials having been found with women, usually very rich ones.[31] From its position close beside the whetstone, the two were almost certainly buried together, either clutched in the man's left hand, or, more likely, in a perished container such as a leather pouch. Since the man was certainly not wearing it as an ornament, and since there is nothing to suggest that he had been a jeweller who might have kept a gold bracteate as bullion, the man must surely have kept the bracteate about his person as an amulet. It is a south Scandinavian bracteate and the ornament of these is generally considered to have been pregnant with Nordic religious symbolism.[32] Like most bracteates from sixth-century graves in Kent, the Monkton find is a D-bracteate, more specifically a slightly bungled version of Mackeprang's Jutlandic Group 1, variant 1.[33] On better executed and prototypal examples of this variant found in Kent, in Bifrons Grave 29,[34] Finglesham Graves D3[35] and 203,[36] and in

[28] R.L.S. Bruce-Mitford, *The Sutton Hoo Ship Burial*, 2 (1978), 345 ff.

[29] Evison (1975), *op. cit.*, 79–83, figs. 5 and 7.

[30] Bruce-Mitford, *op. cit.* (1978), 374–6.

[31] By a strange coincidence no less than three independent papers have been published recently about the Scandinavian gold bracteates in Kentish graves: These are: Bakka, *op. cit.* (1981); Hawkes and Pollard, *op. cit.* (1981); and Morten Axboe, 'The Scandinavian gold Bracteates: Studies on their Manufacture and regional Variations: with a Supplement to the Catalogue of Mogens B. Mackeprang', *Acta Archaeologica*, lii (1981), 1982, 1–87.

[32] See especially Karl Hauck, 'Götterglaube im Spiegel der goldenen Brakteaten', *Sachsen und Angelsachsen*, (Ed.) C. Ahrens (1978), 185–218; 'Brakteatenikonologie', *Reallexikon der Germanischen Altertumskunde*, vol. 3, 3/4 (1977), 361 ff.

[33] Mogens B. Mackeprang, *De Nordiske Guldbrakteater* (1952), 56–7.

[34] E.T. Leeds, 'Denmark and early England', *Antiq. Journ.*, xxvi (1946), Pl. VIII; Hawkes and Pollard, *op. cit.* (1981), fig. 7, Taf. IX.

[35] Sonia E. Chadwick (Hawkes), 'The Anglo-Saxon Cemetery at Finglesham, Kent: a Reconsideration', *Med. Arch.*, ii (1958), fig. 9, e, Pl. III; Hawkes and Pollard, *op. cit.* (1981), Taf. V.

Sarre Grave 90,[37] the ornament shows clearly as consisting of a single sinuous animal with U-shaped head and beak, S-shaped body and limbs interlacing with the loops of the body. The legs terminate in human feet, there is a detached human foot in the middle of the composition and a severed ear in front of the beak.[38] Professor Karl Hauck, who has made detailed studies of bracteate iconography, regards the 'fantasy animal' of the D-bracteates as a 'man-eating monster' and a potent symbol of power over death connected with the mythology of the god Woden.[39] Believe that or not, the iconography of the D-bracteates evidently had some profound meaning for their owners, and religious beliefs seem the likeliest reason for the man in Monkton Grave 26 to have secreted such an object about his person. It is even possible that a wife or kinswoman placed it in the grave to put the man under the protection of Woden. The bracteate was certainly not new when buried, and the pattern of wear on the loop, and the flattening of the filigree rim on either side of it, strongly suggest that the amulet had been worn for a time on a woman's necklace, where it had been flanked by beads. A slightly worn Group I, variant I, Jutlandic bracteate in a Kentish man's grave of *c.* 520/30 would fit well with what we know of the chronology of their manufacture. Though Bakka still argues for a beginning for the type *c.* 525,[40] he has evidently still not seen the Finglesham D3 bracteates on which his chronology largely hangs. We both agree that this grave dates from *c.* 520/30, but re-examination of the bracteates showed that the pair of Group I, variant I, were damaged, repaired and very heavily worn when buried. Because of this, I prefer a date at latest *c.* 500 for the start of D-bracteate manufacture.[41] It seems that the Monkton finding bears me out. Finally, the Monkton bracteate brings the total of Scandinavian bracteates in Kent to at least twenty-two, to use my own previous reckoning.[42] Axboe would add three more, from Faversham, Dover and Ozingell,[43] but the latter at least looks like Kentish work, and the discovery of a C-bracteate-type die being used on a silver cup-mount from Broadstairs[44] certainly suggests that Kent as well as Anglian England could have been producing home-made

[36] Hawkes and Pollard, *op. cit.* (1981), fig. 5, Taf. IV; Axboe, *op. cit.* (1982), Pl. VIII, 314a/1–2.
[37] Leeds, *op. cit.* (1946), Pl. VIII; Hawkes and Pollard, *op. cit.* (1981), Taf. XIV.
[38] See Bakka, *op. cit.* (1981), fig. 1, for a clear drawing of the creature.
[39] Hauck, *op. cit.* (1977), 371 ff.
[40] Bakka, *op. cit.* (1981), 24–8.
[41] Hawkes and Pollard, *op. cit.* (1981), 339–40.
[42] *Ibid.*, 328.
[43] Axboe, *op. cit.* (1982), nos. 308, 314c, 314f, Pls. VIII–IX.
[44] *Ibid.*, 314b, Pl. VIII.

bracteates during the sixth century. However, the Monkton bracteate seems really to have been an import: the twisted filigree on the rim is a characteristic of some Jutland Group I bracteates found in Jutland and north-west Germany,[45] and the rendering of the animal on the Monkton piece is no worse executed than on many a Nordic piece.

Grave 27

With all but the socket of the *spearhead* destroyed by the plough, and the *knife* a common sixth-century form, only the *shield-boss* can date the burial at all precisely (Fig. 9, no. 1). Its high sloping waist and tall convex cone with apical knob, place it in Hinz's type A3 or A4, thus presumably in the second half of the sixth century.[45a] Like the earlier boss in Grave 26, it was complemented by a long grip.

Grave 25

This, the third sixth-century male burial, seems to have been robbed in antiquity, so may originally have been richly furnished. All that survives to place him chronologically now is the little rectangular bronze buckle, too small to have belonged to a waist-belt, so perhaps from a purse, which looks to be a type of the early sixth century. The *spearhead* (Fig. 7, nos. 5 and 7) is in three pieces and, if the detached socket base belongs, this is likely to have been a Swanton series F1 spear, and not chronologically diagnostic.[46]

Grave 23

This is an important female burial of the second third of the sixth century.

The *gold threads* on the skull are exciting because they are the first find of this type since the excavation of Lyminge Grave 44 thirty years ago.[47] As Elisabeth Crowfoot explains in her appendix, p. 112, the now unravelled strips of sheet gold (Plate I) were originally woven into the front of a fillet worn on the hair or as part of a head-dress. Similar gold threads, the remains of brocaded braids, have been found in a number of Anglo-Saxon women's graves in Kent, nearly always rich ones, most of them in fact more richly furnished than this grave from Monkton. In some cemeteries, notably Bifrons, Faversham and

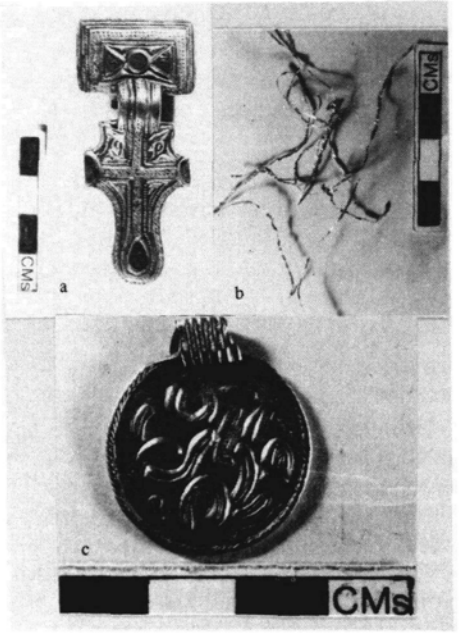
[45] *Ibid.*, 39–40, fig. 43.

[45a] See Ursula Koch, *Das Reihengräberfeld bei Schretzheim* (1977), Abb. 8A/B, Stufe 3, 565–590/600.

[46] Swanton, *op. cit.*, 91–2.

[47] Alan Warhurst, 'The Jutish Cemetery at Lyminge', *Arch. Cant.*, lxix (1955), 28 ff., fig. 11, 4.

PLATE I



(*Photos. E. Cameron*)

a. Small square-headed Brooch, Grave 25 (Scale: $\frac{1}{2}$); b. Gold brocading Threads, Grave 25 (Scale: *c.* $\frac{1}{2}$); c. Gold D-bracteate, Grave 23 (reverse view) (Scale: *c.* $1\frac{1}{4}$).

Sarre, several women were buried with them. The whole topic was written up some fifteen years ago,[48] and there is no need here to do more than stress a few points that need updating in the light of new thinking. First, then, according to the revised chronology of Kentish Anglo-Saxon female graves,[49] none of the gold brocaded bands need have been buried after *c.* 550/60. They belong in the period of heavy Frankish influence,[50] and may well have been actual imports from France. If so, they could well have been made of silk like the braids in

[48] Elisabeth Crowfoot and Sonia Chadwick Hawkes, 'Early Anglo-Saxon Gold Braids' *Med. Arch.*, xi (1967), 42–86; Elisabeth Crowfoot, 'Early Anglo-Saxon Gold Braids: Addenda and Corrigenda', *Med. Arch.*, xiii (1969), 209–10.

[49] Bakka, *op. cit.* (1981); Hawkes and Pollard, *op. cit.* (1981).

[50] Sonia Chadwick Hawkes, 'Recent Finds of inlaid Iron Buckles and Belt-plates from seventh-century Kent', *Anglo-Saxon Studies in Archaeology and History*, 2 (1981), 49 ff.; 'Anglo-Saxon Kent *c.* 425–725', in (Ed.) P. Leach, *Archaeology in Kent to AD 1500*, CBA Research Report 48, 1982, 72 ff.

Frankish graves. Finally, since Kentish women never wore ear-rings, even when they were available,[51] and this is a major difference from Frankish custom, it is to be assumed that the fashion in Kent, at least after marriage, was entirely to cover hair and ears by an enveloping veil or close-fitting coif. It still seems likely that the gold braids were introduced into Kent as bridal wear, the Kentish aristocracy having apparently intermarried into equivalent Frankish families in some numbers during the first half of the sixth century.[52] Initially, then, one imagines them adorning the flowing locks of the maiden;[53] subsequently, the matron will have continued to wear her gold *vitta* over her veil, or, cut to size, to decorate the frontal portion of her coif. Though some of the Kentish gold braids, such as that in Lyminge Grave 44, are long enough for the gold-work to have continued well behind the ears, on others the decorated portion was much shorter. The gold brocaded 'bracelets' in Sarre 4 and Chatham Lines 18, may have been the left-over portions of braids that had been adapted for use on a coif. It is a great pity that the Monkton gold brocading strips may be incomplete, and were anyway unravelled. More well excavated finds are needed to illuminate this interesting aspect of female dress.

The silver *small square-headed brooch* (Fig. 7, no. 2; Plate I) belongs to a known Kentish type with parallels in Bifrons Grave 42,[54] Howletts and Sarre Grave 4.[55] Though they are all very similar, and clearly came from the same workshop, they vary in slight details and did not come from exactly the same mould. David Leigh, in his study of the Kentish square-headed brooches, places their manufacture within the second third of the sixth century.[56] All the ingredients of Bifrons 42, where there is a pair of square-headed brooches in mint condition and Frankish disc brooches and buckle of the period *c.* 525–545,[57] suggest a date of burial well before *c.* 550. In Sarre 4 the small square-headed brooch is accompanied by a great square-headed brooch and a pair of jewelled disc brooches of Avent's class 2.2,[58] all of them Kentish and in fresh condition. This grave might be

[51] Hawkes and Pollard, *op. cit.* (1981), 333 ff., fig. 5, 38 and 52, fig. 6.

[52] Hawkes, *op. cit.* (1982), 72.

[53] Crowfoot and Hawkes, *op. cit.* (1967), 61 ff.

[54] *Arch. Cant.*, x (1876), 314–5.

[55] *Arch. Cant.*, v (1862–3), Pl. II, 1; Bakka, *op. cit.* (1981), fig. 2, 10–14; Hawkes and Pollard, *op. cit.* (1981), Taf. 28.

[56] David Leigh, *The square-headed Brooches of sixth-century Kent* (Thesis submitted for the degree of Doctor of Philosophy, Cardiff, 1980).

[57] See Ursula Koch, *Das Reihengräberfeld bei Schretzheim* (1977), Abb. 8A/B, Stufe 1, 525–545/50.

[58] Richard Avent, *Anglo-Saxon Disc and composite Brooches*, BAR 11, 1975, nos. 42–3, Pl. 8.

slightly later, perhaps of the period *c.* 540–50.[59] The Monkton brooch shows rather more wear than the others, so it is conceivable that we have here a burial of the period *c.* 550/60. The fact that the brooch was worn alone, as a single dress-fastener, clasping a shawl or cloak at the throat presumably, hints that this burial may have taken place after the great fashion-change in the middle years of the century, which saw the old dress, requiring up to five brooches, replaced by a new costume, Mediterranean in origin, which required just one brooch to fasten the outer garment.[60] If so, the Monkton Grave 25 woman was unusual in choosing to wear a square-headed rather than a circular brooch for her sole adornment.

The bronze *buckle*, with tongue with expanded back, is a Frankish type (Fig. 7, no. 7) of much the same date as the Kentish brooch.[61]

The *bronze ring*, with its massive suspension mechanism (Fig. 7, no. 4) found at the woman's left waist, obviously belonged to a pouch, purse or bag. There is ample evidence that Anglo-Saxon women regularly carried such bags, whether from their contents or from the bronze, iron or ivory rings that served to support them.[62] In this case, the contents seem not to have included the usual collection of old metal objects, fossils, bits of glass, etc., but to have been wholly perishable.

The *beads* found scattered over the upper part of the woman's skeleton, from her right shoulder to her waist, probably all belonged to a great festoon, which, in default of shoulder-brooches to which to attach them, is likely to have encircled her neck (thus explaining the bead found amongst the skull fragments). They are all of amber and typical of mid sixth-century graves. The single fluted yellow glass bead found on the frontal bone of the skull (Fig. 7, no. 9) could conceivably have belonged to the head-dress. The 'Cologne Princess' wore a jewelled ornament at the centre of her gold *vitta*, and this find at Monkton may represent a simpler, cheaper variant of the theme.[63] If so, it is the only instance of such a thing known so far from Kent.

[59] Bakka, *op. cit. (1981)*, 16–21; Hawkes and Pollard, *op. cit.* (1981), 350.

[60] Hayo Vierck, 'Zur angelsächsischen Frauentracht', (Ed.) C. Ahrens *Sachsen und Angelsachsen* (1978), 255–62; G. Zeller, 'Zum Wandel der Frauentracht vom 6. zum. 7. Jahrhundert in Austrasien', *Studien zur Vor- und Frühgeschichtlicher Archäologie: Festschrift für Joachim Werner* (1974), 381–5; M. Schulze, 'Einflüsse byzantinische Prunkgewänder aus die fränkische Frauentracht', *Archäologisches Korrespondenz-blatt*, vi (1976), 149 ff.; Rainer Christlein, *Die Alamannen* (1978), 81 f.

[61] Koch, *op. cit.* (1977), Abb. 8A/B, Stufe 1–2, 525–565/70.

[62] David Brown, 'The Significance of the Londesborough Ring Brooch', *Antiq. Journ.*, lvii (1977), 95–9.

[63] O. Doppelfeld, 'Das fränkische Frauengrab unter dem Chor des Kölner Domes', *Germania*, xxxviii (1960), Pl. XIV, 5; Joachim Werner, 'Frankish royal Tombs in the Cathedrals of Cologne and Saint-Denis', *Antiquity*, xxxviii (1964), Pl. XXX, 5.

Grave 32

The *amber-beads* from this burial indicate that it had been another sixth-century female.

The massive iron *clamps* and looped *staple* (Fig. 10, nos. 3, 5 and 4) are the most remarkable feature of the grave. Had there been four clamps they could have been interpreted as coffin-fittings, but the plan and section show most clearly that all three overlay the skeletal remains. Assuming that they could have been shifted slightly through decomposition of the object to which they were attached, and perhaps subsequently moved by the plough, they look for all the world as if they had belonged to a heavy wooden cover placed directly over the burial. This, evidently two stout planks clamped together and provided with the staple in addition, might well have been a domestic door. It is tempting to speculate that this was used as an improvised bier and then placed as a lid over the grave. Whatever the explanation, these fittings seem at present to represent a unique grave-structure.

Grave 31

This lay over 100 m. east of Grave 32, close to the seventh-century burials 18 and 19 found in 1971.

The *pottery bottle* (Fig. 9, no. 1) with its wavy lines of roulette ornament, resembles that found in Grave 18.[64] Since that was published and discussed, Vera Evison has brought out her *corpus* of wheel-made pottery.[65] She parades the comparably decorated bottle-vases from Kent and tracks them back to their source in northern France,[66] thus confirming tentative conclusions reached in 1974. Her chronological conclusions are disappointingly imprecise, however, and for the Monkton type of bottle we are left with a generalised date in the seventh century. On the other hand, she makes a nice case for the rôle of the bottles in the wine trade between Neustria and Kent in the early Christian period.[67]

Grave 33

In this female grave the combination of châtelaine and necklet is typical of the seventh century (Fig. 10).

The *beads*, four amethysts and two cut from a shell, perhaps a cowrie, in which case all imports from Byzantium by the long-haul

[64] Hawkes, *et al.* (1974), 74–6, fig. 6.
[65] Vera I. Evison, *Wheel-thrown Pottery in Anglo-Saxon Graves* (1979).
[66] *Ibid.*, 33f., map 4, figs. 4–6.
[67] *Ibid.*, 48–50.

trade from Aquileia over the Alps, down the Rhine and so to Kent, denote a moderately well-to-do woman, probably buried during the first half of the seventh century. But it is by no means clear how long these exotic trade-beads continued to be imported. They seem to have been available for burial until the third quarter of the seventh century.[68]

Grave 34

There were no grave-goods but the structural features, suggesting a pitched-roof over the grave, indicate a late date for the burial,[69] which its position on the extreme edge of the cemetery goes some way to confirm, given the apparent nuclear development of the burial-ground as a whole.

S.C.H.

APPENDIX I

Textiles

ELIZABETH CROWFOOT

Grave 23 (Fig. 7)

1. On fragment ?pin from brooch, a scrap of textile *c.* 0.6 by 0.8 cm. is preserved, the fibres replaced by metal oxide; spinning, Z one system, S the other, medium grade 2/2 twill, surface damaged, count *c.* 6/6 threads per cm.

2. Six fragments of cut gold strip used for brocading, lengths *c.* 13.0, 11.5, 9.5, 6.0, 5.0 and 3.5 cm.; the width varies from *c.* 0.5 – 0.9 mm. (Fig. 7a). All strips had been straightened out, and though traces of pressure points, left by the threads which passed over the gold, can be seen on all pieces, only the smallest could be refolded clearly enough to suggest a little of the probable pattern (Fig. 7b). The full width of brocading would have been *c.* 6 mm., with *c.* 5 returns of strip in 5 mm. No textile threads survive, but comparative evidence suggests the gold decoration came from a band, perhaps tablet-woven, as in the wide gold-brocaded band from Taplow Barrow, a 4-hole tablet-weave in fine wool, with a narrow undecorated edging on either side of the gold. The little that can be seen of the Monkton pattern

[68] Sonia Chadwick Hawkes, 'The Dating and social Significance of the Burials in the Polhill Cemetery', *Excavations in west Kent, 1960–1970* (1973), 192–3.
[69] Hogarth, *op. cit.* (1973), 119.

suggests a stepped or running design (cf. Crowfoot and Hawkes, 1967, Fig. 13.3, 8, 9)[70] rather than the simpler arrangements of crosses and diamonds also found.

Apart from the Taplow Barrow burial, possibly of the early seventh century, all examples of similar gold-strip brocading so far recorded come from women's graves of the middle to second half of the sixth century. Most are from Kentish cemeteries, and the few from further afield all show Kentish influence. In these graves, the position on or near the skull obviously indicates a head ornament, decoration on a coif or headband; in some, the brocaded area may have been very short, with the band perhaps continuing undecorated round the back of the head. In two graves, where the gold appears to have been found on one wrist, it perhaps adorned some sort of woven bracelet (*op. cit.*, 50).

The use of flat gold strip for this decoration seems to be confined to this limited period, and something similar can be seen in contemporary Continental material, with gold strip brocading found widely in the fifth and sixth centuries, into the seventh, before giving way, as in England, to the more easily manipulated 'spun-gold', a metal strip wound by spindle round a fibre core, which became universal for brocading and embroidery from the ninth century onwards. These Kentish bands, undoubtedly luxury goods, perhaps even of silk, may have been of Continental origin, and the suggestion has been made that they should perhaps be considered a symbol of status, indicating royal, or near-royal connections for their wearers. (*op. cit.*, 53 ff, 65).

APPENDIX II

Analyses of non-ferrous metals by X-ray fluorescence at the Ancient Monuments Laboratory.

PAUL WILTHEW

Grave no.	*Object*	*Result*
23	Square-headed brooch	Silver gilt. Fairly base silver. Gilding applied by mercury amalgam.
23	Châtelaine ring and attachment	Both parts are bronze with a small amount of lead and, in the ring, zinc.
23	Buckle	Copper-zinc alloy (brass) with small amount lead.
25	Ring	Copper-zinc-tin-lead alloy (i.e. leaded gun metal)

[70] E. Crowfoot and S.C. Hawkes, 'Early Anglo-Saxon Gold Braids, *Med. Arch.*, xi (1967), 42–86; Addenda and Corrigenda, *ibid.*, xiii (1969), 209–10.

25	Buckle	Bronze with some lead.
26	Bracteate	Made in three sections. Each part is gold debased with silver. Silver is present in significant amounts and there is also some copper.
26	Disc	Bronze with small amounts of lead and tin. One side of the disc is very high in tin suggesting a tin-rich coating, possibly solder.
26	Rivet	Silver with traces of copper and lead.
26	Buckle	Leaded bronze with small amounts of zinc.
26	Rivet from shield-boss	Bronze with small amounts of zinc and lead. Not possible to tell whether it was tin-coated, but it was certainly not silvered.