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ORIENTATION AT FINGLESHAM: SUNRISE DATING OF DEATH AND BURIAL IN AN ANGLO-SAXON CEMETERY IN EAST KENT*

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Excavation of the Anglo-Saxon cemetery at Finglesham was begun in 1928–9 by the late W. P. D. Stebbing and completed by the author between 1959 and 1967.[1] Though a few graves were destroyed by the small-scale chalk quarrying which first disclosed the cemetery and though at least two remain inaccessible beneath The Whiteway, now a metalled by-road but once an ancient trackway forming the western boundary of the burial-ground, Finglesham has otherwise been excavated in its entirety (Fig. 1). Total analysis of information from 243 burials is under way and promises to yield a richly rewarding story about the lives and deaths of the people in this east Kentish community. The present paper is concerned with just one aspect, grave orientation and its implications, but a little scene-setting is required to put this in context.

The cemetery is at N.G.R. TR 326534, just over 100 ft. A.O.D. on a prominent knoll of bare downland chalk, which has long been under plough. The site commands an unimpeded view out to sea, from north-east to south-east, and is itself visible for quite a distance around. The first burials here date from the first half of the sixth century, when an aristocratic family and their adherents began to inter their dead on the highest piece of ground at the northern end of the eventually much larger cemetery. Amongst the founder burials are four with exceptionally rich jewellery and weapons, and vessels of bronze and glass, with another three, robbed in antiquity, from which enough survives to suggest comparable wealth. They can be dated to the second and third quarters of the sixth century and appear to represent two or at most three generations of a single family. For the rest, a man with sword, shield and spear but less wealth about him, another with shield and spear, two with spears alone, and a few men, women and children with few or no grave-

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[1] For reports on the earlier excavations, see W. P. D. Stebbing, 'Jutish Cemetery near Finglesham, Kent', *Arch. Cant.*, xli (1929), 115–125, and Sonia Chadwick (Hawkes), 'The Anglo-Saxon Cemetery at Finglesham, Kent: a Reconsideration', *Medieval Archaeol.*, ii (1958), 1–71. There are brief notes on the later discoveries in *Medieval Archaeol.*, iv (1960), 135; x (1965), 171.

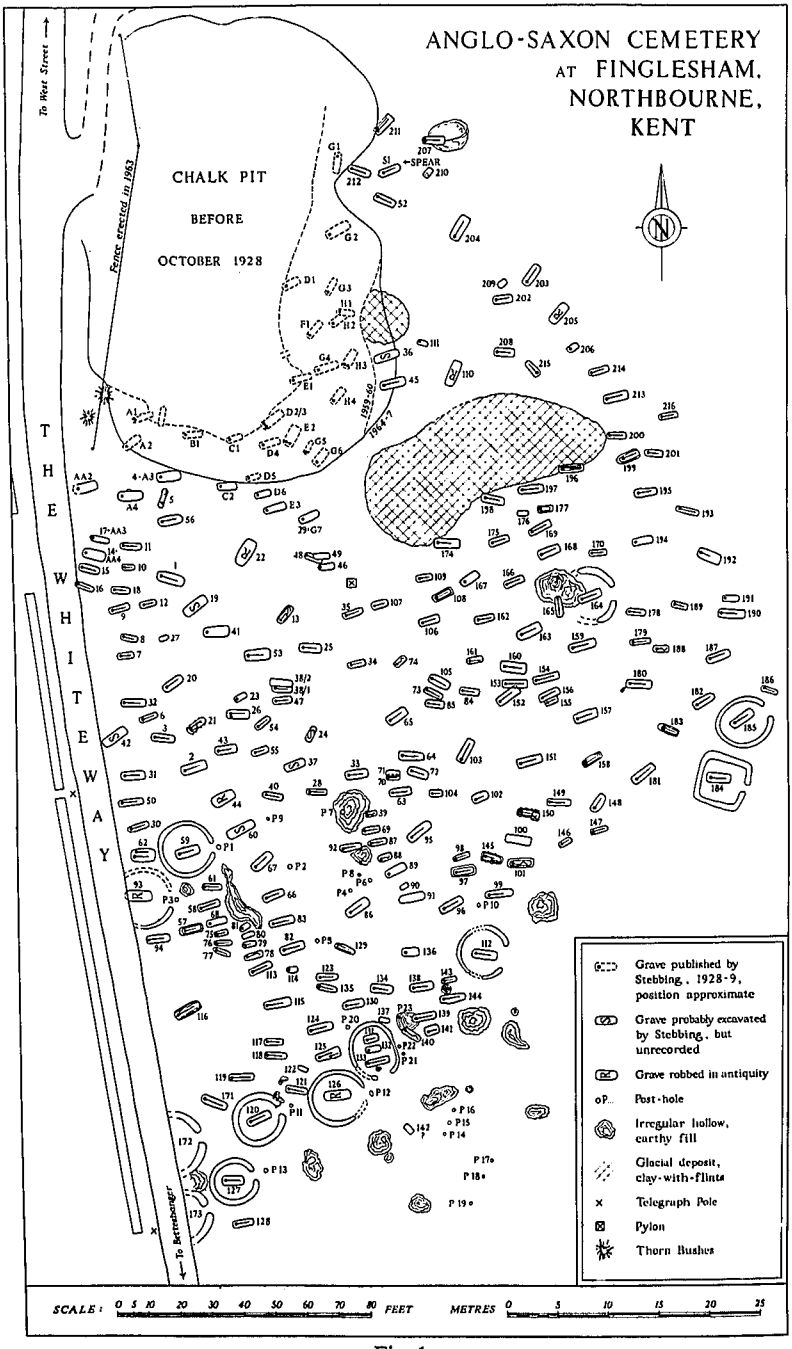

ANGLO-SAXON CEMETERY
AT FINGLESHAM,
NORTHBOURNE,
KENT
CHALK PIT
BEFORE
OCTOBER 1928
Fence erected in 1963
To West Street
THE WHITE WAY
To Betteshanger
SPEAR
Grave published by Stebbing, 1928-9, position approximate
Grave probably excavated by Stebbing, but unrecorded
Grave robbed in antiquity
Post-hole
Irregular hollow, earthy fill
Glacial deposit, clay-with-flints
Telegraph Pole
Pylon
Thorn Bushes
SCALE: 0 5 10 20 30 40 50 60 70 80 FEET
METRES 0 5 10 15 20 25

Fig. 1.

goods bring the total of sixth century burials to at most twenty-five. Several more graves of this period may have been destroyed in the chalk-pit, but even so absolute numbers of people alive at any one time must have been small. We seem to have the principal family, their retainers and servants, but not the whole work-force required to support such an establishment.

This seems to rule out the possibility that we are dealing with a pioneering colony which was breaking new ground in the sixth century. Their place of settlement is unlocated, but whether it was just down the track at West Street or near the present hamlet of Finglesham itself (Fig. 2),[2] this type of site, on prime land close to water, normally attracted Germanic settlement from the fifth century.[3] Our cemetery's small size, late starting date and initial social imbalance seem explicable only if the bulk of the population was being buried elsewhere in a longer established burial-ground, and if our aristocrats were the new lords of an existing manor who formed a new cemetery for themselves and their immediate household. The contents of their unpillaged graves D3, 203 and 204, unsurpassed in Kent at this period, indicate their high social rank. It is just possible that Finglesham was actually named after them: OE *Thengelshām, Fengelshām,* it belongs to an early stratum of English place-nomenclature and means the prince's manor or homestead.[4] It is very tempting to equate our rich family with a branch of the royal kindred settled so conveniently close to the king's own vill at Eastry in the sixth century.[5]

The latest conceivable date for the latest of their graves excavated is *c.* 575, and though the chalk-pit may possibly have destroyed the next generation, it is spatially unlikely to have destroyed more. The rich graves tend to be set well apart, with later seventh-century graves filling up the gaps between them. These appear to represent a northward extension, at a relatively late date, of the seventh-century cemetery which was developed in the area south of the founder graves. We know from other Kentish sites such as the King's Field, Faversham, and Kingston Down,[6] what to expect of aristocratic burials in the late sixth and seventh centuries, and there is nothing comparable at Finglesham. By *c.* 600 at

[2] The topography was discussed by Chadwick, *op. cit.* (1958), 3–7.

[3] Near Great Mongeham, sited very similarly to Finglesham, aerial photography has recently discovered a very large cemetery, with an obviously early nucleus of S–N burials, which suggests a settlement of the kind one would have expected at Finglesham.

[4] E. Ekwall, *The Concise Oxford Dictionary of English Place-Names,* 4th ed., Oxford, 1960, 180; John McN. Dodgson, 'Places from *hām,* distinguished from hamm Names, in relation to the Settlement of Kent, Surrey and Sussex', *Anglo-Saxon England,* 2 (1973), 1–50.

[5] On the antiquity of Eastry as a royal administrative centre, see Sonia Chadwick Hawkes, 'Early Anglo-Saxon Kent', *Archaeol. Journ.,* cxxvi (1969), 189–90.

[6] For refs., see Audrey Meaney, *A Gazetteer of early Anglo-Saxon Burial Sites,* London, 1964, 118, 125–6.

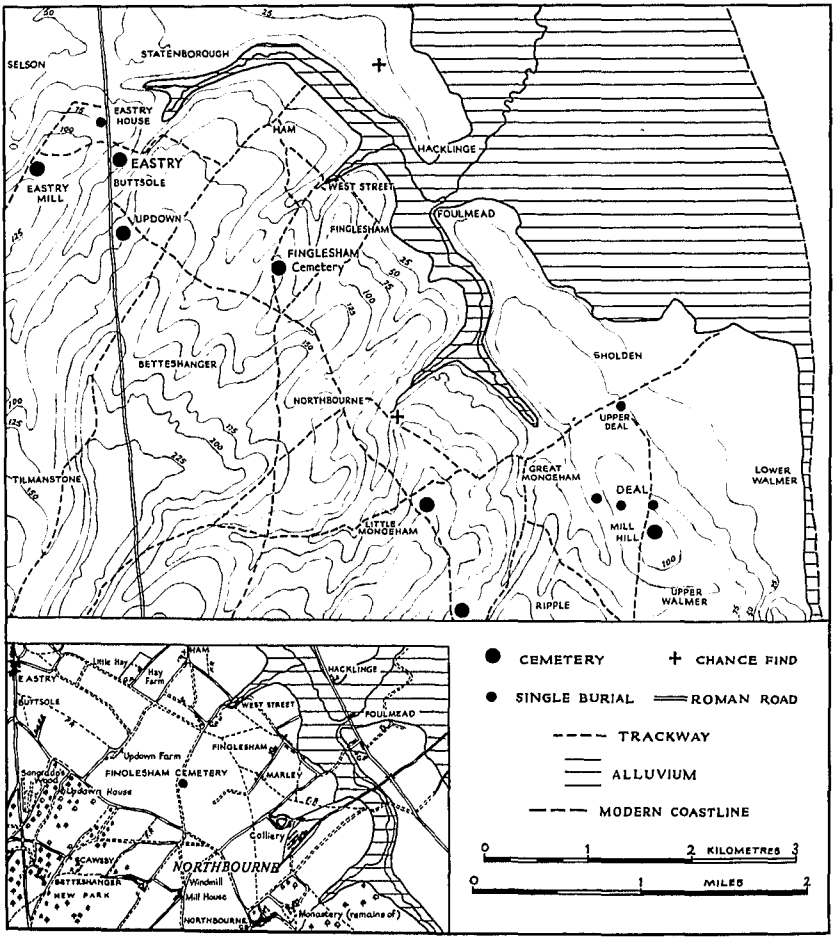


Fig. 2. The Finglesham District in early Anglo-Saxon Times.

latest our upper class family had abandoned the site. Perhaps, they were early converts to Christianity in 596–7 and were thereafter buried elsewhere, possibly in the seventh-century Christian cemetery at Eastry itself.[7] Perhaps, they had moved away altogether to another estate, leaving this one in the charge of a steward or freeman of lesser rank. Whatever the reason, the more numerous graves of the seventh century,

[7] On the analogy of the seventh-century Northumbrian royal palace at Yeavering (*Medieval Archaeol.*, i (1957, 148–9)), the royal vill at Eastry is likely to have included an early church with associated burial ground.

though by no means impoverished, tell us that the community was now dominated by a family of lesser wealth and status. Though some of the leading males owned a few fine things, outstanding amongst them the famous gilt buckle,[8] set of shoe-fittings, the bronze mounted box and bucket, and wheel-made pottery bottle from grave 95, none carried more than the freeman's spear.[9] The prestigious longsword and, for the seventh century, the scarcely lesser status symbol of the iron-bossed shield are both absent.[10] Similarly, though some of the women and girl-children wore elaborate necklaces with some amethyst beads, none had the fine gold and garnet-set pendants of the period.[11] Except for a pair of miniature bronze annulars, brooches are likewise missing.[12] The lack of so many type-fossils and general second-rate quality of most grave-goods makes it difficult to work out family relationships and detailed chronology, and research on these aspects is still far from complete. We are fortunate, however, in having coins from a couple of graves: a pale gold *solidus* of the Frankish king Sigebert III and an even paler Kentish PADA thrymsa, which date grave 7 to *c.* 675; and a purse-hoard of eight primary sceattas of the Kentish king Wihtred, which date grave 145 to *c.* 700 or a little after.[13] This is the latest datable grave in the cemetery, which seems to have gone out of use at about this time early in the eighth century. Christianity was now well established in Kent, and burial may have been transferred to consecrated ground.

Possibly, the people buried at Finglesham had been nominal Christians from early in the seventh century. Deposition of grave-goods and burial in festival attire, though a legacy from pagan times, continued as an important expression of legal right and status everywhere in this

[8] Sonia Chadwick Hawkes, H. R. Ellis Davidson and Christopher Hawkes, 'The Finglesham Man', *Antiquity*, xxxix (1965), 17–32.

[9] On the status of the spear, see M. J. Swanton, *The Spearheads of the Anglo-Saxon Settlements, Royal Archaeol. Inst.*, 1973, 3–4.

[10] The high status of shield-burial in the seventh century emerges very clearly from the evidence discussed by Vera I. Evison, 'Sugar-loaf Shield-bosses', *Antiq. Journ.*, xliii (1963), 38–96. See also, Sonia Chadwick Hawkes, 'The Dating and social Significance of the Burials in the Polhill Cemetery', in B. Philp, *Excavations in West Kent, 1960–1970* (1973), 186 ff.

[11] There is nothing remotely comparable to the best necklaces and pendants known from other sites, see Ronald Jessup, *Anglo-Saxon Jewellery* (1974), pls. 2–4, 17, 21, and Audrey L. Meaney and Sonia Chadwick Hawkes, *Two Anglo-Saxon Cemeteries at Winnall, Winchester, Hampshire* (*Soc. Medieval Archaeol.*, monograph 4, 1970), pls. v and vi.

[12] The absence of all but the earliest type of Kentish jewelled disc brooch, in the long series now conveniently published by Richard Avent, *Anglo-Saxon Disc and Composite Brooches* (*British Archaeological Reports*, 11, 1975), is a sure indication of the changed circumstances in the seventh century.

[13] S. C. Hawkes, J. M. Merrick and D. M. Metcalf, 'X-Ray fluorescent Analysis of some Dark Age Coins and Jewellery', *Archaeometry*, 9 (1966), 115–16; S. E. Rigold, 'The two primary Series of sceattas: Addenda and Corrigenda', *Brit. Numismatic Journ.*, xxxv (1966), 3, 6.

century of transition and need not imply obstinate paganism.[14] Even objects overtly heathen in their symbolism, such as the buckle in grave 95 and a pendant in grave 138, may only have been included as a precautionary measure lest the new religion prove ineffective in averting the evil eye and laying the ghost.[15] Certainly, the woman in grave 138 also wore cross pendants, and a number of other female burials were provided with similar tokens of Christianity. But, perhaps, the clearest evidence of religious change at Finglesham is the slight but general alteration in the alignment of burial that took place at the beginning of the seventh century.

ORIENTATION OF BURIAL

The cemetery was planned during excavation from an accurately laid out 25-foot grid with its baseline aligned on Magnetic North, the graves being triangulated from the pegs and their bearings checked by compass. On the finished plan (Fig. 1) north has been recalculated for True North, and the grave orientations discussed here are head-foot alignments expressed in degrees from True North. These should be accurate to within a degree or so. Unfortunately, there can be no such certainty about the graves excavated in 1928–9. Though W. P. D. Stebbing used a compass calibrated for True North and left a plan which looked good when it was published posthumously in 1958,[16] re-excavation of those which survived in 1959 exposed major planning errors affecting both the spatial distribution and, to a lesser degree, the orientation of his graves. My attempt to marry this old plan to mine, to complete the over-all picture of the cemetery, has probably compounded errors in the case of graves destroyed between 1929 and 1959. Their positions must be regarded as very approximate and appear in broken lines on the plan: their bearings, calculated from Stebbing's original, are given in broken lines in Fig. 1.

In Anglo-Saxon cemeteries, particularly those of the pagan period, orientation can be very diverse.[17] At Finglesham, with the exception of a couple of burials with feet pointing south (my 165, a seventh-century male, and Stebbing's G.1, a late sixth-century female) and another with feet to the north-west (215, undatable female), all burials were laid with

[14] The legal basis of the custom and the Church's attitude to it are not documented for England: for enlightenment, we must turn to the Continent. There is a useful discussion in Frauke Stein, *Adelsgräber des achten Jahrhunderts in Deutschland* (Germanische Denkmäler der Völkerwanderungszeit, Serie A, Berlin 1967), 181 ff.; see also, Frauke Stein, 'Pre-Carolingian graves in South Germany', *Journ. British Archaeol. Assoc.*, 3rd ser., xxxi (1968), 1 ff.

s[15] It was suggested in Meaney and Hawkes, *op. cit.* (1970), 31–3, that the Conversion brought with it feelings of insecurity that actually led to an increased use of pagan rites and amulets during the seventh century.

[16] Chadwick, *op. cit.* (1958), fig. 1.

[17] G. Baldwin Brown, *The Arts in early England,* iii (1915), 158–69.

their feet to the east. Within this easterly orientation there is wide variation, however, with some burials pointing well to the north of east and others to the south of it. From a cursory glance at the plan of the cemetery, the pattern of burial might seem quite random. The graves were clearly not dug in alignment with any fixed feature, such as a post or structure, either within or without the burial area, nor, with few exceptions, do they appear to have been aligned on each other. Indeed, the difference in orientation between graves within obvious groups or rows is in some cases quite extreme. Yet, if we measure all the grave bearings and plot them diagrammatically (Fig. 4) we find that 240 out of 243 burials cluster in the arc between N. 23° and N. 126°. There is nothing random about this. So what conditioned grave orientation at Finglesham?

In this country, questions of this sort have scarcely been posed at all in modern times, but recently there appeared a very interesting discussion of the somewhat similar variation in west–east orientation in the seventh–ninth century cemeteries at Caister-on-Sea and Burgh Castle in East Anglia.[18] The dead in both were early Christians, laid out so that at the Resurrection they would rise up facing east. This, the place of sunrise and the home of life in pagan solar religions, had been adopted by the Church as the direction of the second coming of Christ.[19] Without a compass, however, fixing the east point will have been a problem. At Burgh and Caister, it was argued, the grave diggers may have taken their bearings from the point of sunrise itself, which, in these latitudes, occurs to the north of east at midsummer and to the south of it at midwinter. If they did, it should be possible to work out within known limits the time of year when each grave was dug and thus determine the seasonal pattern of mortality within each community during the period of its cemetery's use. Unfortunately, the basic hypothesis cannot be sustained because the extreme sunrise bearings are not reflected at either site. Instead, the marked clustering of grave alignments within 15° north and south of due east, not a large variation, might suggest the presence in both cemeteries of an east point that was fixed, perhaps by a church as yet unlocated. As neither cemetery plan is figured, it is difficult to judge. The results adduced from these East Anglian sites, as Wells and Green have freely admitted, are at best inconclusive and may be invalid, but this experiment was worth publishing as an encouragement to others to look more carefully at grave orientation. It prompted a closer analysis of the situation at Finglesham, with results both positive and interesting.

From this Kentish burial ground it would have been possible, on clear mornings, to have seen the sun rise from sea horizon at all times of the

[18] Calvin Wells and Charles Green, 'Sunrise Dating of Death and Burial', *Norfolk Archaeol.*, 35 (1973), 435–42.
[19] Baldwin Brown, *op. cit.* (1915), 160.

year. It seemed possible, therefore, that sunrise bearings were responsible for the otherwise puzzlingly wide variation of easterly orientation described above. Wells and Green had already found out from the Royal Greenwich Observatory that 'the obliquity of the ecliptic, which is numerically equal to the maximum declination of the sun, has not, as far as we know, varied by more than half a degree over the past two or three thousand years'.[20] Alexander Thom,[21] quoting formulae by de Sitter,[22] says that the slow decrease in the obliquity of the ecliptic amounts to only about a degree in 10,000 years. From this, it will be clear that the directions in which the sun rose during the year (azimuths) were substantially the same in Anglo-Saxon times as they are today. To check the grave bearings, therefore, it only remained to calculate the azimuths of sunrise for the latitude of Finglesham (51° 13′.75 N.). Wells and Green explain how these may be calculated for any site by means of data given in the Nautical Almanac, but in this case it seemed preferable to enlist the help of a more numerate colleague. I am deeply indebted to Dr. A. D. Petford[23] for responding so generously to my appeal and providing all the data needed. Finglesham proved to be an ideal site for the experiment: not only is the outlook nearly perfect, but the site's elevation above sea-level puts the horizon at 0°, so no correction is needed for curvature and refraction.[24] Dr. Petford calculated the minimum and maximum azimuths of sunrise as N. 50°.559 and N. 129°.441, the positions at the summer and winter solstices respectively. His graph of 'equal month' approximation to azimuth of sunrise shows how the bearing of sunrise moves southward after midsummer and northward after midwinter (Fig. 3). The figures on which it is based are as follows:

AZIMUTH OF SUNRISE (Latitude 51° 13′.75 N.)

Jan. 1	–	128°.64	Dec. 16	–	129°.17
16	–	124°88	1	–	126°31
Feb. 1	–	118°.09	Nov. 16	–	120°.74
15	–	110°.64	1	–	113°.32
Mar. 1	–	102°.30	Oct. 16	–	104°.11
16	–	92°.93	1	–	94°.93
Apr. 1	–	82°.91	Sep. 16	–	85°.63
16	–	73°.85	1	–	76°.54
May 1	–	65°.59	Aug. 16	–	67°.55
16	–	58°.62	1	–	60°.26
Jun. 1	–	53°.23	Jul. 16	–	54°.36
16	–	50°.76	1	–	51°.14

[20] Wells and Green, *op. cit.* (1973), 437.
[21] A. Thom, *Megalithic Sites in Britain*, Oxford, 1967, 19–20.
[22] W. de Sitter, 'On the System of astronomical Constants', *Bull. Astr. Inst. Netherlands*, 8 (1938), 213.
[23] Senior Research Officer, Dept. of Astrophysics, University Observatory, Oxford.
[24] Thom. *op. cit.* (1967), p. 25.

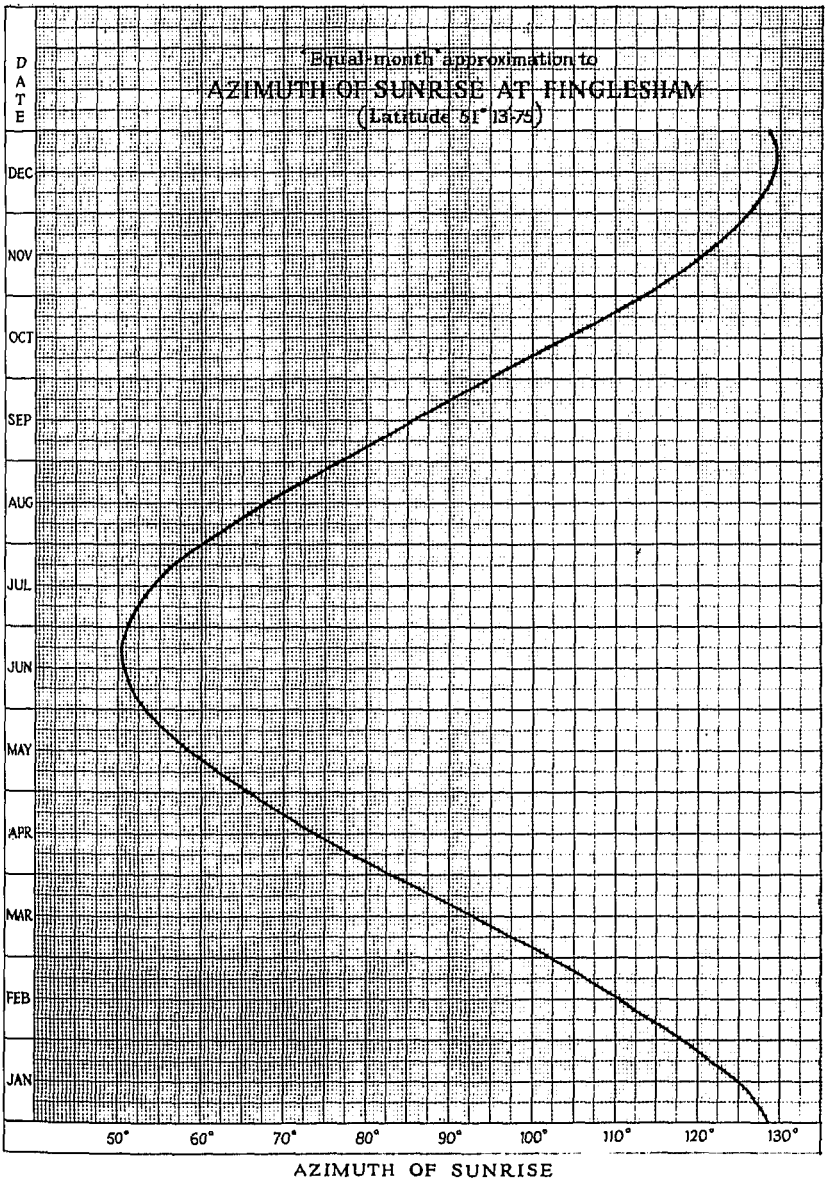


Fig. 3.

These figures for sunrise could now be added to the numerical plot of grave bearings, on a simple dial (Fig. 4), compared and seen significantly to coincide. Only 30 out of our 243 burials lie outside the range of

sunrise bearings, most of them in a compact group facing north of the minimum azimuth of sunrise. These are the cemetery's founder graves. Their more northerly bias was recognizable at the time of excavation and shows up clearly on the plan. Datable sixth-century graves excavated by myself range in direction from N. 23° (110), N. 31° (22 and 204), N. 35° (203) to N. 40° (205 and 211). Those excavated by Stebbing may be less accurately measured, but their bearings are strikingly similar: N. 23° (H3 and E2), N. 34° (G6), N. 41° (H2), N. 43° (A2) and N. 47° (D2 and D3). With them, in the northern corner of the cemetery, are some unfurnished burials whose similar alignments suggest that they, too, were of the sixth century. The only early grave within the sunrise range of bearings is Stebbing's G2 at N. 56°. Even allowing this one, the overall pattern of orientation is remarkably compact. The governing factor, which was neither sunrise nor moonrise, has not been determined. The mean of the reliable grave bearings approximates to that of the founding male in grave 204: projected, it brings one to the head of the old creek, down the hill at West Street, a very likely site indeed for the homestead. There have been times when I wondered whether the members of our sixth-century princely family may have been buried facing some visible landmark such as a totem mounted on the gable end of their hall. Though this suggestion should not be taken too seriously, possibilities of this sort should not be ignored.

With the exception of G2, all datable graves within sunrise bearings were dug in the seventh or very early eighth centuries, and very few graves of this date lie outside these bearings. The notable exception, the N–S grave 165, has been mentioned already, but there is a small number of graves within the seventh-century area of the cemetery which were dug on what we may now call typically sixth-century alignments. Of these, 24, which was robbed, and 13, which is not datable, may just possibly have been outliers from the sixth-century group of burials, but the unfurnished 148 is too far out and 103 has grave-goods more likely to be seventh- than sixth-century in date. The occupants of all these deviant graves were middle-aged or elderly by the standards of the time. Allowance for planning errors and grave-digging errors permits two seventh-century graves bearing N. 47° and N. 48° to be included within the sunrise margin. We, therefore, have 215 graves of the seventh and very early eighth centuries clustering between the azimuths of midsummer and midwinter sunrise, and there can be very little doubt that they were dug on sunrise bearings deliberately. The abandonment of the more northerly alignments current in the pagan sixth century, by all except a few elderly members of the community, suggests a change in religion. At Finglesham, therefore, we seem to have a genuine case of what Wells and Green hoped for at Caister-on-Sea and Burgh Castle: an early Christian burial ground, where the east point was not fixed and the

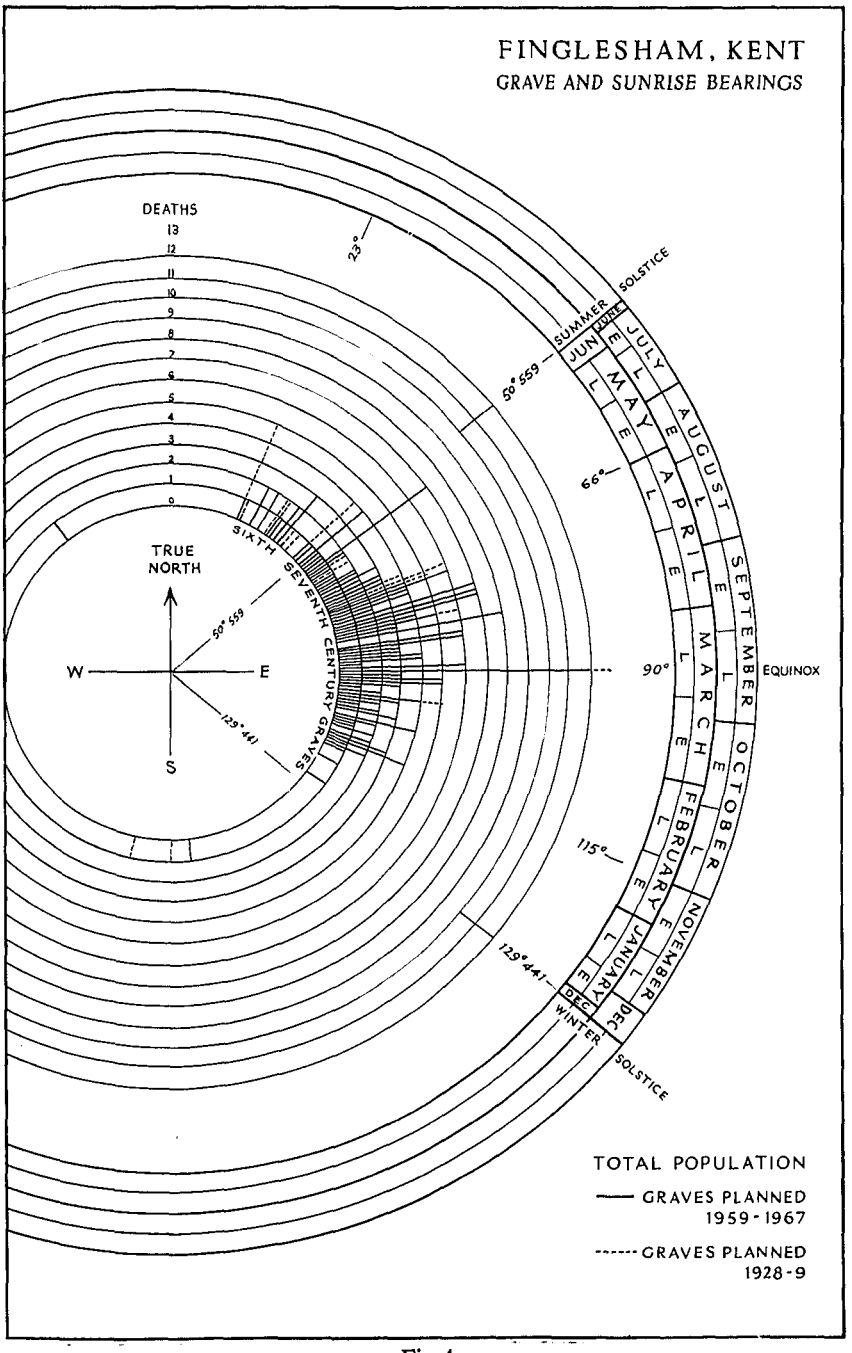

FINGLESHAM, KENT
GRAVE AND SUNRISE BEARINGS
DEATHS
13
12
11
10
9
8
7
6
5
4
3
2
1
0
23°
SUMMER SOLSTICE
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DEC
JANUARY
FEBRUARY
MARCH
APRIL
MAY
50° 559
66°
90°
EQUINOX
115°
129° 441
WINTER SOLSTICE
TRUE NORTH
W
E
S
SIXTH CENTURY GRAVES
SEVENTH CENTURY GRAVES
50° 559
129° 441
TOTAL POPULATION
GRAVES PLANNED 1959-1967
GRAVES PLANNED 1928-9

Fig. 4.

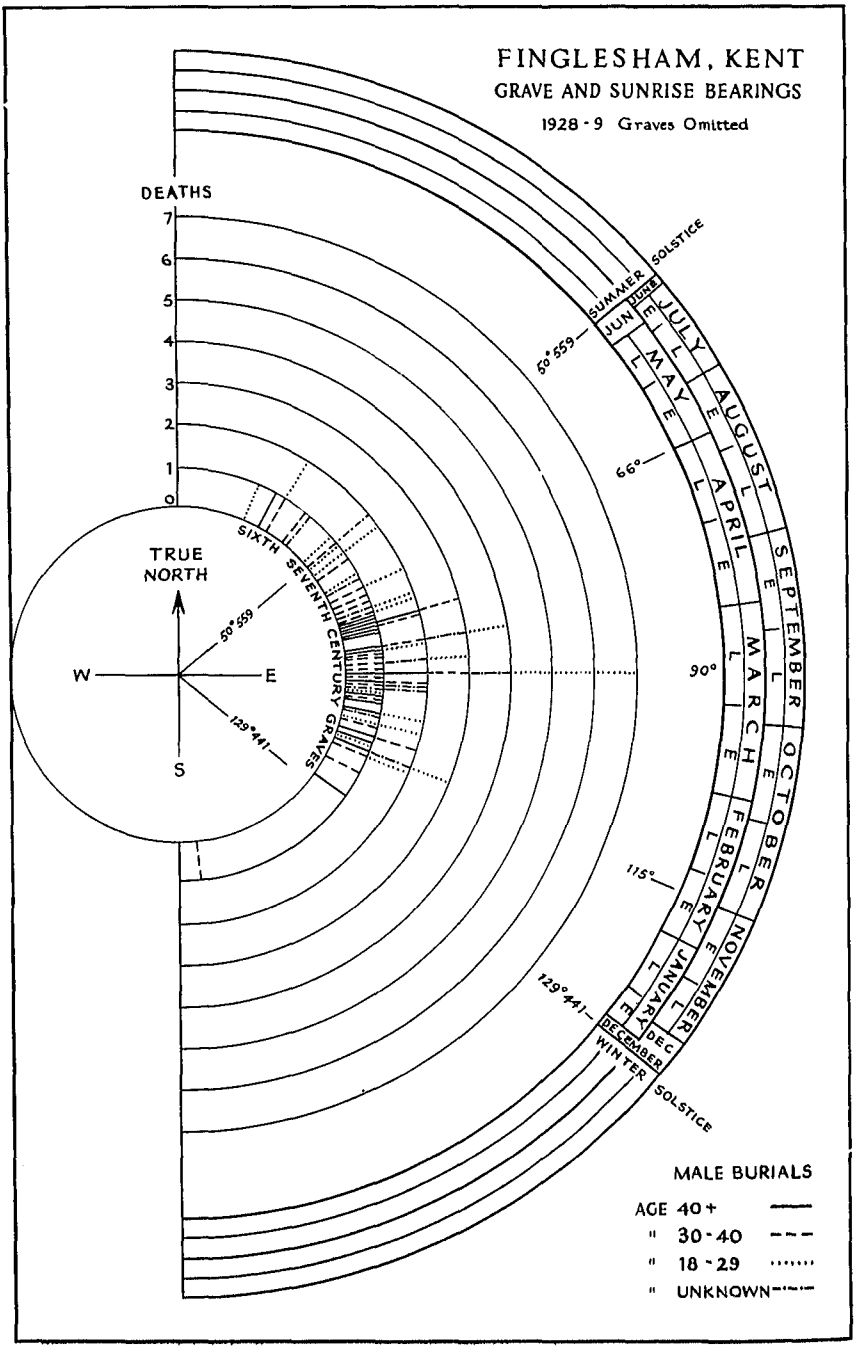

FINGLESHAM, KENT
GRAVE AND SUNRISE BEARINGS
1928 - 9 Graves Omitted
DEATHS
7
6
5
4
3
2
1
0
SUMMER SOLSTICE
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
WINTER SOLSTICE
50° 559
66°
90°
115°
129° 441
TRUE NORTH
W
E
S
SIXTH SEVENTH CENTURY GRAVES
MALE BURIALS
AGE 40+
" 30-40
" 18-29
" UNKNOWN

Fig. 5.

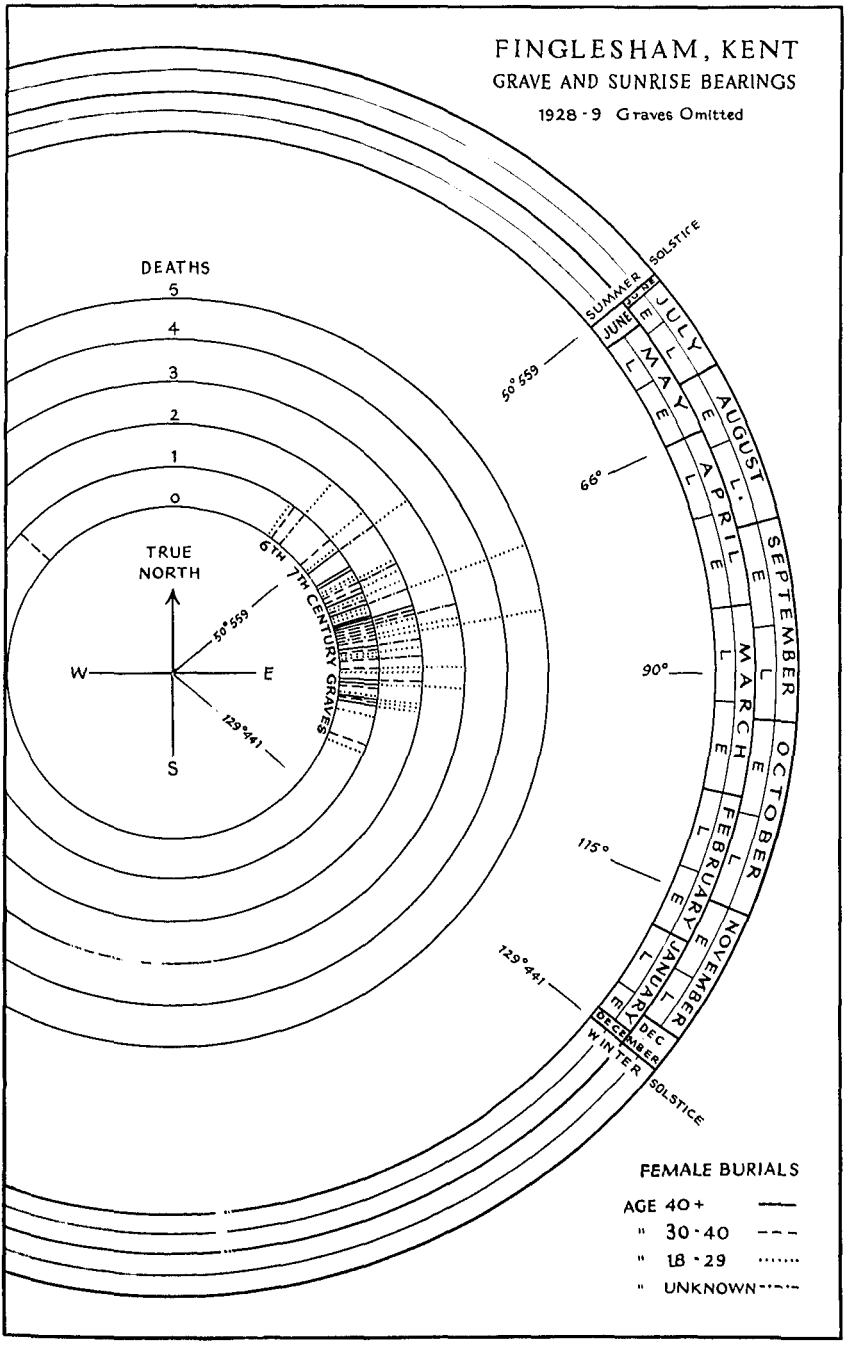
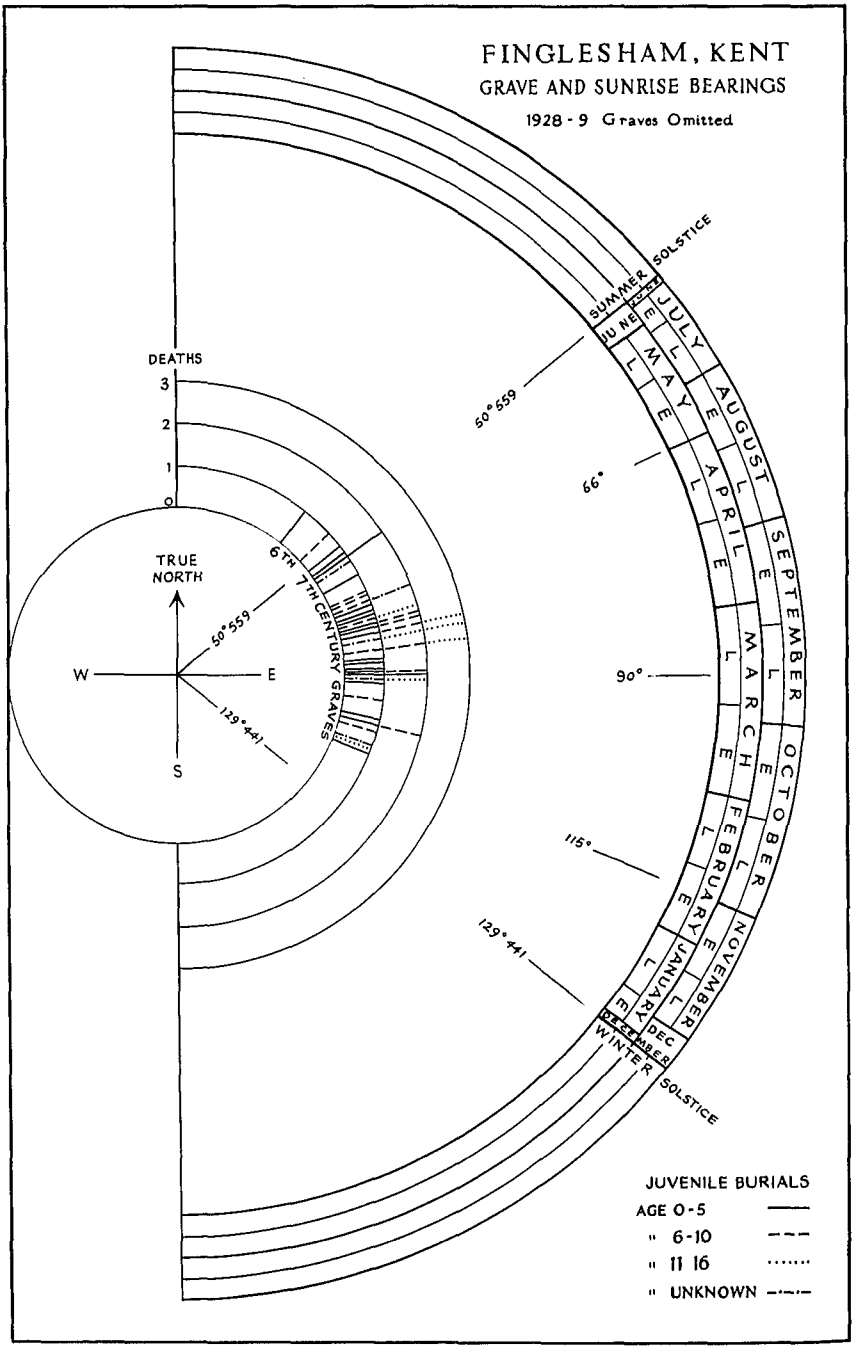

FINGLESHAM, KENT
GRAVE AND SUNRISE BEARINGS
1928 - 9 Graves Omitted
DEATHS
5
4
3
2
1
0
TRUE NORTH
W
E
S
6TH
7TH CENTURY GRAVES
50° 559
129° 441
SUMMER SOLSTICE
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
50° 559
66°
90°
115°
129° 441
WINTER SOLSTICE
FEMALE BURIALS
AGE 40+
" 30 - 40
" 18 - 29
" UNKNOWN

Fig. 6.


FINGLESHAM, KENT
GRAVE AND SUNRISE BEARINGS
1928 - 9 Graves Omitted
SUMMER SOLSTICE
JUNE
JULY
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JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
WINTER SOLSTICE
50° 559
66°
90°
115°
129° 441
DEATHS
3
2
1
0
TRUE NORTH
W
E
S
6TH
7TH CENTURY GRAVES
50° 559
129° 441
JUVENILE BURIALS
AGE 0-5
" 6-10
" 11 16
" UNKNOWN

Fig. 7.

grave-diggers had to take their bearings from the rising sun, thus producing directional variation according to the time of year when each grave was dug. Using methods learned from reading Wells and Green, I hope to interpret Finglesham with more valid results.

SUNRISE DATING OF DEATH AND BURIAL

First, we must try to visualize the funeral proceedings. A grave's site within the cemetery will probably have been chosen and marked during the hours of daylight, but before it could actually be dug the burial party, or at least the grave diggers, will have had to spend part of the night in the cemetery to be in position to make their sighting at sun-up. To make it tolerable, one imagines that this ghostly vigil, which may or may not have been a feature of the pagan ceremony earlier, became the occasion for a festive wake. On mornings of visible sunrise, establishing orientation will have been a simple matter, probably involving just a couple of ranging rods, one of which had already been planted at the eastern end of the grave to act as a foresight. In the majority of cases, we find no trace of these markers, but there are a number of post-holes in the cemetery area which may indicate where foresights had been dug in and left standing. For most, it is possible to find a grave in alignment, but the most certain cases are those where the post-hole is close to the foot end of a grave, as in the case of graves 59, 60, 93, 124, 126, 132 and 133. Several of these are placed within penannular ditches, to which we will return shortly. On cloudy or foggy mornings when the sun was obscured, instead of direct observation, extrapolation must have been used to obtain a grave bearing. People, who normally rose with the sun and were familiar with its daily progression, would have been capable of making a reaonably accurate guess at the alignment on which a grave should be dug. This, as we have seen, was near N. 50° at midsummer, N. 129° at midwinter, and known points between during the rest of the year. From its bearing, therefore, it should be possible to estimate the date, or in most cases the choice of two dates in the year, when a grave was dug. There remains the problem that we cannot know how much time normally elapsed between death and burial. But in the absence of any evidence for freakish practices, such as burial in an advanced state of decomposition, we should not assume these people kept their dead above ground longer than was necessary to prepare and enjoy a decent funeral. Within a week of death, probably, the corpse will have been carried to the cemetery and there lowered into its prepared grave. Whether the grave was immediately filled in or whether it was left with a temporary cover for the benefit of members of the kindred who arrived late to the funeral, is another matter for speculation. The evidence for

coffins, timber mortuary-houses and simple planking over graves[25] admits of more than one interpretation.

Considerations of this kind about burial ritual draw the eye to the graves within penannular ditches, of which there are several at Finglesham. They are a regular feature in seventh-century cemeteries in Kent and occur elsewhere in southern England as singletons with rich furnishings.[26] The penannular ditches seem to have been dug to form an enclosure around the grave – at St. Peter's the best preserved contained evidence for a fence of close-set stakes; at Ford, Laverstock, the ditch silts suggested that the chalk extracted had been banked up around the outside – leaving a causeway by which the burial party might enter to carry out the last rites, family and friends pay their respects, and so forth. In one case at Finglesham there was some slight evidence that subsequently chalk was mounded up over the grave itself, though whether this included chalk from the ditch in addition to that overflowing the grave because of the coffin inside, remains uncertain. Unfortunately, ploughing has now destroyed much information which could have clarified the sequence of events and perhaps allowed us conclusively to equate these ditched graves with the low tumuli which were once an observable feature of seventh-century cemeteries and single graves.

For present purposes, however, the ground plans suffice. Graves within penannular ditches are usually placed with their foot end towards the causeway. At Finglesham there are four instances where grave and causeway are clearly aligned on an external posthole, and three others where, though there is no post, grave and causeway are nonetheless aligned. This suggests contemporaneity of overall planning, with ditch and grave dug on the same sunrise bearing. However, in two cases, 127 and 184, the grave is decidedly askew in its enclosure. The penannular ditch and causeway of 127 are aligned on a post and bear N. 71°, whereas the grave points away from the post to N. 89°. If we exclude sheer carelessness, two explanations are possible. The least likely is that the grave was dug in the third week of March and the enclosure constructed a month later. The more plausible is that the enclosure was laid out in anticipation of a burial towards the end of August, but that it was delayed until the third week in September, by which time the sunrise bearing had changed so much that it had to be recalculated. Similarly, we can interpret 184 as an enclosure dug in late February for a burial

[25] See, A. C. Hogarth, 'Structural Features in Anglo-Saxon graves', *Archaeol. Journ.*, 130 (1973), 104–119, and Nicholas Reynolds, 'The Structure of Anglo-Saxon Graves', *Antiquity*, I (1976), 140–143.

[26] For recently published examples see, Hogarth *op. cit.* (1973), on St. Peter's, Thanet; B. Philp, *Excavations in West Kent 1960–1970* (1973), 164–214, on Polhill; J. K. St. Joseph, 'Air Reconnaissance: recent Results', *Antiquity*, xlviii (1974), 213–15, pl. xxviii, and S. C. Hawkes, *Arch. Cant.*, xcii (1976), on Updown (Sangrado's Wood), Eastry; and John Musty, 'The Excavation of two Barrows, one of Saxon Date, at Ford, Laverstock, near Salisbury, Wiltshire', *Antiq. Journ.*, xlix (1969), 98–117.

which actually took place, on a revised alignment, in the second week in March. These postponements, surely too long to have been merely caused by lengthy funerals, might be explained by deaths unexpectedly delayed. If this interpretation is correct, here is evidence not only of the care taken over correct grave alignment, but also the expectation of prompt burial of the dead.

Accepting this as a working hypothesis, we may now turn to a general consideration of graves within sunrise bearings to find out whether any significant pattern of mortality appears. For this we must omit the possibly inaccurate bearings of graves excavated by Stebbing and use only those of the seventh-century graves between N. 47° and N. 129° excavated and planned between 1959 and 1967. The diagram (Fig. 4) makes it clear that during the century under consideration there was marked seasonal fluctuation in the incidence of burial. There were remarkably few deaths in winter, only 5 altogether for the period from the beginning of November until the second week in February (N. 113–129°). For the weeks before the spring and after the autumn equinox, however, comprising the last three weeks of February and the first three weeks of March, and the last week in September and the whole of October (N. 90–112°), we have 66 burials in all. The total rises higher still for the weeks after the spring and before the autumn equinox (N. 67–89°), with the last week in March and the whole of April, and the last three weeks of August and the first three weeks of September, together claiming 103 burials. Finally, during the summer months from the beginning of May until the second week in August (N. 47–66°) the total falls to 34 burials.

All this accords very well with what Wells has said about the seasonal variations in morbidity and death-rates before the recent period of scientific medicine.[27] 'We know little about the vital statistics of the Anglo-Saxon period ... it is likely that epidemics of dysenteric diseases were especially common in late summer and early autumn. They would account for many deaths in infancy and early childhood, but all ages would be involved to some extent. Towards the end of winter and in early spring the respiratory infections would reach their peak; acute bronchitis, pneumonia and perhaps viruses of the influenzal type. These, too, would take a heavy toll of young children, but elderly people – by the standards of the time – would also be particularly vulnerable. Peaks of this kind and distribution would go some distance towards producing the pattern which is found at' Finglesham. If we look at the diagrams illustrating the patterns of mortality amongst men, women and children (Figs. 5–7) we can see that the great majority of children and elderly people did indeed die either in late winter and early spring, or in late summer and early autumn.

[27] Wells and Green, *op. cit.* (1973), 440–1.

Unfortunately, the grave bearings do not allow us to distinguish between these two killer seasons. This will become clearer, perhaps, if we consider the few examples of double or multiple burials of people who had died contemporaneously, presumably from infectious diseases of one kind or another. The trio of graves 131–3, enclosed within the same oval ditch, perhaps once under the same burial mound, and very similarly aligned, contained the skeletons of a man aged between 25 and 30, and two young children aged 4 and 5. This group, presumably members of the same family, probably died from either something like influenza in mid-April or from something like typhoid in late-August. The 35-year old man and 9-year old child in grave 125 may have died similarly either in late-April or mid-August; the young couple in grave 62 and the two older men in grave 26 died together either in the third week of March or the third week in September; the young man aged about 21 and the 3–4-year-old child in grave 145 succumbed either in late-February or mid-October. There remain two more double burials, one above the other and therefore less certainly contemporary; two men in grave 129 and a man and woman in grave 21. The primary burials in these pairs took place in early-February or late-October and at midsummer, respectively. Thus, though it would have been more convincing had the sample been larger, 6 out of 7, or 86 per cent, of double or multiple burials suggestive of death by infectious diseases, fall neatly into one or other of Wells's epidemical seasons of the year.

In the healthier season of late spring and early summer, 6 infants and young children died; 14 women, of whom only 3 were elderly and 7 were young; and 11 men in the two younger age groups. Epidemiological causes are not wholly ruled out, but one may suspect that some of these deaths may have been the result of childbirth and occupational hazards. Winter seems to have been much the healthiest time of year. Wells has suggested that this could be due to the fall in soil temperature causing the abatement of enteric infections. One could add that the relatively ample and rich food available in summer and autumn would have built up reserves of vitality and health, which would only gradually have been eroded by the debilitating effects of the winter diet, and perhaps even malnutrition, as the late winter wore on into spring. Of the five people who died in the period from early November to the second week in February, four were men. This might seem quite random until one considers the more extended winter season from mid-October to the end of February (N. 102–126°) when 25 people died. Of these 15 were men, 6 children and only 3 women. This preponderance of male over female deaths in winter is quite understandable, if one considers how much more time the menfolk must have had to spend out of doors in foul weather, running the risk of bad chills and pneumonia.

Finally, lest we forget that not everyone in this Anglo-Saxon

community need have died from natural causes, it is time to mention the only case where the reason for death is certainly known. The middle-aged man in grave 94 died either in late-March or mid-September from a sword cut that severed a complete disc of skull and entered his brain. The fact that he was buried at home suggests that he may have been the victim of a blood feud rather than a casualty of outright war. There may have been other such deaths, particularly male deaths, in the community, from injuries not so dramatically explicit. But as there was no closed season for violence, they may have occurred at any time of year and would thus not affect the pattern of mortality from natural causes, which we have been discussing here.

SUMMARY

Interest in grave orientation at Finglesham was first aroused by the slight but quite definite change in alignment that took place between the sixth and seventh centuries. The aristocratic family, which had been burying its dead facing north–east to north–north–east, were no longer using the cemetery by the end of the sixth century. Their humbler successors in the seventh century favoured a more easterly alignment, but with a range of variation from north to south of east, which at first seemed random. However, closer investigation, inspired by experimental analysis carried out by Calvin Wells and the late Charles Green on the Christian cemeteries at Caister-on-Sea and Burgh Castle, has led to the conclusion that the seventh-century burials at Finglesham were dug on sunrise bearings. This reinforces the impression that the community had become Christian and also permits certain inferences to be drawn about burial ritual and time of death within the year. Seasonal variations in the death-rate appear to be non-random and explicable by the expected prevalence of disease and occupational hazards. The information afforded by the sunrise dating of death and burial at Finglesham is both novel and supplementary to what may be inferred either from skeletal material or grave-goods. Our understanding of this Anglo-Saxon community in Kent is thereby greatly enlarged and enriched, and our vision of their lives and deaths has acquired a new dimension. It is to be hoped that further work on other cemetery sites may enlarge the perspective.

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