

EAST ANGLIAN
ARCHAEOLOGY

REPORT NO.2

NORFOLK

NORFOLK ARCHAEOLOGICAL UNIT

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Editor:

Peter Wade-Martins,
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Scole Editorial Sub-committee:

Alan Carter, Director of Norwich Survey
Peter Wade-Martins, Director of Norfolk Archaeological Unit
Stanley West, Director of Suffolk Archaeological Unit

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CONTRIBUTORS

- Marion Archibald, M. A., S. S. A., S. M. A.
Assistant Keeper, Department of Coins and Medals, British Museum.
- Justine Bayley, M. Sc.,
Scientific Officer, Ancient Monuments Laboratory,
Department of the Environment.
- Elisabeth Crowfoot,
Consultant on archaeological textiles.
- Derek A. Edwards,
Survey Officer, Norfolk Archaeological Unit.
- Alison Gebbels, B. Sc.,
Scientific Officer, Ancient Monuments Laboratory,
Department of the Environment.
- Catherine Hills, B. A.
- Bari Hooper,
Warden, Residential Centre, Essex County Council.
- Graham R. Johnson, B. Sc.,
Conservation Assistant (Antiquities), Hampshire County
Museums Service.
- Andrew Jones, B. Sc.,
Consultant Environmentalist, Norfolk Archaeological Unit.
- Andrew J. Lawson, M. Sc.,
Assistant Director, Norfolk Archaeological Unit.
- Maureen Mellor.
- David Moore, B. Sc.,
Higher Scientific Officer, Department of Mineralogy,
British Museum (Natural History).
- Hugh Richmond, M. A., A. R. I. B. A.,
Senior Investigator, Royal Commission on Historic Monuments.
- Andrew Rogerson, B. A.,
Field Officer, Norfolk Archaeological Unit.
- John T. Smith, M. A., F. S. A.,
Senior Investigator, Royal Commission on Historic Monuments.
- Robert Taylor, M. A.,
Senior Investigator, Royal Commission on Historic Monuments.
- Keith Wade, B. A.,
Field Officer, Suffolk Archaeological Unit.

Peter Wade-Martins, Ph. D.,
Director, Norfolk Archaeological Unit.

Calvin Wells, F.R.A.I., Ph. D., M.R.C.S., L.R.C.P.,
Consultant Anthropologist.

Alwyne Wheeler,
Department of Zoology, British Museum (Natural History).

EDITORIAL

The publication of Report No. 1 of East Anglian Archaeology in July 1975 marked an important step forward in the arrangements for publishing reports on archaeological research in the region. It is envisaged that each volume in this series will normally be devoted to the work of either one of the two county Units or the Norwich Survey. Report No. 1 brought together a number of reports on Suffolk sites, and Report No. 2 is concerned with recent work in Norfolk. Although much of this volume is devoted to the activities of the Norfolk Archaeological Unit, there are reports of excavations at Swaffham and Langhale which were carried out before the Unit was formed in 1973. Other papers which have been delayed will be published in future volumes of this series.

Notes for the guidance of contributors to East Anglian Archaeology are now available, and copies of these can be obtained from the Secretary, Norfolk Archaeological Unit, Union House, Gressenhall, Dereham, Norfolk, NR20 4DR.

Special thanks are due to the Department of the Environment which provided funds for all the projects described in this volume and also for its publication. The Historic Buildings Council kindly provided a grant for the survey of the King's Lynn buildings. The Leisure Services Committee of Norfolk County Council has generously contributed towards the cost of printing this volume.

Some description is necessary of the recording procedures which have been devised jointly by the Norfolk Unit and the County Museums Service. Each site published here has a number; the Unit is compiling a new index of sites, and each site is being allocated one of these County Numbers. The index is modelled on the one which has been used successfully for a number of years in the Oxfordshire County Museum at Woodstock. In Norfolk this system has been extended so that each excavated or surveyed site also has a continuous series of Context Numbers for recording both features and finds. To assist the Museums Service with the storage of material there is also a three letter abbreviation for each parish.

Therefore the pottery from a pit in the Unit's Yarmouth excavations has been recorded as follows :-

County Number	Parish Code	Context Number
1032	YAR	385

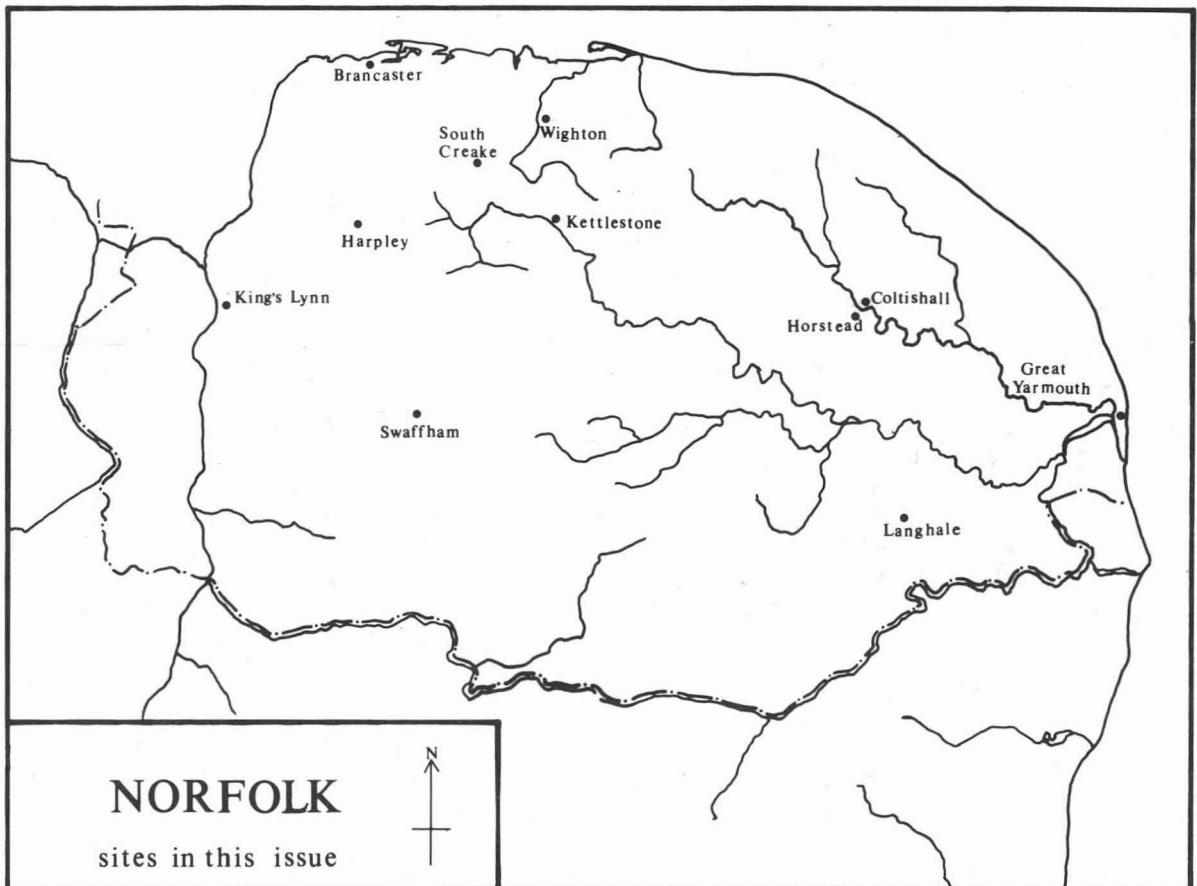
The full code (1032.YAR.385) will be the label for the pit and the material from it.

In this way the county index and the recording of material from excavations and fieldwork has been integrated into a single system. The Yarmouth report, where the Context Numbers are all underlined, is the best example of the use of this procedure. After a trial period it may be helpful to publish further details of the system.

The final paper contains an account of how the Unit's air photographs collection has been organized. This has been modelled largely on the index system used by the Air Photographs Library of the National Monuments Record in London.

Peter Wade-Martins

January, 1976.



Map showing sites described in this issue.

The Anglo-Saxon Cemetery at The Paddocks, Swaffham

by Catherine Hills and Peter Wade-Martins

I. SUMMARY

This report describes the excavation of a small part of the Anglo-Saxon inhumation cemetery at Swaffham, Norfolk, site 1125, which came to light during building operations at "The Paddocks", Haspall's Road in 1970 (Fig. 2). A total of nineteen inhumations, and a possible cremation, were excavated during August and November following the discovery of skeletal material and grave goods¹.

Inhumations 1-11 appeared to form the north western corner of the cemetery. The distribution of the unexcavated finds collected during building work suggests that the nineteen excavated graves form only a very small part of a much larger cemetery. The rest is now sealed under the buildings and under the tarmac area of the cul-de-sac shown in Fig. 3.

As Plate I demonstrates, the excavations were severely restricted by the buildings which had been erected before the excavations took place, by the contractor's piles of building materials and by the road.

Of special interest are the two male graves, numbers 15 and 18, with their shields and spears. In the case of Inhumation 18, it appears that these weapons may have been deliberately broken before being placed beside the body, which was covered with bracken before the grave was backfilled. Amongst the women's jewellery, the gilded cruciform brooch from Inhumation 6 and the necklace from Inhumation 16 are especially fine.

The survival of textile impressions on the grave goods has revealed a number of different weaves including a broken diamond twill identified only twice before in Britain.

The most remarkable aspect of this site has been the discovery of perforations on two of the skulls identified by Dr. Wells as successful trephinations; these two skulls, together with three others from Watton, Grimston and Eriswell, are the first examples of Pagan Saxon skulls on which this type of surgery has been identified.

II. ACKNOWLEDGMENTS

Special thanks must go to those who have assisted with the preparation of this report: Mr. Derek Edwards who drew the site plans; Mr. Nick Griffiths who illustrated the grave goods; Mr. Bill Milligan who assisted with the preparation of the finds for publication; Miss Elisabeth Crowfoot who examined the textile impressions, and Dr. Calvin Wells who reported on the skeletal material.

Miss Elizabeth Owles of Ipswich Museum, Mrs. L. Webster of the British Museum and Miss Barbara Green of Norwich Castle Museum all kindly made comparative material available for study during the preparation of this report.

Every possible assistance was provided for the excavation by Mr. John Miles, who was then Engineer and Surveyor for Swaffham Urban District Council.

All the finds were deposited on loan to Norwich Museums by Swaffham Urban District Council².

III THE EXCAVATED BURIALS

INHUMATION 1 (Figs. 3, 4 & 8)

Extended female, aged ? 35-45, lying west-east.

- A. Bronze tweezers on right shoulder; worn incised decoration below loop; length 6.3 cm.
- B. Bronze annular brooch, with iron pin, on right shoulder adjacent to A; decorated with incised transverse lines, singly and in groups; diameter 3.6 cm.
- C. A pair of bronze wrist clasps on left forearm; cast; triangular gusset extension cast as one with 'eye' part; decorated with incised dot-in-circle motifs, rows of small circular stamps and longitudinal grooves; length, with gusset, 4.8 cm.
- D. Iron buckle above right pelvis; oval loop, narrow rectangular plate folded over loop, tongue broken; length 4.7 cm.
- E. A length of iron bar parallel to the right femur; hooked at one end; length 7.5 cm.

INHUMATION 2 (Figs. 3, 4 & 8)

Crouched child, aged 11-12, lying west-east on right side, immediately to the north of Inhumation 1. It is possible that these first two inhumations were associated, although they were not necessarily buried at the same time.

- A. Iron spear-head to right of skull; angular blade, split socket; length 21.5 cm.
- B. Iron spear-ferrule lying near the feet; length 5.5 cm.
- C. Small iron buckle on left arm; oval loop, straight tongue; length 2.8 cm.

INHUMATION 3 (Figs. 3 & 4)

Crouched child, aged 11-12 years, lying west-east on left side. No grave goods.

INHUMATION 4 (Figs. 3, 4 & 8 and Plate I)

Crouched adult male, lying south-north with legs bent up to the left. The fill of the grave contained the disturbed remains of parts of Inhumation 11 (shaded on grave plan).

- A. Iron knife lying along right side above pelvis; traces of wood on tang; two edges of blade curve together to point; length 15 cm.
- B. Undecorated potsherd lying below the spine: possibly a stray; hard, gritty fabric, part of large wide-mouthed vessel (not illustrated)

INHUMATION 5 (Figs. 3, 4 & 8)

Crouched child, aged ?6-7, lying west-east on right side.

- A. Bronze annular brooch on right shoulder; rectangular in section; iron pin; decorated with groups of incised transverse lines and a single row of punched dots around the centre of the ring; diameter 5 cm.

INHUMATION 6 (Figs. 3, 5 & 8 and Plate IV)

An almost extended female, aged ?35-45, lying east-west with legs slightly bent to the left.

- A. Bronze small-long brooch on right shoulder; trefoil head, sub-triangular foot; length 7.5 cm.
- B. Small-long brooch on left shoulder; identical to A, but for slightly differing foot; length 7.5 cm.
- C. Gilded bronze florid cruciform brooch also on left shoulder. (Plate IV). The side arms of the head have broken off, and either the original arms or a different pair have been clumsily riveted on. The catchplate has also broken and been mended with a sheet of bronze, riveted on.

Headplate is winged, with oblong panel of disintegrated zoomorphic ornament across middle. Rows of small circular stamps outline upper and lower edges and emphasise division between wings and middle of head. Each arm consists of a pair of beaked heads, facing outwards and downwards, flanking an outwards facing human mask. Below the nose of the mask the arm terminates in a flat wedge-shaped tinned plate.

The bow is convex, plain but for a raised square in the middle. The lappets are upwards facing beaked heads, not precisely symmetrical. The foot consists of a zoomorphic head, with small protuberant eyes, above a mask with curled hair and moustaches. Below the mask is a flat tinned crescent.

The decoration is carried out in chip-carving, overlaid by incised lines on rows of stamps, to accentuate the detail; length 15.5 cm.

The Excavated Burials

- D. A necklace of four glass and seven amber beads strung between the two small-long brooches (only two of the amber beads are illustrated, but they are all small and unevenly shaped).

The shapes and colours of the glass beads are :

- Bead 1: cylindrical, translucent yellow.
Bead 2: cylindrical, opaque, blue and white striped.
Beads 3 & 4: flattened spheres, opaque, yellow, red and green.

- E. Small iron buckle on left pelvis; oval loop, tongue; length 2.1 cm.

- F. Flint; leaf-shaped worked flake.

INHUMATION 7 (Figs. 3, 5 & 8)

Extended male, aged 40-55, lying west-east (the central part of the grave was disturbed by the trench for an electricity cable which is shown as a dotted line on the grave plan).

- A. A large iron spearhead lying to right of the head; angular blade, split socket; length 28.5 cm.
B. A small iron knife at waist; concave back, at angle to tang; length 9 cm.

INHUMATION 8 (Figs. 3, 5 & 8 and Plate II)

Extended child, aged 5-6, lying west-east adjacent to Inhumation 9.

- A. Iron knife on left ribs; traces of wood on tang; back of blade concave; length 10.5 cm.

INHUMATION 9 (Figs. 3, 5 & 9 and Plate II)

Crouched adult female, lying west-east with legs bent up to the left.

Inhumations 8 and 9 were almost certainly buried together.

- A. Bronze annular brooch with iron pin on right shoulder; notched at one side for attachment of pin; decorated with four groups of transverse incised lines and grooves, and also with rows of stamped dots around inner and outer edge of ring; diameter 4.5 cm.
B. Similar annular brooch on left shoulder.
C. Thin iron rod lying across top of chest; length 7.8 cm.

- D. Necklace of 37 amber beads lying between brooch B and the iron rod; all are small and unevenly barrel-shaped; (a selection of seven beads is illustrated).
- E. Small iron ring with the beads; probably part of necklace fastening; diameter 1.3 cm.
- F & G. Two pairs of similar wrist clasps on the arms; each piece consists of a rectangle of thin bronze sheet, with narrow longitudinal slits at one side of each 'eye' and rectangular, bent over, extensions on the 'hooks'. Each piece is decorated in repousse with a single row of large raised dots between double rows of small dots, running longitudinally, with a single row of small dots across the end; length 4.2 cm.
- H. Iron knife on left thigh; edges of blade curve to point; traces of wood on tang; length 17.5 cm.
- I. Iron ring beside H; rectangular in section; diameter 4 cm.

INHUMATION 10 (Figs. 3 & 5 and Plate II)

Fragments of inhumation, lying west-east, cutting into north side of Inhumation 9.

No grave goods.

INHUMATION 11 (Figs. 3, 5 & 8)

Extended male, aged 30-40, with left knee bent over right leg, lying west-east; the western half of this burial was disturbed by Inhumation 4.

- A. Iron buckle on right side of pelvis; rectangular loop, broken, and tongue; length 3.5 cm.
- B. Fragment of iron knife on left side of pelvis; length 4 cm.
- C. Iron spear ferrule on feet; length 4.7 cm.

INHUMATION 12 (Figs. 3 & 6)

Burial of child lying west-east.

No grave goods.

INHUMATION 13 (Figs. 3, 6 & 9)

Crouched adult male, with legs bent up to left, lying south-north.

- A. Bronze buckle plate beside right wrist; sheet of bronze, bent

The Excavated Burials

over part of iron loop and riveted together; narrower at bent end than at separate ends; length 3.5 cm.

INHUMATION 14 (Figs. 3, 6 & 9)

Extended male, aged 25-30, lying east-west.

- A. Iron knife on left waist; back of blade curved; length 12.5 cm.
- B. Potsherd beside right femur; probably a stray; part of rim of wide-mouthed pot; hard, well fired fabric, with chips of flint and organic inclusions (not illustrated)

INHUMATION 15 (Figs. 3, 6 & 9 and Plates III, V and VI)

Extended burial of tall powerfully built male, aged 30-40, placed face downwards with arms bent under the chest, lying east-west. A shield was placed over his head and shoulders.

- A. Iron shield boss, with grip lying on the neck of skeleton, has low convex dome, rising to small flat topped spike; carinated, with vertical waist and wide flange; traces of two of the three original rivets on flange; diameter 16.5 cm. Grip is a concave sided strip, with a rivet at either end; length 17 cm.
- B, C, D and E. Four iron discs lay in two pairs on either side of the boss; traces of the iron rivets for attachment to the shield; convex in section; diameter 8 cm.
- F. Iron buckle under disc B; rectangular plate bent over remains of loop, with part of tongue; length 10 cm.
- G. Iron pin close to the left ear; length 7.5 cm.
- H. Small iron knife beside left elbow; strongly curved blade; length 7.5 cm.

INHUMATION 16 (Figs. 3 & 9)

Extended female lying west-east, found and partly disturbed by workmen 60 ft. west of the excavated area (no grave plan available).

- A. Very damaged bronze applied brooch on shoulders; base plate, possibly tinned, and small part only of gilt repousse decorated upper disc; surviving decoration, from outer edge, beaded zigzag; diameter 5.9 cm.
- B. Bronze annular brooch with iron pin on left shoulder; oval wedge-shaped extension from one of the shorter sides opposite hole for pin attachment; decorated with transverse

groove and lines across extension and faint rows of dots around inner and outer edges of ring; worn; length 5.1 cm.

- C. Similar annular brooch on right shoulder.
- D. String of 33 amber and five glass beads and a central silver pendant (only the pendant, three glass beads and a selection of three amber beads are illustrated).
- Glass beads: 1. Annular, translucent blue.
 2. Hemispherical, flattened, translucent yellow-brown.
 3. Five-sided cylinder, opaque white.
 4. Melon, translucent blue.
 5. Melon, opaque, brown with arched trails white or blue, now decayed.
- Pendant: thin disc silver sheet, bronze loop; decorated central repousse boss, surrounded by small stamped circles; four triangular stamps arranged in four-point star around boss, row of same stamp around edge; diameter 2.5 cm.
- E. Bronze wrist clasps on left arm; not matching pair; sheet, not cast; 'hook' plain rectangle; 'eye' decorated; repousse, S motifs across width and longitudinal row small stamped dots; length 3.6 cm.
- F. Bronze wrist clasp; hook only, like that of E.
- G. Fragment of bronze; location unknown; bent strip enclosing ? wood; length 1 cm.
- H. Small iron knife on right ribs; edges of blade curve together to point; tang broken; length 10.2 cm.
- I. Small iron buckle on right ribs; D shaped loop and part of tongue; length 2.5 cm.

INHUMATION 17 (Figs. 3 & 7)

Fragmentary remains of a crouched burial lying north-south.

No grave goods.

INHUMATION 18 (Figs 3, 7 & 10 and Plate VII)

Extended adult male, lying west-east.

- A. Iron spear ferrule on right of skull; length 7.5 cm.
- B. Potsherd, base of vessel; hard, gritty fabric (not illustrated).
- C. Iron knife, lying tang upwards, beside the left arm; blade straight backed, angular cutting edge; length 10 cm.

The Excavated Burials

- D. Broken and battered iron shield boss and grip (Plate VII) lying over right ribs and arm; boss carinated with low convex dome, no spike. Straight waist and wide flange on which are three tinned rivet heads; diameter 17 cm. Grip: concave sided strip, with rivet at either end; length 17 cm.
- E - H. Four fragmentary iron discs in two pairs, one on either side of the boss; straight in section, each with central rivet for attachment to shield; diameters 9 cm. (E not illustrated).
- I. Bent iron spearhead under shield; split socket, long angular blade, corroded and bent over; length 41 cm.

The impressions on D - H (Plate VIII) suggest that the body was covered with bracken (Pteridium aquilinum) before the grave was filled.

INHUMATION 19 (Figs. 3, 7 & 10)

Extended male, aged 25-30, lying west-east.

- A. Iron spearhead on left side of skull; leaf shaped blade, split socket; traces of wood still in haft; length 35.5 cm.
- B. Small iron buckle, with a bronze strap plate, lying over the centre of the body; oval loop, narrow plate bent over loop with slot for tongue; plate riveted together; length 3 cm.
- C. Iron knife under left ribs; two edges of blade curve together to point; length 13 cm.
- D. Fragments of two pots. One plain, probably globular; hard gritty fabric. Other less well fired, smooth surface, uneven grey-brown; sub-biconical, rim and upper neck all missing, about half remainder surviving; irregular rows large circular stamps and small dots at neck, narrow widely spaced bosses at mid height; height approx. 15 cm. Although these vessels were more complete than those from graves 4, 14 and 18, it is by no means certain that these were not also stray objects on site before burial.
- E. Animal vertebra by left arm: too fragmentary to be identified.

'CREMATION' 20 (Fig 3)

Possibly a disturbed cremation burial; part of the side of a plain pot (not illustrated) was lying in the top of a circular hole, cut one foot into the sand. No cremated bones were recovered.

IV. OTHER RECORDED FINDS

(Figs. 3 & 10)

The unstratified grave goods collected during building work between 1968 and 1970 include three spears, two knives, an annular brooch, another fragment of bronze and various pieces of human bone including the skull referred to as 'Inhumation A' by Dr. Wells (p. 33-5). With the exception of the brooch (B, Fig. 3) the find spots of these objects are unknown.

1. Iron spearhead, angular blade, split socket: length 28 cm.
2. Iron spearhead, angular blade, split socket: length 30 cm.
3. Iron spearhead, angular blade, split socket: length 25 cm.
4. Iron knife, angular back: length 11 cm.
5. Iron knife, point broken: length 10 cm.
6. Bronze annular brooch, decorated rows of small stamped circles around inner and outer edges of ring: diameter 4.5 cm.
7. Bronze fragment, bent strip: length 1 cm.



Photo: Peter Wade-Martins

BJ24

Plate I. Swaffham: general view of one of the trenches open in August 1970.

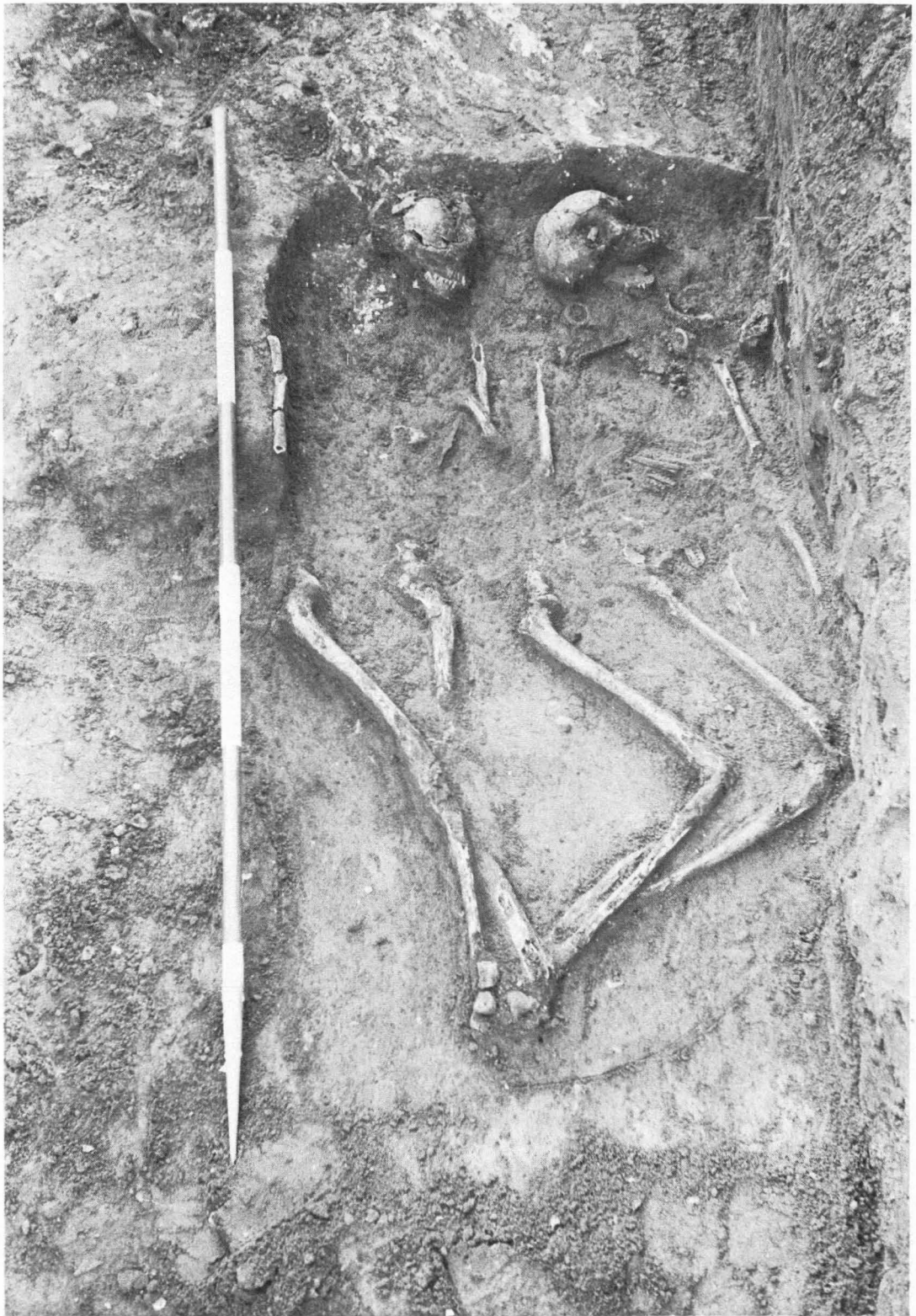


Photo: Peter Wade-Martins

BP3

Plate II. Swaffham: inhumations 8, 9 and 10
from the east.



Photo: F. Wright

Plate III. Swaffham: head and shoulders of inhumation 15 partly covered by the shield fittings.

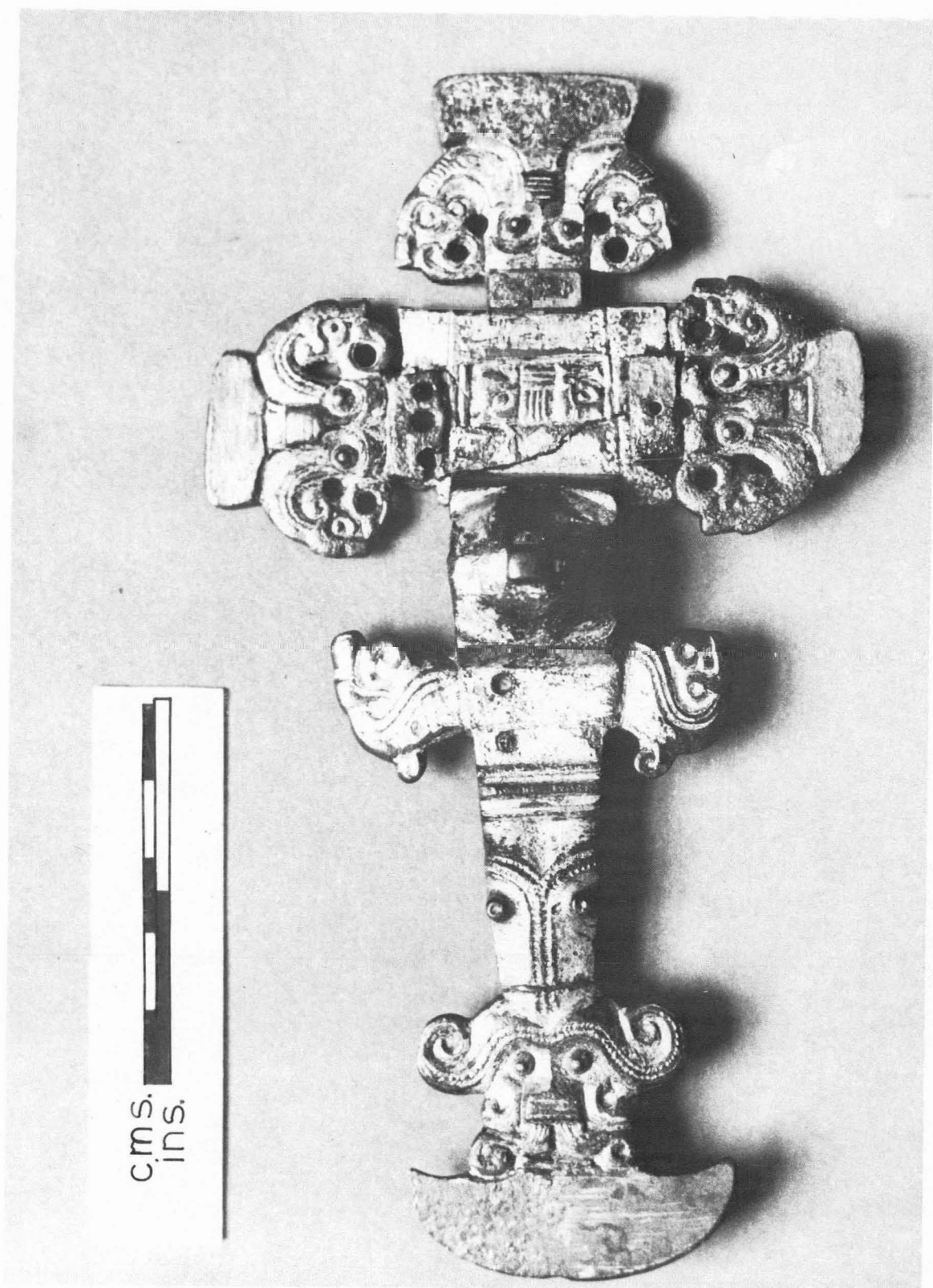


Photo: Andrew Lawson

MF22

Plate IV. Swaffham: the gilt cruciform brooch 6C
after conservation.



Photo: Peter Wade-Martins

CC27

Plate V. Swaffham: textile impressions of broken diamond twill on shield grip A from grave 15.



Photo: Andrew Lawson

ME34

Plate VI. Swaffham: textile impressions of broken diamond twill on strap buckle F of grave 15.

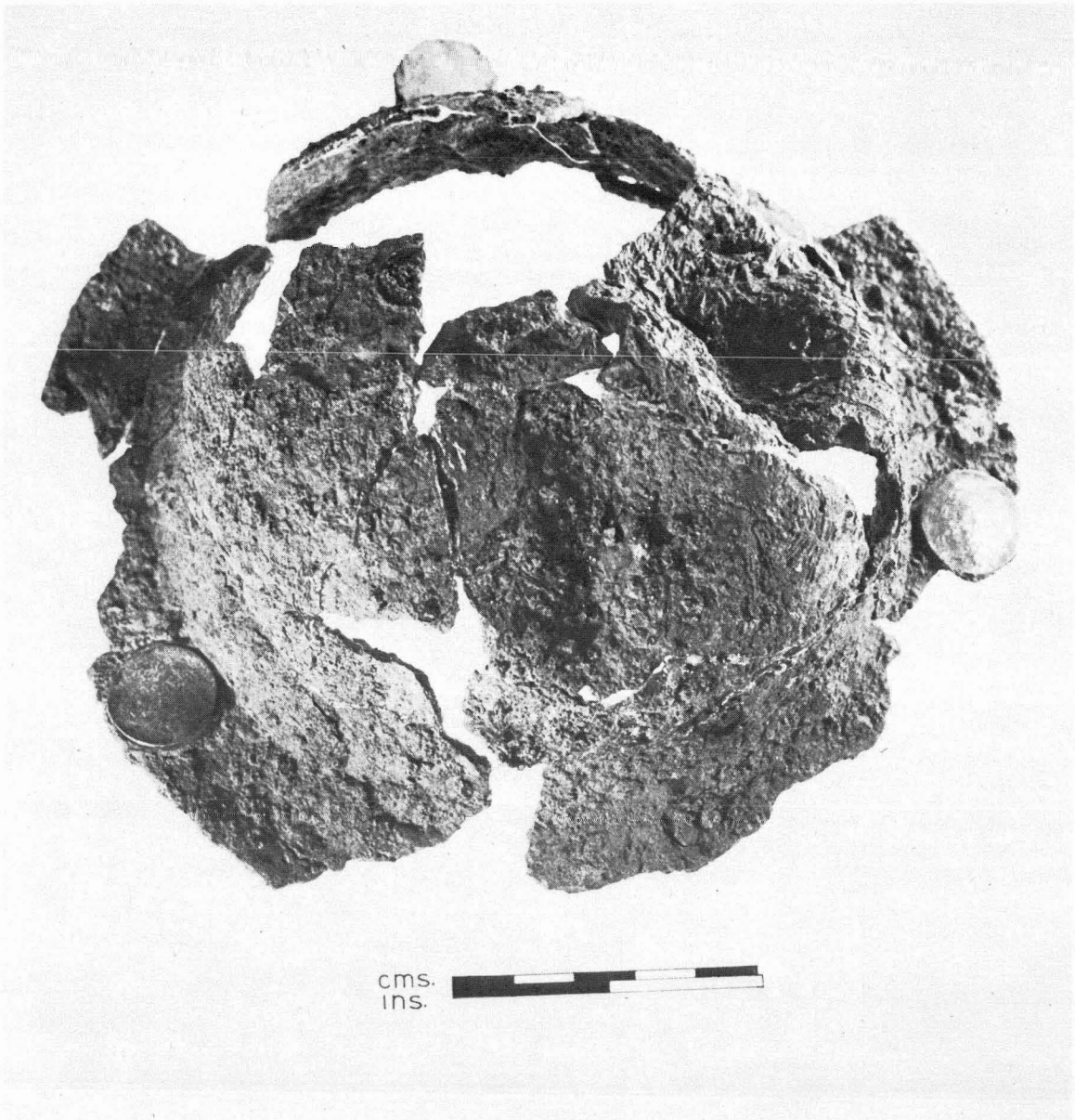


Photo: Andrew Lawson

ME24

Plate VII. Swaffham: the damaged shield
boss F from grave 18.



Photo: Andrew Lawson

ME30

Plate VIII. Swaffham: bracken impressions on one of the iron discs of the shield from grave 18.



Photo: Calvin Wells

Plate IX. Swaffham: close-up view of skull of inhumation "A" showing possible trephination.



Photo: Calvin Wells

Plate X. Swaffham: skull of inhumation 7
showing possible trephination.

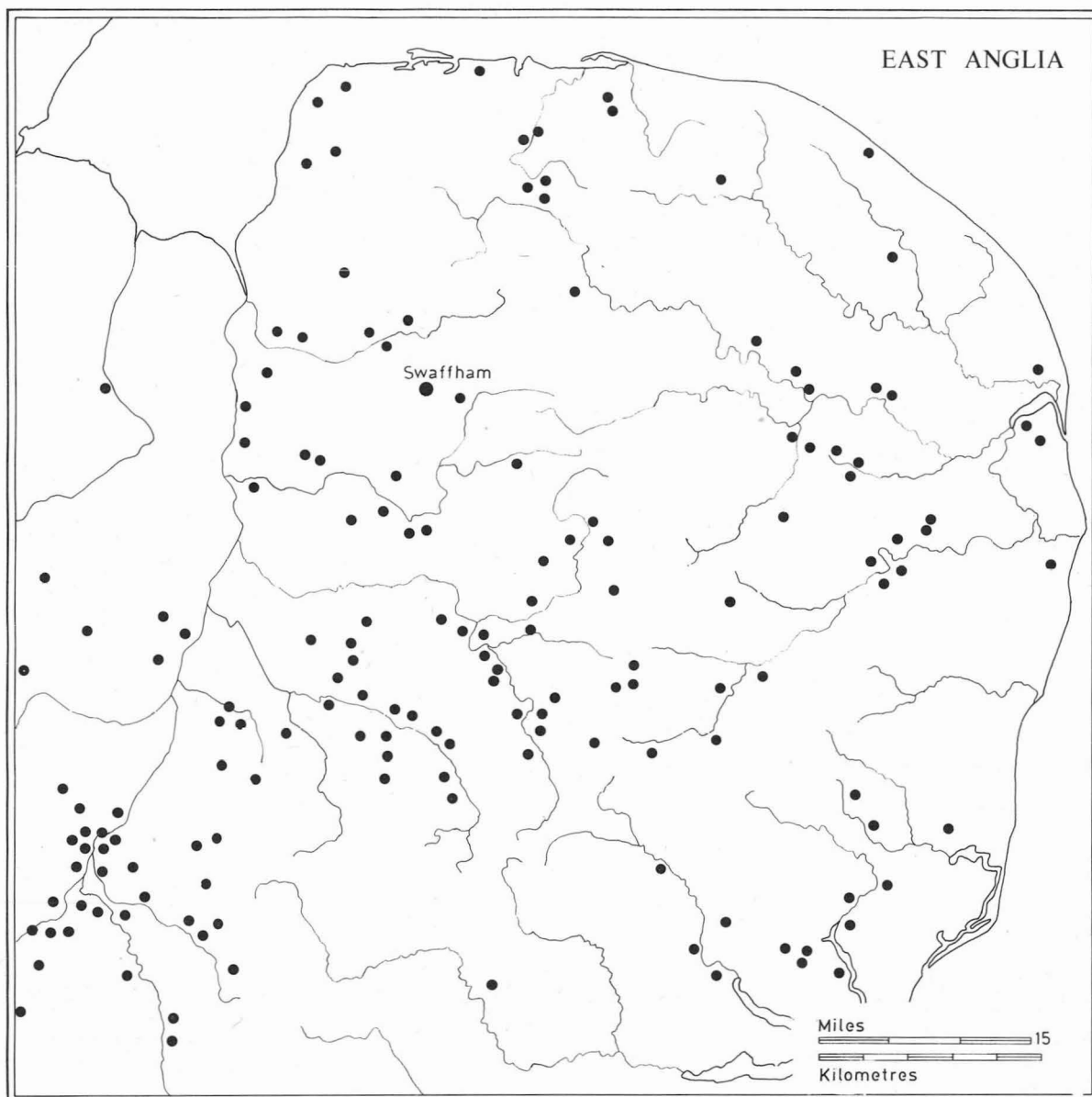


Fig. 1. A map of the Anglo-Saxon cemeteries of East Anglia showing the location of the Swaffham cemetery; after Green and Myres with additions up to July 1975.

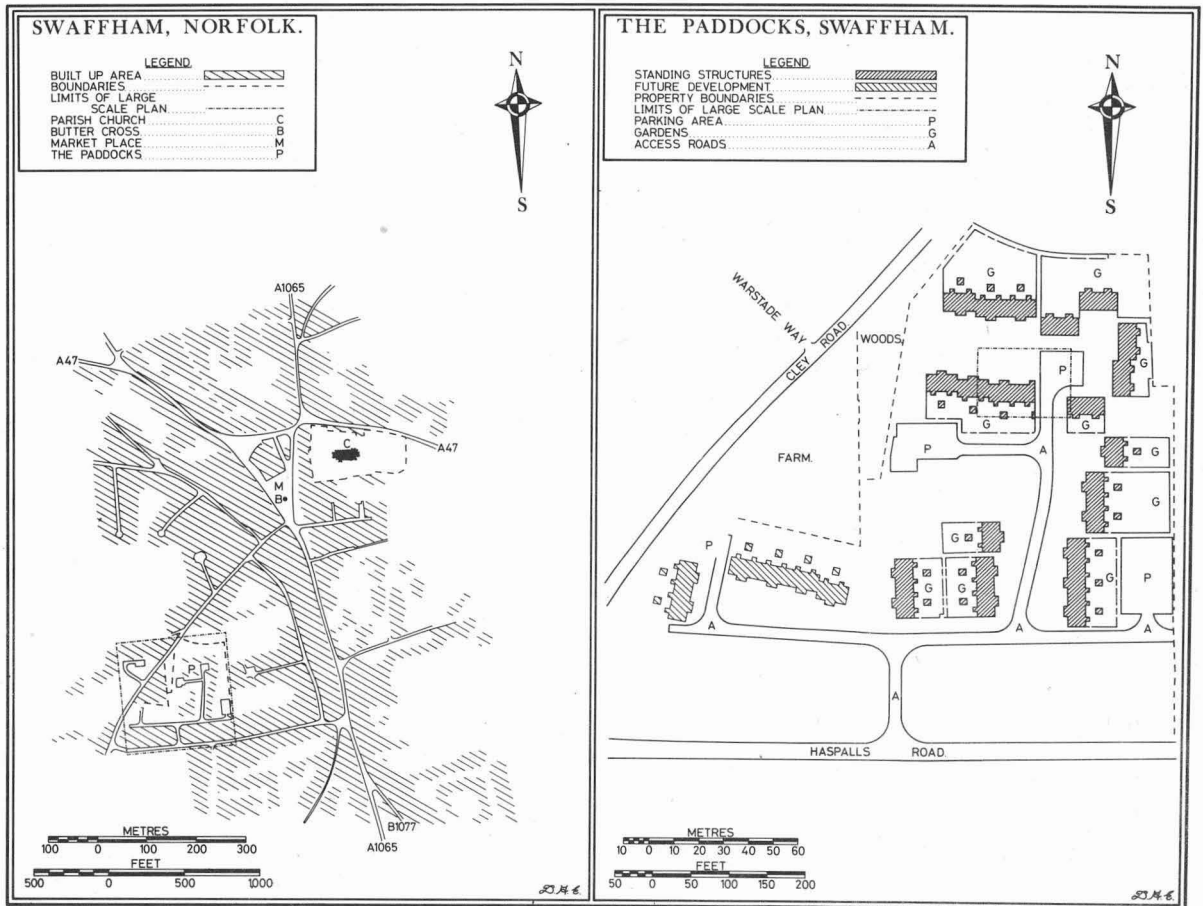


Fig. 2. Plans of Swaffham showing the location of the cemetery at Haspall's Road building development, The Paddocks.

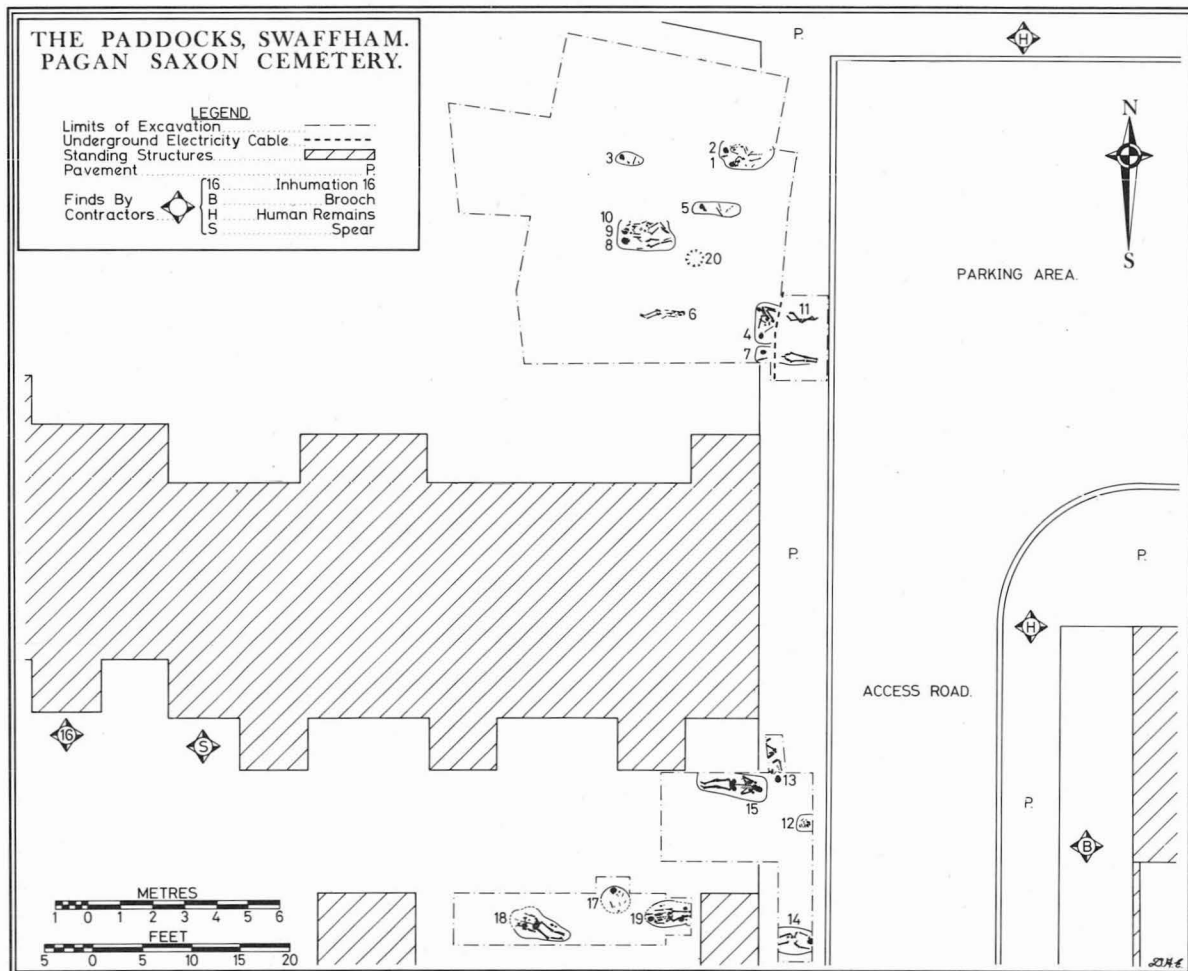


Fig. 3. A plan of the cemetery showing the excavated graves and the positions of some of the other finds collected during building work.

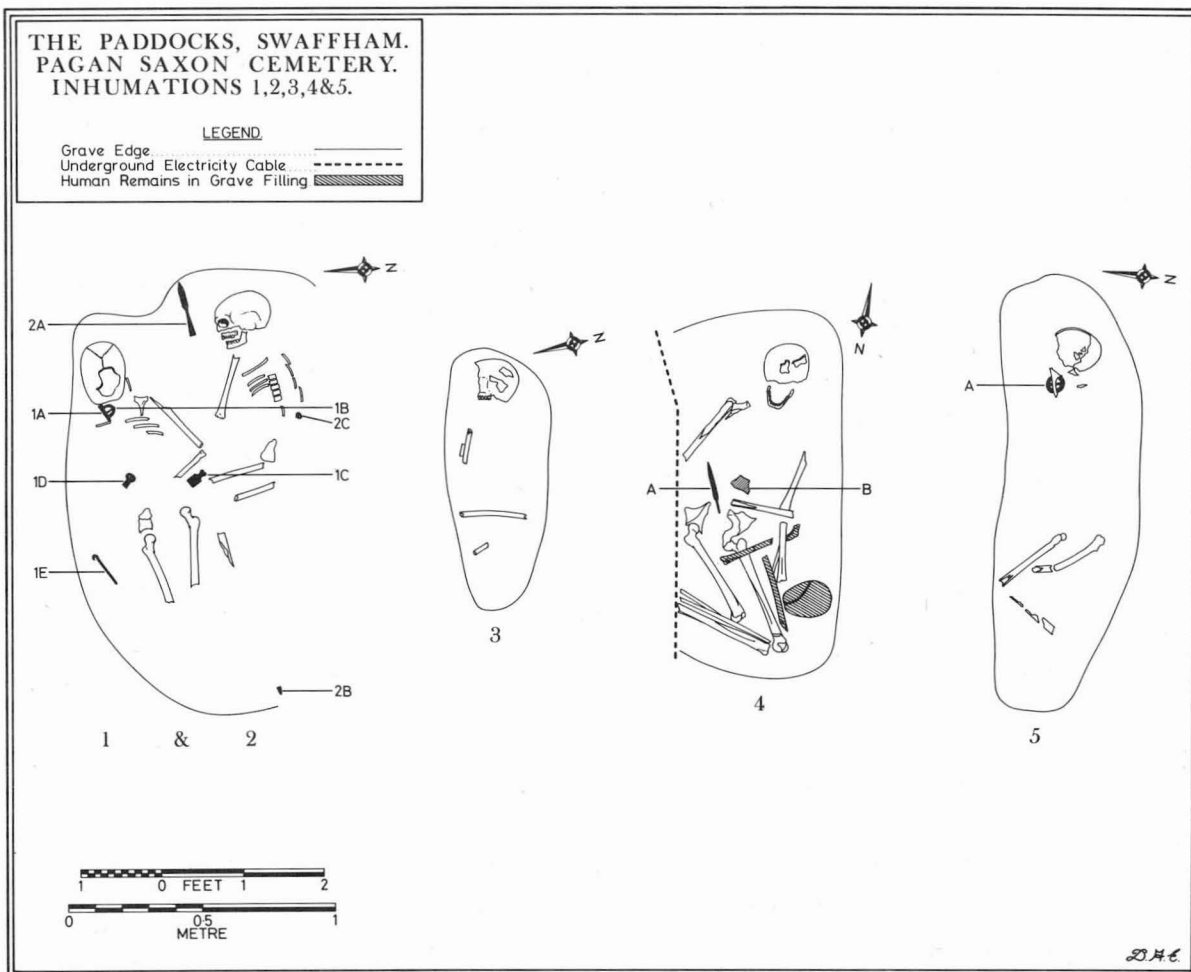


Fig. 4. Grave plans of inhumations 1 - 5

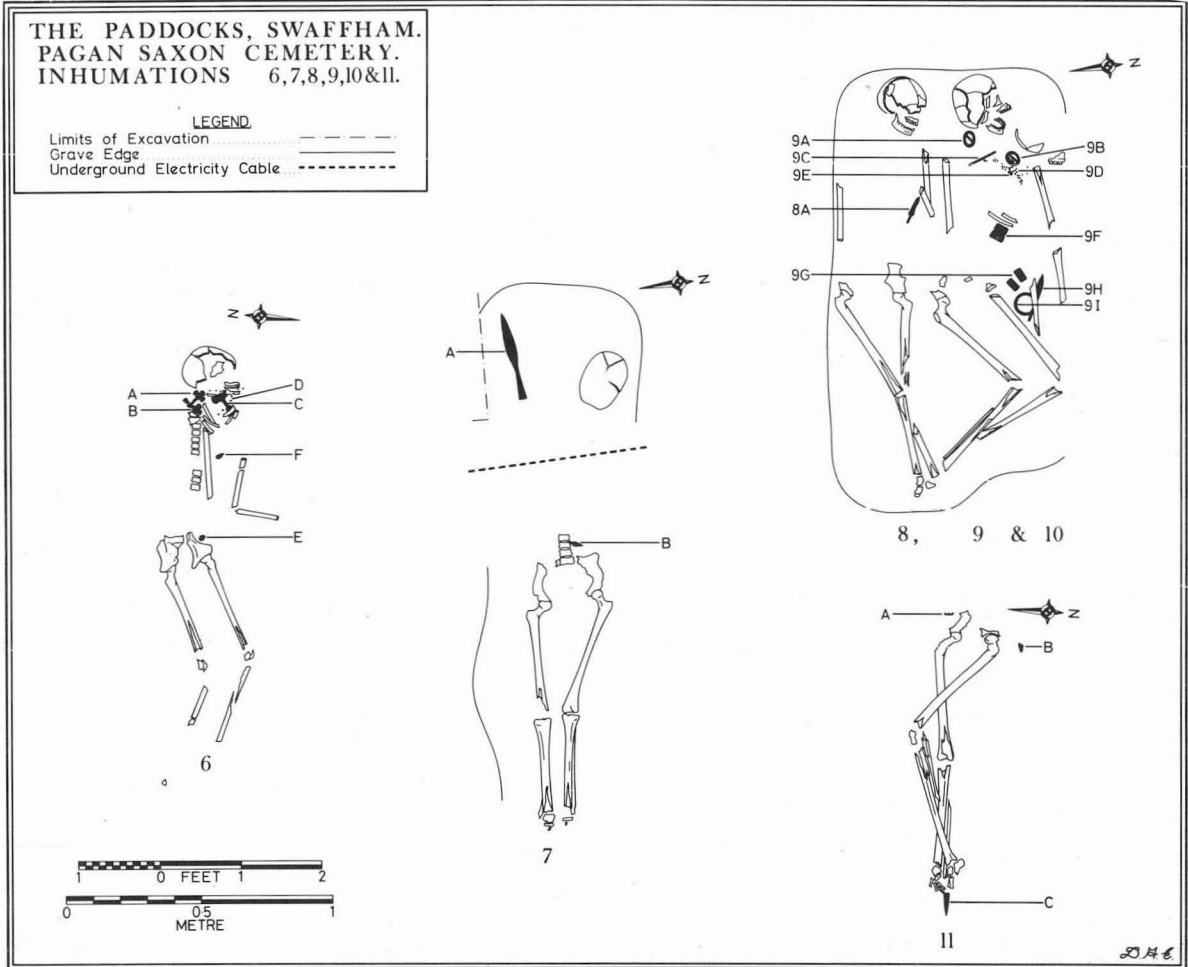


Fig. 5. Grave plans of inhumations 6 - 11

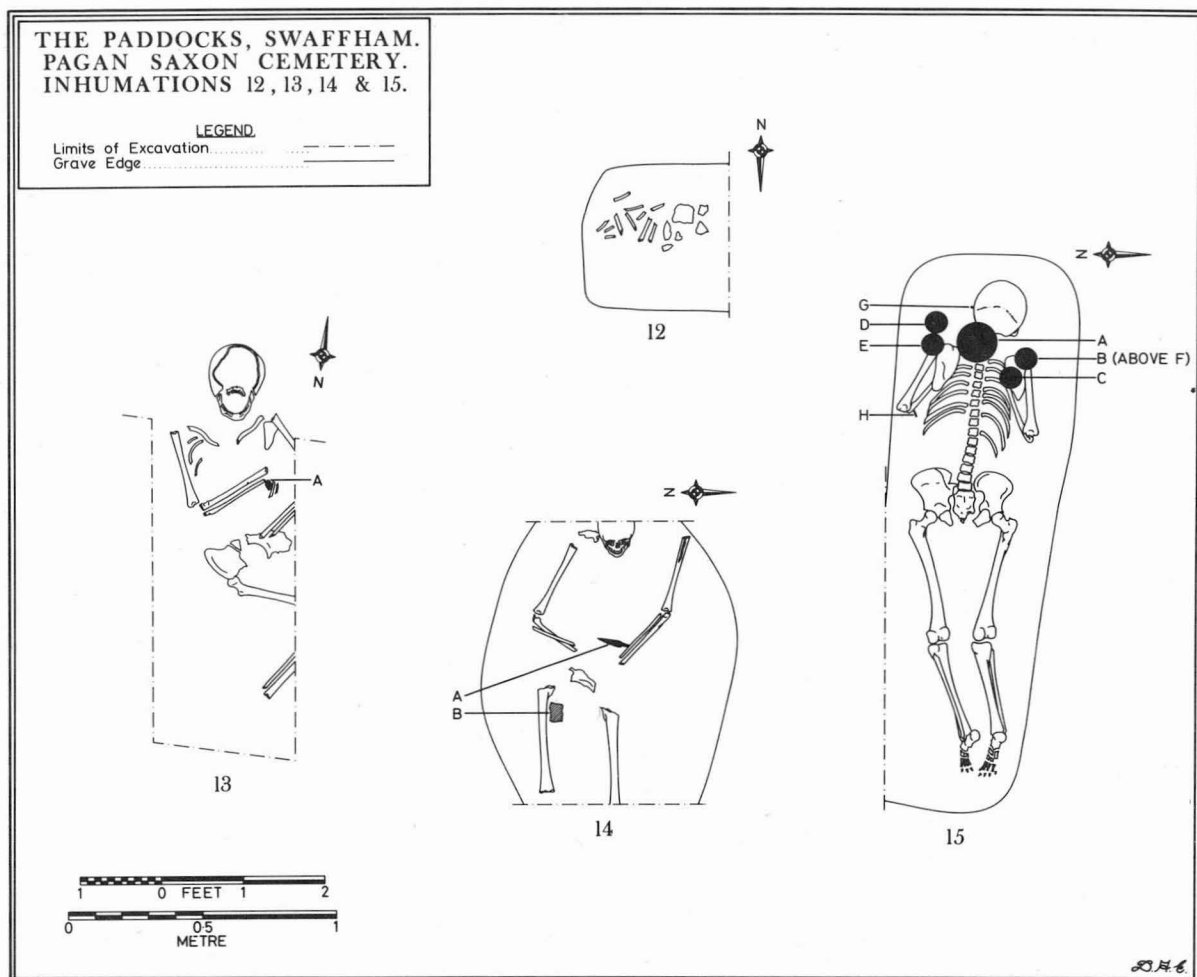
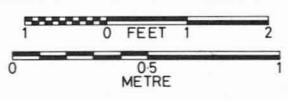
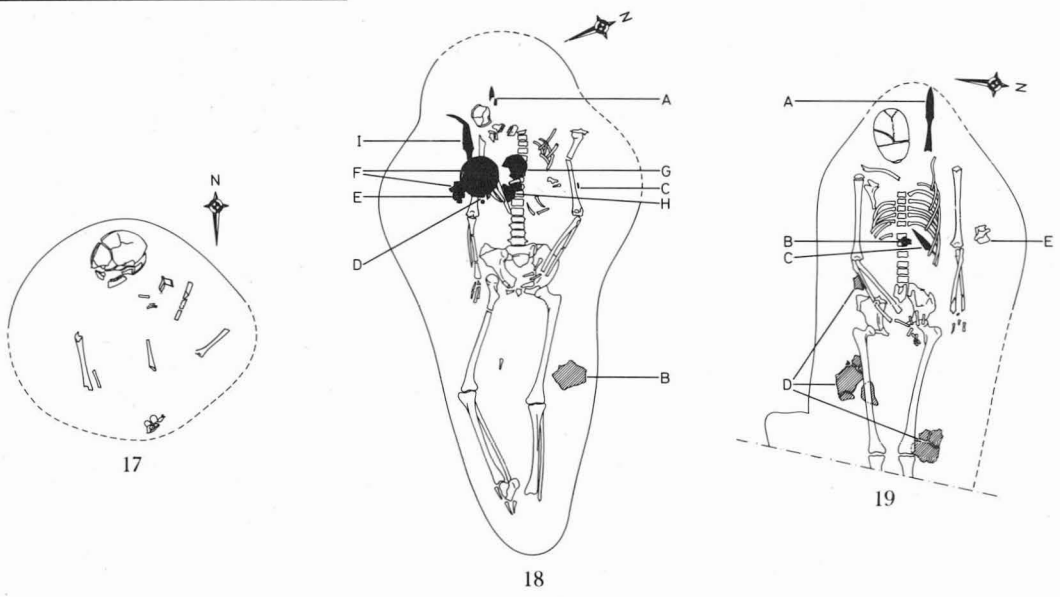


Fig. 6. Grave plans of inhumations 12 - 15

THE PADDOCKS, SWAFFHAM.
PAGAN SAXON CEMETERY.
INHUMATIONS 17, 18 & 19.

LEGEND.
Limits of Excavation
Grave Edge
Grave Edge (?)



20.11.6

Fig. 7. Grave plans of inhumations 17 - 19

Swaffham

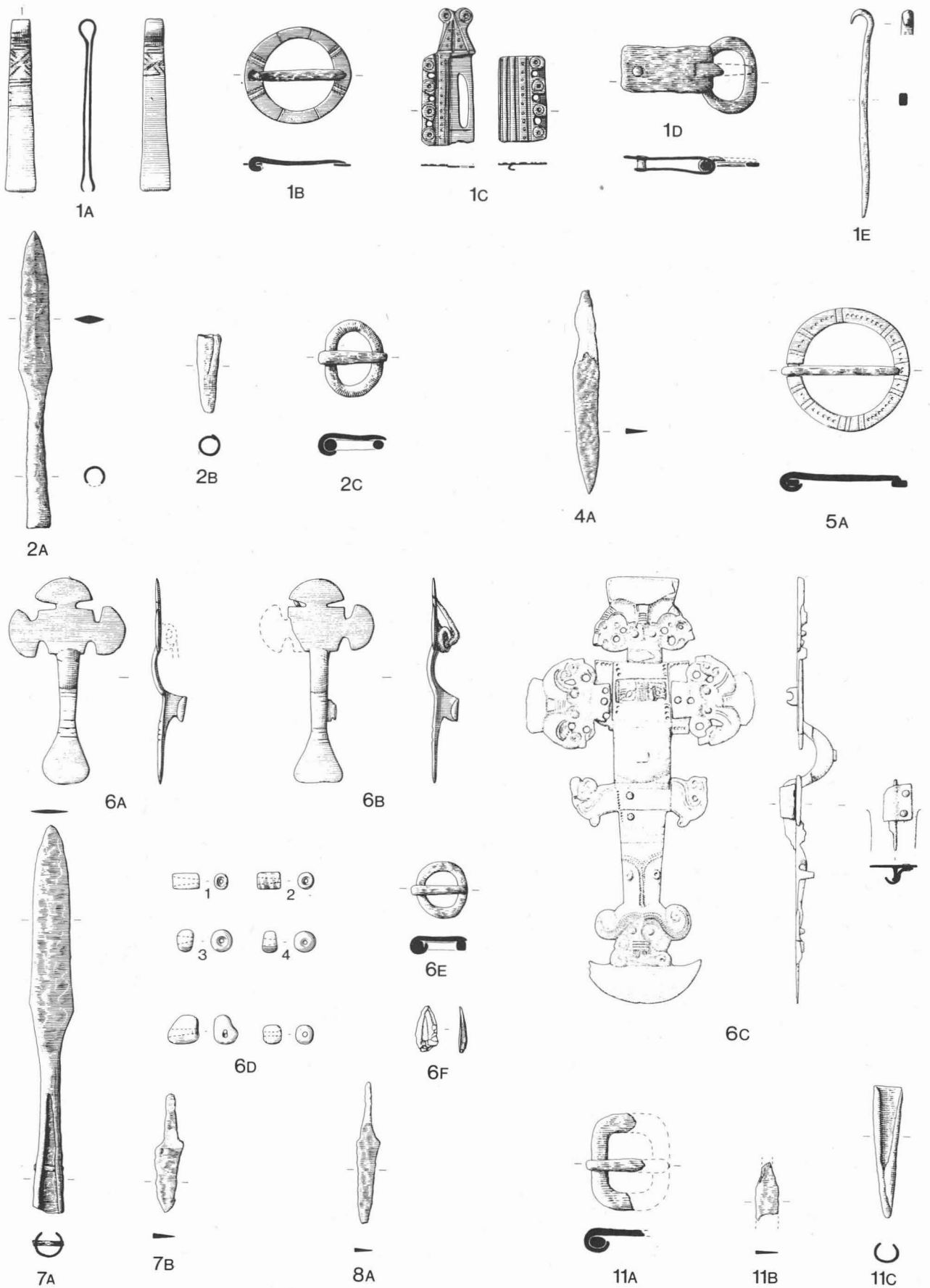


Fig. 8. Grave goods from graves 1, 2, 4, 5, 6, 7, 8 and 11.
 Scale $\frac{1}{2}$: 1A-D, 2C, 5A, 6A-E & 11A.
 Scale $\frac{1}{4}$: 1E, 2A, 2B, 4A, 6F, 7A, 7B, 8A, 11B & 11C.

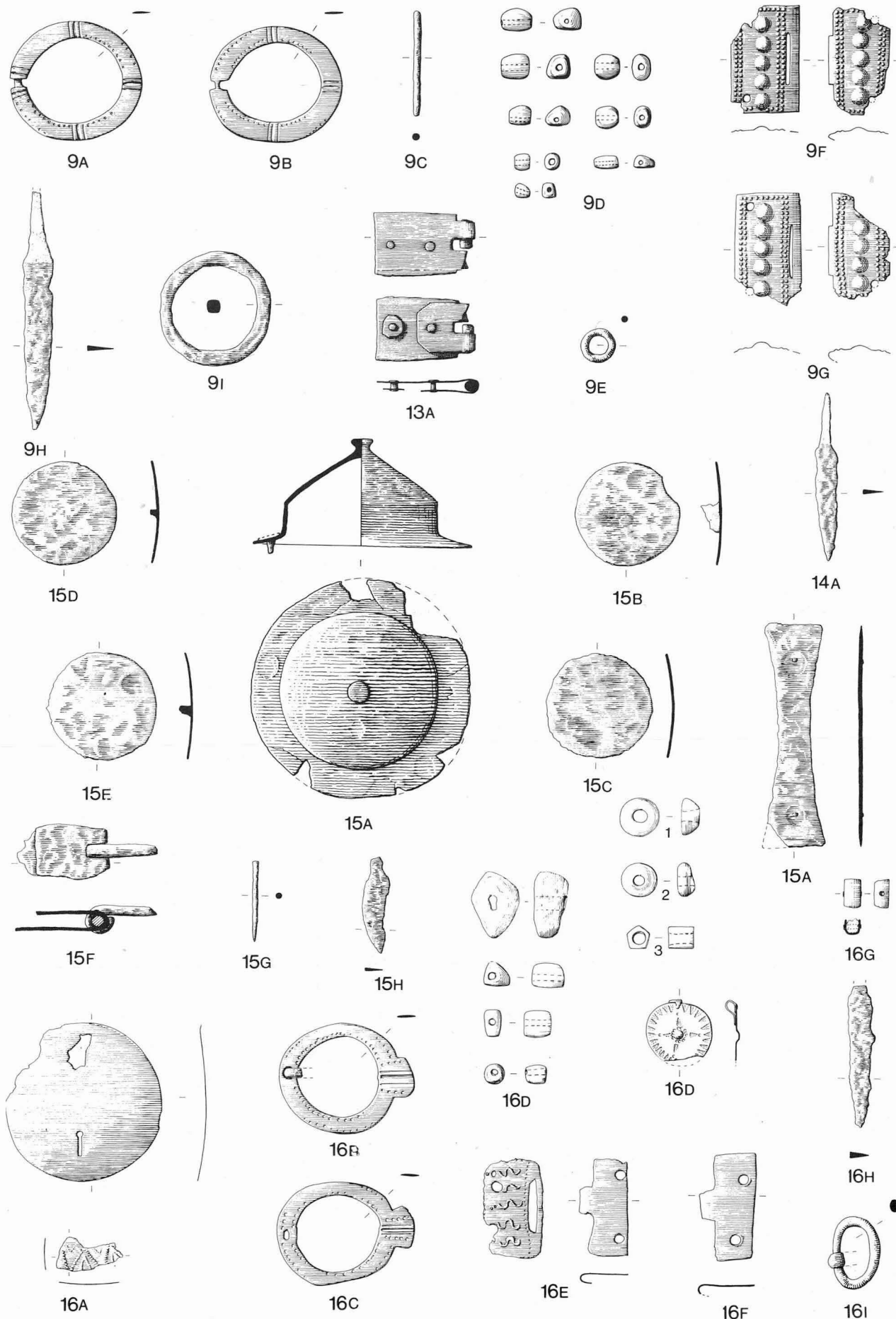


Fig. 9. Grave goods from graves 9, 13, 14, 15, and 16.
 Scale $\frac{1}{2}$: 9A, 9B, 9D-G, 13A, 15F, 16A-G & 16I.
 Scale $\frac{1}{4}$: 9C, 9H, 9I, 14A, 15A-E, 15G, 15H & 16H.

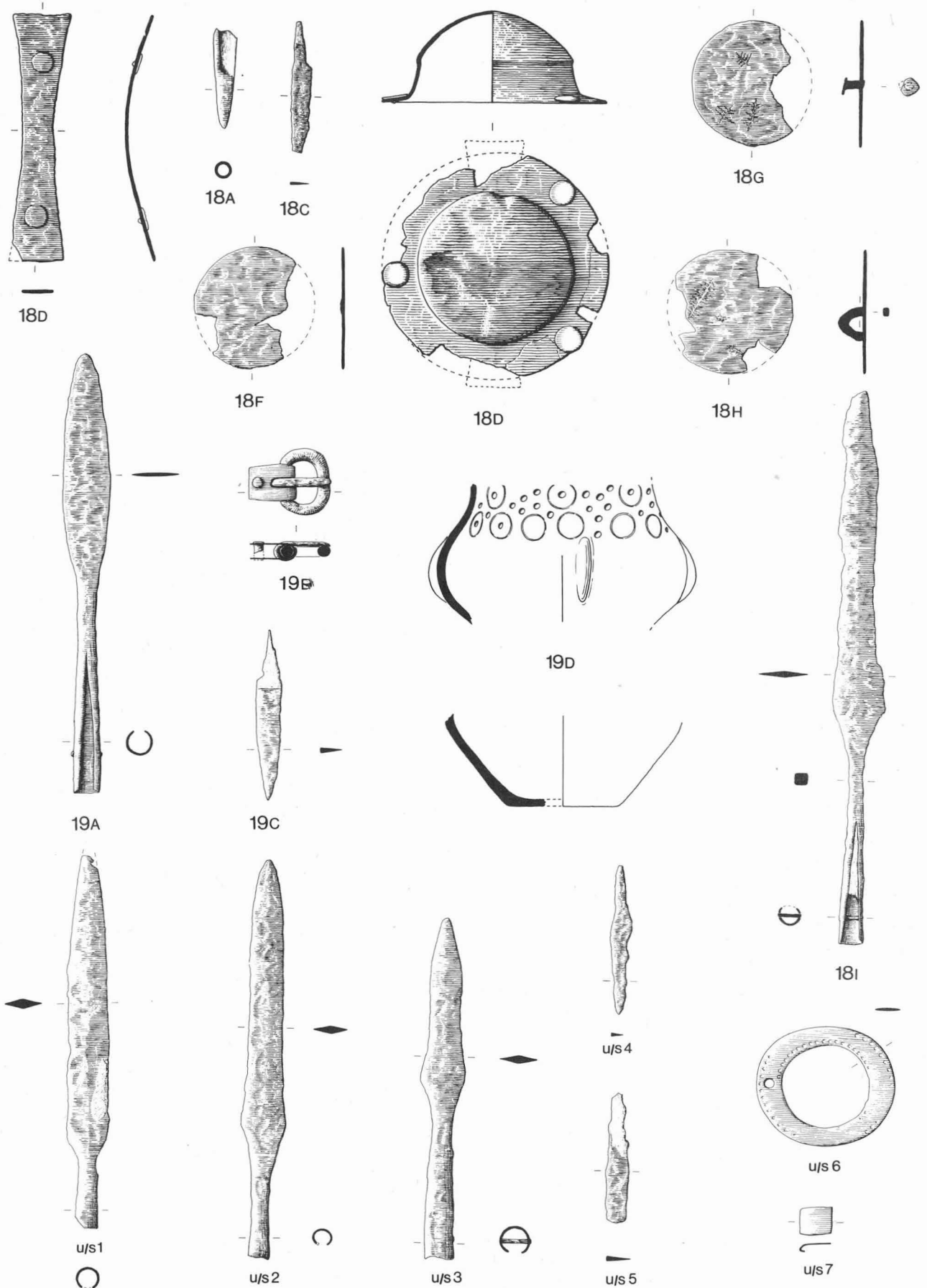


Fig. 10. Grave goods from graves 18 and 19 and stray finds collected by builders from the site.

Scale $\frac{1}{2}$: 18A, 18C, 18D, 18F, 18H, 18I, 19A, 19D and five unstratified iron objects.
 Scale $\frac{1}{4}$: 19B and two unstratified bronzes.

V. THE FINDS : A DISCUSSION

WEAPONS

Spears

There are seven spearheads from Swaffham, three unstratified and four from graves 2, 7, 18 and 19. The first of these, inhumation 2, is a child burial; the others are all adult males. Inhumation 11, which had been disturbed, had a ferrule only. This was also an adult male grave.

Pagan Saxon spearheads have recently been the subject of study by M. Swanton³. None of the Swaffham examples belongs to any of the groups he isolates as early or unusual. All except one fit into one of his major classes, that of angular bladed spears. The exception, 19A, belongs to the group with leaf shaped blades. Within these broad classes, various smaller groups have been distinguished on the grounds of details such as the size of the blade or the curvature of the sides of the blade and its relationship to the socket.

Four of the Swaffham blades, 2A, 7A and two unstratified, appear to belong to the group (H) of medium size concave-sided angular blades. All four would seem to be of Group H2, although Swanton himself has classified one of the unstratified examples as H3⁴. This group of spearheads is one of the more common types found over a wide area and not closely dated, except that it does not seem to be found later than the sixth century. Another blade, 18I, may also belong to Group H3 because of its length. But this blade is very corroded, so that while it does seem to be angular rather than leaf shaped, there is no way of being certain that the edges of the blade were concave and not straight. If the latter, it would belong to E3, a group which may have continued in use into the seventh century, and been, in general, later than Group H.

One of the unstratified blades is straight sided and angular, so not of Group H. It is very like one from Sleaford, classified by Swanton as of Group G1⁵. This is a small sixth century variety. But it could also fit the description of Group E2, another later type found in seventh century contexts.

The last spearhead, 19A, is the only leaf shaped blade from the site. This appears to fall between Swanton's Groups C2 and D2, since the proportions of blade to socket do not really fit either. Both of these have been found in seventh century contexts, and can also be earlier.

Four of the spears therefore belong to a common sixth century type, while the remainder are not easily classified, but may have been of later date.

Because of the great variety of shapes, there is difficulty in fitting individual examples to general classifications. If the four H3 blades are sufficiently similar to have come from the same workshop, the others are

different, either imports or of a different date, as is possible from their tentative classification.

Shields

Two graves, 15 and 18, contained shields, represented by bosses, grips and iron discs, the latter placed in two pairs at either side of each boss. The shield in 15 was placed over the neck, that in 18 over the right arm and right side of the body. Traces of wood in 15 showed that the grip had been attached to the underside of the wooden shield rather than directly to the iron boss, fastened at right angles to the grain of the wood. Inside the grip had been a strip of wood, perhaps rounded to fit the hand. The shield lay with the grip at right angles to the body. The outline of the shield itself could not be seen. In 18 no wood was found. The grip lay under the boss, across the middle, and extending slightly at either side. This boss had been damaged before burial, crushed and pierced.

The bosses were of a similar shape, with low convex dome, straight waist and wide flange, originally fastened by three rivets to the shield. The boss from 18 now has no spike, which is unusual; the spike may simply have been broken off, which in the present fragmentary state of the boss is not impossible. It is also unusual in that the rivet heads are tinned, otherwise this is a common variety of boss⁶. Later bosses show a tendency to increase in height and decrease in diameter, the flange especially becomes narrower⁷. So the Swaffham bosses should be early in the sequence, perhaps from the first half of the sixth century, although simple well-known shapes may have had a long life.

The tinning of rivets is probably a cheap substitute for silvering. The silvering of shield rivets has been discussed briefly by Werner³ who suggests it may be an indication of rank. He dates this feature to the late fifth and first half of the sixth centuries. Of eight burials identified as males at Swaffham only two had shields, which might in themselves be significant of rank.

Pairs of discs can be paralleled in various parts of the country and have been found in association with various types of boss⁹. There are similarities between the shield burials and burials found in the last century at a site only two of three miles to the east, near Sporle¹⁰.

Inhumation 18 was especially interesting because both the spear and the shield were damaged in a way which suggests that they may have been deliberately and ritually broken before burial. The shield boss and the discs were severely battered and broken. The spearhead was bent, and the spear ferrule lay close to the head showing that the shaft had been broken in two before being placed beside the body.

Similarly at Sporle one of the bosses had been pierced before burial.

JEWELLERY

Beads

There is no detailed study of beads, which remain difficult to date. The fashion for long strings of amber and glass beads seems to have ended some time in the seventh century, when necklaces of silver rings, amethyst beads and pendants replaced them¹¹. The Swaffham necklaces do not belong to this late phase, although one does include a pendant.

Pendant

Silver pendants with stamped and repousse decoration occur in the Midlands¹² and East Anglia¹³. Most recently in Norfolk they have been found at Bergh Apton, an inhumation cemetery¹⁴, and at Field Dalling, which may be a mixed cemetery¹⁵. They are not found in early contexts - but neither are they entirely confined to seventh century burials.

Wrist-clasps

Three graves (1, 9 and 16) contained wrist-clasps. Only one (9) included two complete pairs; others held one complete pair only, and two incomplete pairs. Those from inhumation 1 are cast, the others are made from thin sheet, plain or with repousse decoration. This kind of clasp is simple to make, and widespread in distribution¹⁶. The cast pair has a triangular gusset extension. These are more often found as separate pieces, but there are parallels to this construction. A pair from Icklingham is particularly close in design¹⁷. These belong to one of the later stages of development¹⁸. Probably simple sheet clasps continued in use for a long time, but the cast version is at least unlikely to be early.

Brooches

1. Annular brooches. These are found throughout the pagan period in most of Saxon England¹⁹. None of the brooches from Swaffham belongs to a group thought to be either early or late. The brooch from inhumation 5 is unlike the others in having a rectangular instead of a flat, thin oval section. The pair from inhumation 16 is unusual in that each has a small wedge-shaped extension at one side. This may have been a purely practical development to protect cloth from being stained or damaged by the iron pin. It is not clear how a pin so long as this would imply could have swung through the ring. In fact it is not clear how annular brooches functioned as dress fasteners. They look as if they could only be used as ring-headed pins. Stylistically, these may have something in common with a brooch from Londesborough which was

thought to have Alamannic affinities²⁰. But the flat shape of the Swaffham pair, ring and extension all being part of the same piece, is not like the solid ring and large, decorated flat extension of the Londesborough example. In other respects the former are like normal annular brooches, for which it would not seem necessary to postulate a foreign origin.

2. Small-long brooches. There is one pair of small-long brooches from Inhumation 6. These are trefoil headed with sub-triangular foot plates. Leeds dated small-long brooches in general to the sixth century²¹. In his sequence, this pair would be early, although they are perhaps of less precise and defined design than the earliest. They were from the same grave as the florid cruciform, which might be thought somewhat later. Perhaps this shape had a long life, or the brooches may have been old when buried.

3. Applied brooches. There is one applied brooch (16A). This is very fragmentary, with nothing of the decoration surviving apart from a beaded zig-zag from the edge. It is very like a brooch from Barrington²² which has a central panel of zoomorphic ornament. Applied brooches have not often been found in Norfolk, but parts of two have recently been recovered from cremations at Spong Hill, North Elmham. The fragility of this type of brooch has probably led to a greater rate of destruction than amongst more robust varieties, so that its frequency and the extent of its distribution may have been misrepresented. It is not closely dateable²³.

4. Cruciform brooch. There is one cruciform brooch from Inhumation 6. Also from this grave are the pair of small-long brooches mentioned above, amber and glass beads, and an iron buckle.

At first sight, this is an attractive piece of work, well balanced in shape and with good contrast in the decoration between areas of sharp relief and plain flat areas. Except for the panel in the middle of the head plate, all the zoomorphic and anthropomorphic design is coherent, not muddled. But the balanced shape is not entirely intentional since the side arms were put further on to the head plate when they were mended. In its original form (Fig. 11) it was slightly top-heavy, being too wide at the head. It is not certain that the arms are those which broke off, and not a similar pair from another brooch. But the details in which the side arms differ from the third are very slight - the incised lines on the necks of the beasts are longitudinal instead of transverse. The two lappets are much less alike, yet they were certainly both cast as parts of the brooch. It is more economical to assume that these are the original arms, rather than postulating another almost identical brooch more severely damaged than this one.

It may be that the brooch has been repaired more than once, since there are unused rivet holes in the arms, perhaps from an earlier attempt.

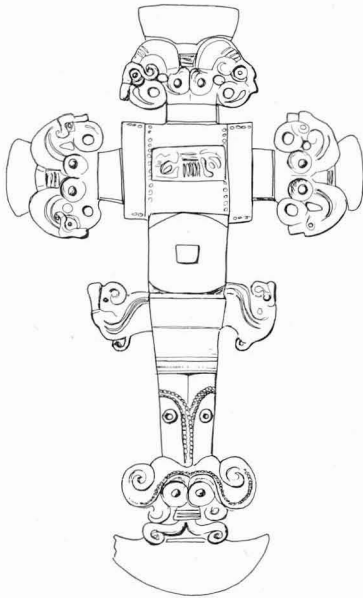


Fig. 11. The cruciform brooch from inhumation 6 in its original form: drawing by Catherine Hills. Scale $\frac{1}{2}$.

There are faults in the casting, causing hollows in the back of the foot, and apparently leaving one of the lappets so thin that more metal had to be run on. Many details are not exactly symmetrical. But this is still an interesting brooch, even if not so well made as it first appears.

Florid cruciform brooches have recently been the subject of a study by Leeds and Pocock²⁴. The original group isolated by Aberg²⁵ and listed by him as Group V has been subdivided into a number of smaller groups, possibly with a regional or chronological significance. Of these, Vaii, Vf and Vgi

seem the most relevant to the Swaffham brooch, though it does not correspond exactly to any of them.

These are all East Anglian types, Vaii from Norfolk and the other two from the Lark valley. Vf includes one brooch only, from West Stow²⁶. The foot of this differs only slightly from that of Swaffham. The crescent terminal is smaller, the curls of the mask less widely spread and there is less use of stamps. The head is not so closely similar. It is not winged, has no central panel, and the side arms have begun to fuse together.

Vgi includes a number of brooches so alike they may have come from the same workshop²⁷. This group resembles the Swaffham brooch as to the head, though also lacking the central decorative panel, but the foot is not so close. The bow is grooved, not flat, the lappets are climbing beasts, not beaked heads, and a pair of heads flanks the mask. There is little use of stamps.

Vaii includes one extant brooch and two nineteenth century illustrations²⁸. These are all closely similar, in so far as the details of decoration can be seen. The only difference is that one illustration (Sporle) shows both arms in position, with that on the right damaged; the other (Gt. Carbrooke) shows the right hand arm broken off, and the surviving brooch has neither arm. There is a detailed account of the discoveries at Sporle²⁹, and several other finds are now in Norwich Castle Museum. Gt. Carbrooke has been thought a doubtful provenance, since objects said to come from that parish have been shown to have come from elsewhere³⁰. The brooch now in Ipswich Museum is catalogued as from Felixstowe. It was previously in Norwich as part of the Fitch

collection. There is no other record of a pagan cemetery at Felixstowe. It is odd that brooches so similar as these do not have a more concentrated distribution, since although the two Norfolk villages are only a few miles apart, Felixstowe is at the other end of East Anglia. Provenances of finds in collections partly acquired from dealers, without record of the circumstances of their original discovery, cannot be relied upon. It may be difficult ever to prove it conclusively, but it seems possible that there was only ever one brooch and not three.

If this were so, the most probable provenance would be Sporle. This site has already been mentioned in connection with shield bosses (p. 22) and it is not surprising that there should be links in the jewellery as well.

The Sporle brooch illustrated by Akerman is in many ways a simpler variation of that from Swaffham. The shape and size correspond closely, except that the top arm of the Sporle brooch has been set nearer to the main head-plate, giving an even more top-heavy appearance. If it had tinned terminals to foot and head, these have been lost. It is also lacking wings or panels on the head. Stamps are used, but less often than at Swaffham. On the other hand, it has a more elaborate bow. The lappets are not clearly shown.

Although the Swaffham brooch cannot be precisely classified as belonging to any one of the groups isolated by Leeds and Pocock, it clearly belongs to the series they describe as 'East Anglian'. One detail only, the panel in the middle of the head, does not appear on these but on the 'mid-Anglian' types, which may be later. There are in fact examples of this series in East Anglia, from Brooke³¹ and Bergh Apton³², sites near to each other in south-east Norfolk. These are very similar to the latest phase of cruciform brooches. Exactly when the Swaffham brooch was made cannot be decided with any confidence, but it should probably not be put into the seventh century. It may have been made some time in the latter half of the sixth century and was in use long enough to need repair before it was buried.

MISCELLANEOUS

Knives, Buckles

These classes of object are of common occurrence and cannot be closely dated, although the small size of most of the buckles may relate them to those of the 'late' cemeteries³³. They are found in graves of both sexes.

Iron Rods

These are probably parts of keys and come from female graves.

Worked Flint

A small worked flint was found in Inhumation 6, near a part of the spine which had been damaged. The association is probably accidental, although the possibility that Saxons used worked flints as tools should not be entirely discounted.

POTTERY

Four of the inhumations, all male, contained potsherds (4, 14, 18 and 19). There is also a pot thought possibly to be a cremation urn, (Cremation 20). All the pottery except one sherd from 19 is plain. The sherds are of a hard, well fired fabric, probably all from large wide-mouthed vessels. No cremated bones were found with the pottery, not even with 'cremation' 20. Nor are there any burnt finds such as melted glass beads, which might be expected if the sherds were the remains of cremations disturbed by later inhumations. If this is domestic pottery, it would imply that the settlement is not far away, so that rubbish could spread into the cemetery. It is not usual to find rubbish in graves. The fact that pottery occurs only in male graves may be a slight indication that its deposition was deliberate, not accidental. Sherds could have been substituted for complete accessory vessels.

One of the pots from Inhumation 19 is rather different from the others. It is less well-fired and has a smoother, less gritty surface. It is also decorated. Its shape, somewhere between globular and biconical, is one which is common to many fifth and sixth century Saxon pots. Rows of stamps above vertical bosses is a usual decorative scheme. But rows of stamps are not often undefined by horizontal incised lines, and the untidy arrangement on the Swaffham pot is perhaps an indication of a later date than otherwise would be suggested. A small pot from Mildenhall³⁴ has similar large circular stamps with small round indentations, but this does not have much else in common with Swaffham, and there are no published parallels to this pot in England.

VI. THE CEMETERY

It is hardly possible to draw any conclusions from such a small group of burials, which represent a fraction of the original cemetery. Recent more extensive excavations at Bergh Apton, Morningthorpe and Bury St. Edmunds have greatly increased the material available from pagan Saxon East Anglia³⁵. A detailed re-assessment and discussion of the period will be necessary when these have been published. It is only possible here to mention a few points of interest.

The date of the site in general cannot be more precisely fixed than 'sixth century'. The shield bosses could, just, be of fifth century date, and the cruciform brooch need not have been buried until the seventh. But these also have been buried in the sixth. There may be a difference in date between the two areas excavated. The southern part produced only male graves, including the two shield burials. Orientation was varied. To the north, both sexes and children were found, and all but two had their heads to the west.

Similarities between Swaffham and the site at Sporle have already been noted. These two could perhaps be seen as part of a West Norfolk group, as opposed to the East Norfolk group which includes Brooke, Bergh Apton and Morningthorpe. But this could be a chronological rather than a regional difference, for the very elaborate cruciform brooches and the square-headed brooches from the eastern sites are seen as later than the phase represented by the Swaffham brooch.

There are also links with the Lark valley and Cambridgeshire sites, not only through the cruciform brooch, but also through the applied brooch and the wrist-clasps.

VII. THE TEXTILE REMAINS

by Elisabeth Crowfoot

The textiles from graves excavated at Swaffham are replaced by metal oxides, with the exception of a few threads from a plain weave on the cruciform brooch from grave 6, but even these were too deteriorated for the fibre to be identified. The mineralised pieces preserved, however, are sufficiently clear to give some idea of their probable uses.

In the four women's graves from which textiles were identifiable (Inhumations 1, 5, 6, 9) simple twill fabrics of medium weight were found underneath or on the pins of brooches lying near the shoulders, most likely the remains of woollen gowns or possibly cloaks; in two cases (6 & 9) tablet braids or borders may have decorated the necks of these garments. In addition, there are plain weave fabrics lying in folds on the upper surface of two brooches (1 & 6) which may indicate shrouds, but they could equally well represent the woman's head veil, draped around the neck and falling on to the breast. This interpretation seems to be supported by the fabric on the cruciform brooch from grave 6, where the soft folds are tucked under the edge of the headplate and touch the pinhead; the same arrangement is even more clearly marked on other cruciform brooches from women's graves, particularly those from Fonaby, Lincolnshire³⁶.

A scrap of plain weave from an iron hook in grave 1 seems rather fine to be shroud material, and its position, lying against the woman's hip, suggests perhaps the lining of a small bag.

The only textile from a man's grave (Inhumation 15) is a coarse four-shed twill, a broken or displaced diamond, which must have been woollen (Plates V & VI). The man lay face downwards, his shield across his shoulders, and the position of the weave on the shield grip and on a strap fitting underneath to the right of the body shows that the pieces probably represent his cloak, for which this heavy material would have been very suitable.

The diamond pattern from grave 15 (Fig. 12) has a different centre from that most commonly found in Anglo-Saxon cemeteries, a type so far identified twice in Britain - in an exactly similar weave from Palmaclellan in Scotland,³⁷ dated by the Celtic bronzes with which it was found to the 2nd-3rd centuries A. D., and in a smaller diamond from Grave 204 at Finglesham, Kent of the 7th century.³⁸

Examples with this centre have been published from Birka, Sweden (8th century),³⁹ and Lousgaard, Denmark (7th-8th century)⁴⁰. The Swaffham piece is very coarse, 9/8 threads per cm., compared with those from Balmaclellan (20/14) and Finglesham (20/18); the Scandinavian examples, probably high quality imported fabrics, are much finer, Birka 36/16 and Lousgaard 50/22 threads per cm. Of these five examples, the two earlier pieces, Balmaclellan and Swaffham, use Z yarn in one thread system and S spun in the other⁴¹, a practice

sometimes regarded as emphasising the pattern of the weave, and the three later pieces Z spun yarn in warp and weft. As far as finer twill weaves, particularly diamonds, are concerned, the British evidence tallies with that from Scandinavia⁴², that from the 7th century onward the use of different spinning directions in warp and weft begins to give way to that of mainly Z spun yarns.

The Swaffham twill is obviously a domestic product. In spite of its coarseness, the fragment on the belt fitting shows a weaving mistake, the heddles having been lifted in the wrong order, spoiling the reverse of the diamond (Fig. 12 (b)).

INVENTORY OF TEXTILE REMAINS

Inhumation 1

A. Bronze tweezers on right shoulder

Area 1.5 x 1.0 cm, textile, fibres replaced, Z spun in both systems, surface deteriorated; as the tweezers lay against brooch B this weave is probably plain weave (2) described below.

B. Bronze annular brooch also on right shoulder

Back, textile (1), round pin head, patch with replaced fibres, 1.7 x 1.5 cm. overall, Z, Z, twill 2/2, as far as can be seen simple diagonal, count 12/10 threads per cm.

Top, textile (2) along upper surface of pin, lying in folds for a length of 3.8 x 1.8 cm. replaced, Z, Z, probably plain weave (tabby), count 8/5 threads on 5 mm., i. e. c. 16/10 per cm. Coarse Z threads, probably from twill (1) preserved on the ring and across centre of pin.

E. Iron hook (lying on right hip)

Traces all along the top surface and small traces underneath, textile (3), fibres replaced, clearest area 2.5 x 1.5 cm. curving round the side, Z, Z, plain weave, fine, count on 5 mm. 14/9 threads, i. e. 28/18 per cm.

Inhumation 5

A. Bronze annular brooch on right shoulder

Fragments of replaced weave along the pin on both surfaces, on top area 1.7 x 0.7 cm, underside area 2.0 x 0.7 cm; both the same weave, Z, Z, fairly coarse twill, count impossible to take.

Inhumation 6

A. Small-long brooch on right shoulder

At back of pin head, mass of replaced textile (1), one fairly clear area 1.2 x 1.5 cm, Z, Z, twill, many broken threads but count estimated c. 14/12 per cm.

The Textile Remains

Front, across the neck of the brooch, 3 ply string or fine plait of Z spun threads, probably used to fasten beads.

B. Small-long brooch, forming pair to A on opposite shoulder

On back, area c. 2.7 x 1.5 cm, textile (2) replaced by the iron of the pin, lying in several layers under fragment of ? bone; thread Z one system, the other Z, S ply. This looks like a confused plain weave, count c. 7/6 threads on 5 mm, but where the edge is broken one system of threads seems to twist as in a tablet-weave, though the other system is not concealed.

C. Gilt cruciform brooch on left shoulder

Front, textile on the foot, replaced area 1.7 x 1.0 cm, Z, Z, twill, simple 2/2, count 7/6 on 5 mm, i. e. 14/12 threads per cm, probably the same as textile (1). On the cross, area c. 4.0 x 2.0 cm, textile (3), also lying in a fold at the top of the cross, area c. 2.0 x 1.2 cm; fibre mostly replaced, examined by WIRA, but too far deteriorated for identification; spinning Z, Z weave plain (tabby), count clear 7/5 on 5 mm, i. e. 14/10 threads per cm

On back, area 5.6 x 3.5 cm, same plain weave (3), passing in folds under the edge of the brooch on to the pin head, counts 11/9, 12/9 threads per cm. Traces on the back of the footplate of twill, possibly (1), and fragment 1.5 x 0.8 cm. of the same on the detached armpiece. Long fine replaced fibres lying across (3) on both back and front; these look more like unspun vegetable fibres than woven threads, but might be hair.

Inhumation 9

B. Annular brooch on left shoulder

On front, area replaced textile 5.5 x 2.0 cm. along the pin; most of the surface is badly deteriorated, but one clear area at the pin attachment, Z, Z twill, has count estimated at C. 14/12 per cm, thread regular. In two layers across the twill at an angle to the pin, perhaps a fold in the neck-border of the garment, remains of a fine tablet-weave border or braid, length preserved 1.5 cm, width 5 mm, five clear twists lying right and left in chevrons (Fig. 12 (c)), too deteriorated for weft count; other traces further along.

Inhumation 15

A. Shield grip on shoulder

Area c. 3.2 x 2.2 cm, replaced textile, coarse, spinning Z one system, S the other, broken diamond twill, count 9/8 threads per cm. (Fig. 12 (a)).

F. Iron strap end, buckle plate under shield

Area 3.0 x 2.0 cm, replaced, Z, S, the same broken diamond twill as on the shield grip; on this piece there is a weaving mistake due to taking the heddles in the wrong order, which spoils the reverse (Fig. 12 (b)).

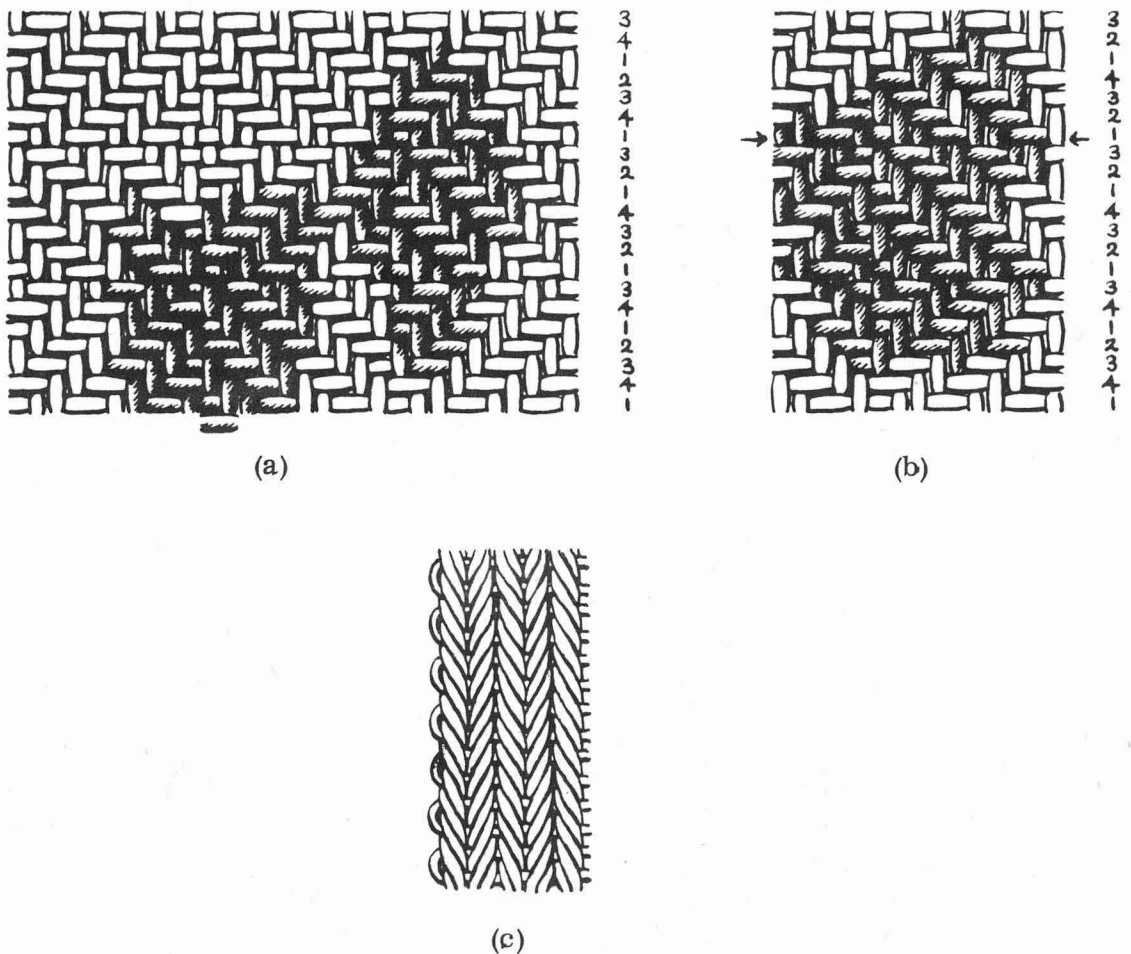


Fig. 12. (a) and (b). Diagrams of broken diamond twill from Grave 15: (a) on shield grip A. (b) on strap fitting F. (c) Tablet weave, chevrons of the type used in border or braid from Grave 9.

The shaded threads are those preserved.

The numbers show the order of lifting heddles with mistake on (b) indicated by arrow.

VIII. THE SKELETAL MATERIAL

by Calvin Wells

INHUMATION 'A'

At least two persons are represented, although it is not possible to allocate every bone with certainty to its appropriate individual.

One, to whom most of the bones may be attributed, is an adult woman of uncertain age. The other is a man, probably between 30 and 40.

The woman is represented by a damaged pelvis (sacrum and two innominates) which has rather strongly marked feminine characteristics. Some fragments of both humeri, radii, femora and of a left tibia are also very probably from a woman and may belong to the same person.

Some damaged vertebrae, a fragment of clavicle, two bronze-stained metacarpals and a bronze stained phalange of a hand are of uncertain sex. So, too, are a damaged maxilla, a small fragment from a mandible and seven loose teeth.

The male is identifiable by a fragmented and incomplete skull. The proximal half of a right ulna is also most certainly male. Four rib fragments and the glenoid/coracoid process region of a left scapula are probably male.

Some reconstruction of the cranial vault is possible. This reveals a skull which is a long ovoid in norma verticalis. The frontal bone rises fairly steeply from moderately strong supraorbital ridges and passes in a smooth curve through a slightly flattened vertex, descending to a strongly marked nuchal region with no trace of a tuber occipitale. The mastoid processes are shortish and blunt but robust; areas of muscle attachment are well developed. The cranial sutures show early fusion in parts of their endocranial surfaces.

The cranial length and breadth can be tentatively estimated as 193.1 and 134.0 mm, giving a cranial index of 69.3 (dolichocephalic). The overall appearance of this skull would fit well within the normal range of variation of Anglo-Saxon skulls.

The surviving teeth (which are of doubtful association) show fairly heavy, but not severe, attrition. This suggests a moderately coarse diet but not one which imposed gross masticatory strains or contained great amounts of abrasive grit. Hypoplastic defects of the enamel on some teeth suggest childhood illness or nutritional defects - in some instances possibly due to the disturbance of weaning.

Well marked osteoarthritic lipping on the head of one rib fragment may be the result of old injury or chronic stress and strain through a physically vigorous life.

The most interesting finding in this collection of bones is an opening in the skull (Plate IX). This hole is situated in the obelionic area of the parietals. It encroaches on both bones but more on the left than the right. The opening is elliptical, with its long axis sagittally. Its dimensions are 16.4 x 10.7 mm and it lies at the bottom of a bevelled groove about 42.8 x 22.5 mm. in its diameters.

The cause of this orifice remains in some doubt. It does not much resemble a congenital defect and there is no evidence to suggest that it is the result of one of the blood dyscrasias. Various infective processes may produce cranial lacunae but evidence of infection is wholly absent in the present case. Perforation of the skull by malignant tumour is common (though not so in Saxon times) but nothing here gives support to such a diagnosis. Atrophy of the bone from the pressure of an overlying tumour, such as a simple sebaceous cyst or a sebaceous horn, is a distinct possibility but cannot be considered very probable.

By far the most likely cause is trauma. This might be the result of a wound by some tool or weapon, or it could have followed a deliberate operation for trephining the skull.

We know little about trephination in Saxon times. A dozen or two skulls have lesions that are somewhat like the one discussed here but in all of them there is the same ambiguity as in the present example. There is no reference to trephination in Anglo-Saxon texts.

In the Swaffham "A" skull the bevelled sides of the lesion descend at an angle of about 50 degrees in their steepest part, which is laterally. In the anterior and posterior part of the defective ellipse the angle of bevel is much less, about 30 degrees. This is a pattern which is sometimes seen in trephinations but is also common in weapon wounds. Primitive surgeons with skill and experience in performing trephinations usually avoided attempting the operation at the site where this hole is located, because it lies over the superior longitudinal venous sinus. This vascular channel may easily be wounded and serious or fatal haemorrhage may result. However, trephinations do sometimes occur in this position and the operation cannot be excluded merely because of the site of the lesion.

From its appearance this opening might be either a wound or a trephination. But it is uncertain what weapon could have caused it. A metal arrowhead, gouging the surface of the bone, could produce the type of lesion present on this skull but a difficulty is that arrowheads are extremely rare in Saxon material: the bow seems to have been hardly used as a fighting weapon, though a few instances are known. A spear, thrown or thrust, might perhaps

The Skeletal Material

also cause such a wound but this seems less probable. It would be even more unlikely to result from a sword cut or an axe. A blow from some blunt weapon, by causing a depressed fracture of the outer table of the skull, with subsequent elimination of splintered fragments and remodelling of the edges of the wound, might possibly give this appearance. In the right posterior quadrant a slight thickening of the bone may indicate an active reaction to the wound, due to a mild and localized infection, but it is much more likely to be due to normal processes of repair.

Despite this measure of uncertainty in the case there seems little doubt that, on osteological grounds, the balance of evidence favours trephination. This is greatly reinforced by the additional evidence which is recorded under Inhumation 7 (p. 37).

Inhumation 1

Adult, ?35 - 45. Sex uncertain.

This consists of a few very damaged cranial and long bone fragments. Only one individual is represented. It is more likely to be female than male. The frontal bone has an unfused median suture, i. e. it is metopic. A fragment of mandible shows the following dental state :

R.				L.
	? ? 0 5 0 . . ?			

The teeth show very severe attrition of the biting surface. The missing incisor and canine may have been knocked out as a result of some traumatic episode occurring at least six months before death. There is no evidence that they were lost as a result of dental or alveolar infection. No caries is present in the surviving teeth.

Some of these bones are extensively bronze stained.

Inhumation 2

Child, 11-12 years. Unsexable.

This consists of a few dozen very small scraps of cranial vault, vertebrae, ribs and long bones. There are also some damaged jaw fragments and teeth.

Inhumation 3

Child, 11-12 years. Unsexable.

This child was probably a few months younger than that of Inhumation 2. The remains include a few tiny scraps of cranial vault, L. and R. petrous temporal bones; a few fragments of jaw and some loose teeth; half a dozen small pieces of long bone.

Inhumation 4

Adult, Male

This consists of a much damaged and fragmented cranial vault, with strongly marked brow ridges. Fragments of cranial base; two pieces of maxilla and the body of a mandible showing the dental state:

R.	? 7 6 5 4 3 2 0	1 2 3 4 5 6 7 ?	L.
	- 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

Attrition is very heavy on these teeth. No caries. The chin, or mental region, is very strongly protruding in a way that is commonly found in Anglo-Saxon jaws. It bears no resemblance to acromegaly.

Post-cranial bones include: a few pelvic fragments; some much damaged pieces of L. and R. humerus, ulna and radius; the L. and R. femora and tibiae; and some fibular scraps. These bones are very powerfully built with extremely powerful areas of muscle attachment.

Maximum femoral lengths are :

Left 451.5 ? mm.

Right 453.7 mm.

The L. tibia was 378.7 mm.

These measurements indicate a stature of about 1719.7 mm (5ft 7 $\frac{3}{4}$ in) Also present are L. and R. patellae; a few fragments of tarsus.

Neither tibia can be examined for the presence of squatting facets owing to damage in the area.

Inhumation 5

Child, ? 6 - 7 years. Unsexable

This consists of a few tiny scraps of cranial vault; L. and R. petrous temporal; fragment of R. side of mandible; one molar tooth crown; fragments of clavicle and of shafts of long bones.

There is bronze staining on the vault and jaw remains.

Inhumation 6

Adult, ? 35 - 45 years. ? Female

This consists of fragments of a much damaged cranial vault with fusing sutures; a few pieces of base and face, including parts of the jaws with :

R.	8 7 6 0 0 3 0 0	0 0 3 4 5 6 7 0	L.
	? 7 6 5 4 0 0 0	? ? 0 4 5 6 7 8	

Dental attrition is heavy. No caries.

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Post-cranial remains include : the dens of an axis; a few other fragments of vertebrae, ribs, scapulae and very defective long bone shafts.

Much bronze staining is present.

Inhumation 7

Adult, 40-55 years. Male

This consists of a broken and incomplete skull, together with a few scraps of vertebrae, ribs, long bones and other post-cranial remains in extremely bad condition.

The skull. Most of the cranial base is present, with the occipital squama and the posterior three quarters of each parietal articulated with it. Also the temporals and a detached frontal fragment. Pieces of a very defective maxilla and mandible survive and show a dental state :

R.	0 0 0 5 0 0 0 0	0 0 0 0 0 6 0 0	L.
	8 7 6 5 0 0 0 0	0 0 0 0 0 6 7 0	

The overall condition of these remains is too poor for much of value to be said about them. However it is fortunate that one of the best preserved areas is the posterior part of the R. parietal bone (Plate X). Here, an opening in the skull is found which resembles that in Inhumation 'A'. This one is elliptical with its long axis running sagittally. The orifice is 12.3 x 8.4 mm and lies at the bottom of a bevelled groove approximately 41.2 x 21.5 mm. The mid-point of the medial margin of the orifice is 35 mm from the lambda.

The same problems of its causation are found here as in Inhumation 'A'. Here, both the orifice and the trough in which it occurs are slightly smaller than in 'A'. The angle of bevel, especially at the sides of the opening, is rather less than in 'A'. It also lacks a conspicuous ridge of bony reaction which runs along the lateral margin of the bevelled area in 'A'. Apart from this the two lesions are very remarkably alike. In any situation such as this the occurrence of several similar lesions much increases the likelihood of their being due to trephination. In Inhumation 7 the probability of trephination would, apart from the existence of 'A', be rather higher than 'A' owing to the avoidance of the mid-line, though too much weight should not be given to this. It should also be noted that Anglo-Saxon skulls with well healed defects of similar size and shape have been found at the nearby villages of Watton, Eriswell and Grimston. In the first two of these the lesion is on the frontal bone. In the Grimston skull there are two lesions: one is on the R. parietal, the other sagittally straddles the L. coronal suture. All these cranial lesions have been critically discussed with the conclusion that each is a trephination and that all are the work of one distinguished surgeon - the Master of the Gliding Gouge⁴³.

Inhumation 8

Child, c. 5 - 6 years. Unsexable

A few teeth and splinters of jaw. Slight enamel hypoplasia is present.

Inhumation 9

Adult, Female

A few fragments of cranial vault; 2 petrous temporals; pieces of jaw; a few scraps of long bones and other post-cranial fragments.

Inhumation 10

Virtually no identifiable scraps of bone survived in this burial.

Inhumation 11

Adult, 30 - 40 years. Male

This consists of a damaged calva; a few fragments of cranial base and face, including 2 pieces of maxilla. The maximum length of the skull is 180.6 mm, its bi-parietal breadth 147.2 mm. This gives a Cranial Index of 81.5 (brachycranial). There is, however, reason to think that this is artificially high owing to post-inhumation warping of the skull from soil pressure, etc.

Teeth:

	? 7 0 5 4 3 2 0	0 2 3 4 0 0 ? ?	
R.			L.

Attrition on these teeth is very heavy. Caries is absent.

Post-cranial remains include: one cervical vertebrae; 4 rib fragments; a few pieces of humerus and some much disintegrated and eroded fragments of lower limbs. The damaged R.femur was not less than 497 mm long: corresponding to a stature of about 1808 mm (5 ft 11½ in). This was a powerfully built man.

Inhumation 12

Only a few useless, unidentifiable fragments of bone survived in this burial.

Inhumation 13

Adult, Male

A few much fragmented and eroded fragments of cranial vault, pelvis, ribs, long bones and other post-cranial scraps of a powerful man.

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Inhumation 14

Adult, 25 - 30 years. Male

A few fragments of cranial vault, jaws and long bones. The frontal bone has moderately full brow ridges. There is severe post-inhumation erosion of all bones. A few millimetres of sagittal suture show early fusion in the obelionic region.

Teeth :

	P	
	C	
R.	8 7 6 5 4 0 2 0	1 2 3 4 5 6 0 0
	? 7 0 5 4 3 2 1	0 2 3 9 5 6 0 ?
		L.

Attrition of all teeth is gross. This has opened the pulp cavity of 7 and set up a carious reaction with a periodontal abscess cavity which has discharged on the buccal surface of the bone. Tartar thickly encrusts the buccal surfaces of 87.

Inhumation 15

Adult, 30 - 40 years. Male

A fragmented skull; most of the post-cranial skeleton, in good condition, of an extremely powerful man.

Teeth :

R.	0 7 6 5 4 3 2 1	1 2 3 4 5 6 7 0	L.
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

Attrition is heavy, including all anterior teeth, giving edge-to-edge bite. No caries.

The following long bone measurements were taken :

	L.	R.
HuLl	355.4	-
FeLl	500.0	500.2
FeDl	29.1	28.3
FeD2	38.2	37.4
TiLl	389.8	394.7
TiDl	39.4	41.3
TiD2	27.2	28.2
Meric Index	76.2	75.6
Cnemic Index	69.0	68.2

This corresponds to a stature of about 1816 mm. (5 ft 11½ ins). Well marked squatting facets are present distally on both tibiae.

Pathology. Schmorl's nodes are present on 4 thoracic vertebrae; osteophytosis on at least one thoracic and one lumbar vertebrae.

Inhumation 16

No identifiable bone was recovered from the builder's trench which revealed this burial.

Inhumations 17 and 18

Nothing survived of these burials except a few useless splinters of bone.

Inhumation 19

Adult, 25 - 30 years. Male

A calva; damaged maxilla and mandible. Scraps of vertebrae, pelvis, ribs and scapulae; parts of all long bones; a few small bones of hands and feet. All these items are much damaged.

The skull is ovoid in norma verticalis.

Teeth:

	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 ?	
R.	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	L.

Attrition is light. The caries cavities are all interstitial. There is slight overcrowding of the anterior maxillary teeth. The mental region is very prominent.

The maximum cranial length is 194.7 mm; the bi-parietal breadth is 143.1 mm. This gives a Cranial Index of 73.4 (dolichocranial).

The maximum length of the L. femur is 490.0 mm, which is equivalent to a stature of about 1792 mm (5 ft 10½ ins).

Pathology. The R. maxillary antrum shows osteitic roughening and pitting of its floor. This was presumably due to chronic sinusitis.

COMMENTS

The overall condition of these burials is very poor; they are incomplete and much eroded. However, a brief summary of a few facts may be made.

Of the twenty burials mentioned above, five contained no serviceable remnants of bone. Of the remaining fifteen, four (26.7%) were children. The expectation of life for the community was presumably

low because, apart from the children, the mean age at death of the eight adults in whom some precision was possible was only 35.9 years. Ten adults were sexable on osteological criteria and of these eight were male. Little can be said about their racial characteristics. From the limited material available it seems that they all fall within the limits of normal variation of pagan Saxon populations in this country. They were fairly tall people, ranging from 1720 - 1816 mm. (5 ft. 7 $\frac{3}{4}$ ins. - 5 ft. 11 $\frac{1}{2}$ ins.) in stature. The robustness of their bones and the strongly developed areas of muscle attachment leave no doubt that these were a sturdy vigorous people used to hard work and strenuous exercise. Their generally heavy dental attrition indicates a somewhat tough, perhaps gritty, diet. Of 157 surviving adult teeth four (2.5%) were carious. All these were molars, a caries rate of 7.4% for the molar series of fifty-four teeth. Only two teeth, a $\overline{32}$, had been lost antemortem, perhaps from trauma rather than disease. Of eighteen identifiable third molar positions only one (5.5%) contained an unerupted tooth.

Very little pathology is identifiable here. Inhumation 15 had at least four Schmorl's nodes and at least two osteophytotic lippings of his vertebral column, indicating severe spinal stresses presumably begun in adolescence. This man also had well developed squatting facets at the ankle joints: perhaps he was of lower social status than some of the others. Inhumation 19 had well marked R. maxillary sinusitis (the L. side has not survived) and this might indicate chronic antral infection partly aggravated by irritation from living in a smoke filled hut.

The outstanding feature of this group is undoubtedly the two trephinations which have been described under Inhumations 'A' and 7. These, and the other examples noted above, have now been fully described elsewhere⁴³.

July 1975.

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38. Unpublished.
39. Geijer (1938), abb. 2-4.
40. Hald (1950), figs. 86 and 87.
41. Wherever selvages or borders are preserved, the Z yarn in Anglo-Saxon twills, as in most Scandinavian examples with mixed spinning, seems to be the warp. This was probably the case in the Balmaclellan piece (not, as published, the warp S and weft Z) but comparative material from the British Isles was not then available.
42. Hald (1950), 141-4, tables A-E.
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Photo: Andrew Lawson

HV12

Plate XI. Harpley: general view of the excavation from the west.

The Excavation of a Round Barrow at Harpley

by Andrew Lawson

I. SUMMARY

The Early Bronze Age round barrow at Harpley, site 1005, (Ancient Monuments Schedule No. 160e), excavated by the Norfolk Archaeological Unit in 1973, was found to have a minimum diameter of 8.25 m. The mound had been almost totally destroyed by ploughing. As a result no primary burial was found, but a dispersed cremation can be postulated with the scattered sherds of a collared urn. The material of the mound may have been derived from irregular scoops on two sides of the barrow cut into the glacial sand, which caps the chalk on which the barrow stands. Two post holes were found. One, which may be contemporary with the mound's construction, contained pottery of a type similar to that found on the 'old ground surface', where three different types of pottery were represented. A C14 date of 3720 ± 90 b.p. was obtained from charcoal beneath the mound.

II. ACKNOWLEDGEMENTS

I would like to thank the Inspectorate of Ancient Monuments, Department of the Environment for the authorization to excavate this scheduled barrow. The excavation would not have been possible without the willing and eager consent of the landowner, the Marquis of Cholmondeley and the willing cooperation of the tenant, Weasenham Farms Ltd. I would like to extend my gratitude to all those who took part in the excavation; in the preparation of this report I was greatly assisted by: Mr. Don Darlow in permitting the publication of the flat-axe; Miss. E. B. Green, B. Sc., F. S. A., in constructively criticising the original typescript; Mr. A. K. G. Jones, B. Sc., in identifying the charcoals; Dr. Helen Keeley in arranging the pollen analysis at the Department of Environment Ancient Monuments Laboratory and the C14 analysis at the C14/Tritium Measurements Laboratory, Harwell; Dr. Calvin Wells, F. R. A. I., Ph. D., M. R. C. S., L. R. C. P. in identifying the bone fragments, and the States of Guernsey Ancient Monuments Committee in permitting the publication of abstracts from the Lukis notebooks.

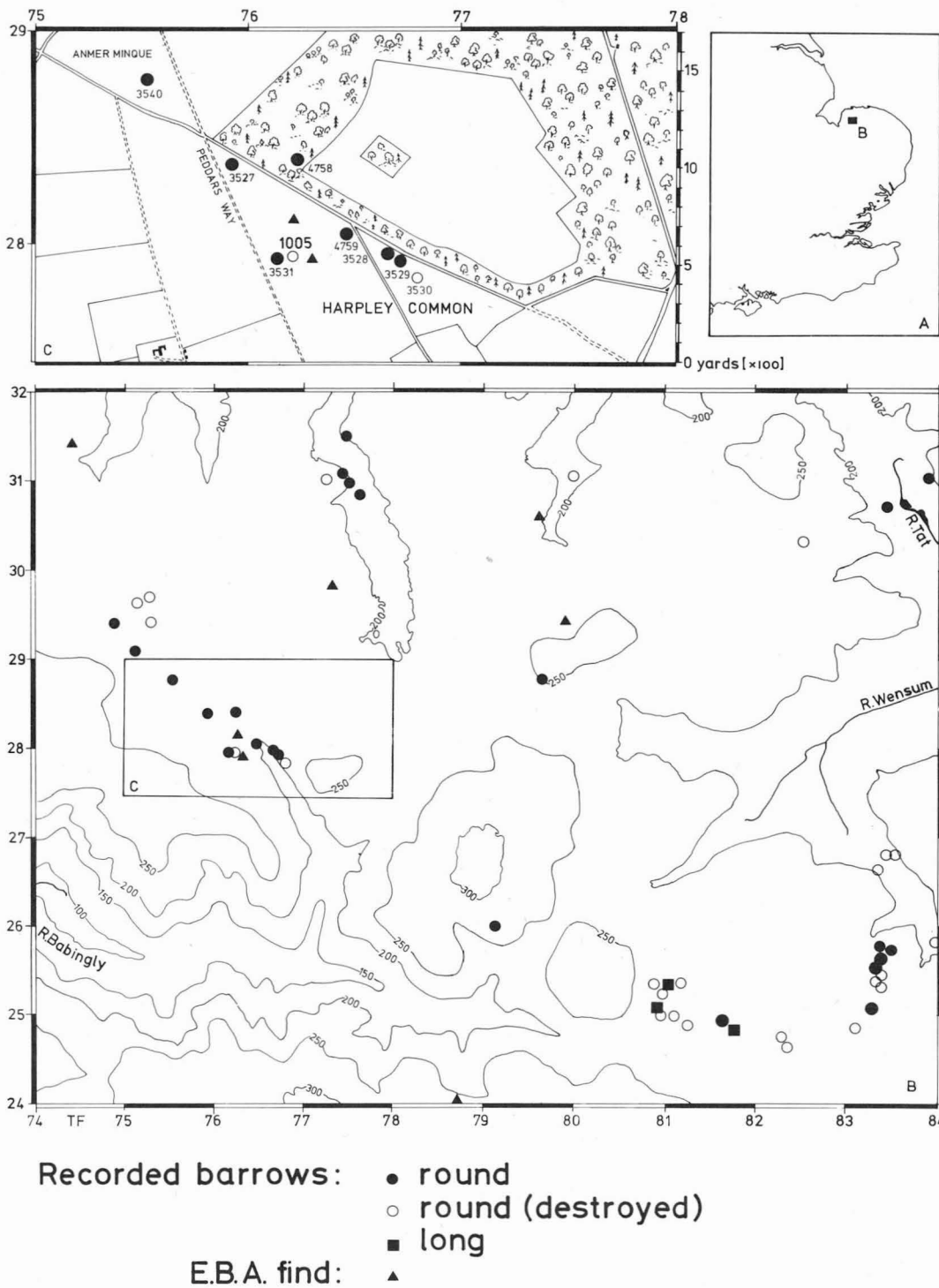


Fig. 13. Location of the Harpley barrow group and other neighbouring barrows.

III. INTRODUCTION

The Harpley barrow, site 1005, (TF 762279) is one of a group of eight round barrows which lie above the 200 ft. (61 m.) contour, on the chalk ridge which divides the headwaters of the rivers Wensum and Babingley in N. W. Norfolk. It is at the head of a dry valley, which probably once supported a tributary of the Babingley (Fig. 13). The barrow stands on an irregular patch of glacial sand which caps a small spur of the chalk, and is so situated to give the mound an impressive appearance to a viewer passing along the dry valley. The Peddars Way (Roman road) passes through the group, crossing over the chalk ridge.

The only early record of this barrow group is from one of the F. C. Lukis notebooks in the Guernsey Museum, and this refers to the opening of three barrows on 25 July 1843. The barrows were apparently brought to the attention of Lukis by a letter from Dr. Gurney on 3 June 1843. The first of these barrows examined by Lukis stands at the crossing of the Peddars Way and the modern Harpley-Anmer road. This is site 3527 (Ancient Monuments Schedule No. 160a; TF 759284). Lukis remarks on the flat summit of the mound. He cut a single trench 9 ft. wide through the mound from north west to south east.

To quote from the Lukis notcbook:

'After working about 18 inches several portions of jars were discovered. Before arriving at a depth of 3 feet indications of charcoal became perceptible, near the summit in particular. This increased until a layer of burnt wood and human bones were found. These lay in no particular order and appeared in a disturbed state. No pottery was with them. On the south part of the trench some loose flints were found near which a distinct layer of marl and burnt clay and sand was seen. At the depth of 6 feet from the summit another layer of burnt wood and bone was met with, but too much disturbed to lead to any decided observation. After passing through the mass of this barrow to the depth of 10 or 11 feet, the soil of the neighbouring heath became visible (? the old ground surface - A. J. L.) ... It was closed up again burying the remains of bones and charred wood in the centre at a depth of 8 feet.'

An attempt to reconstruct this section is shown in Fig. 14.

The second and third barrows examined, site 3528 (Ancient Monuments Schedule No. 160b; TF 766280) and site 3529 (Ancient Monuments Schedule No. 160c; TF 767279) respectively, lie to the east of the Harpley-Anmer road. Damage by a neighbouring gravel pit had exposed a mass of 'bones and burnt materials'.

'This barrow is formed of flints and hard gravel and from the difficulty of working it in a regular manner it was abandoned for a small low barrow near to it on the east side. Here the summit

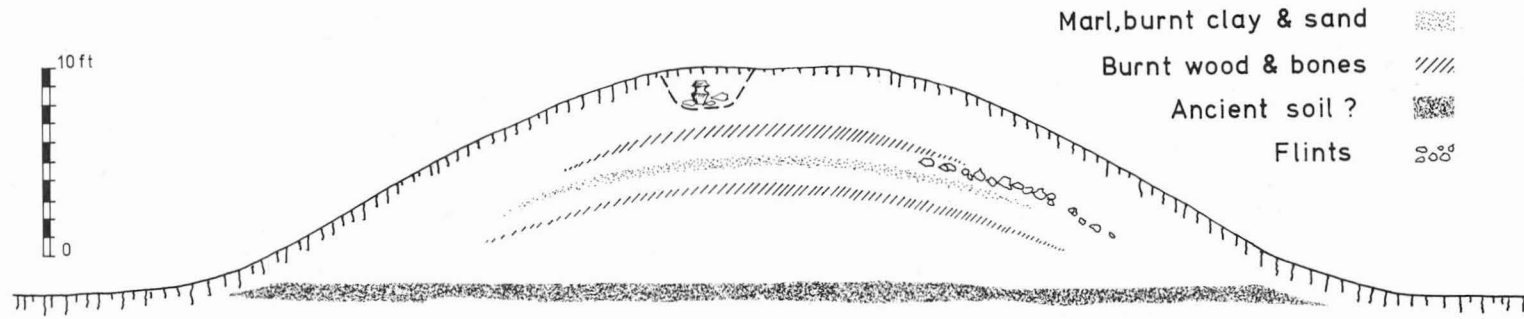


Fig. 14. Hypothetical reconstruction of site 3527.

appeared overlain with loose flint stone ... no vestige of any kind was found ... but at the lowest part a layer of strong stiff sand of a dark colour was met with. This resisted the spade in a remarkable manner. We closed it up and left the heath. '

IV. THE 1973 EXCAVATION

Five of the eight barrows in the north of Harpley parish are scheduled ancient monuments (No. 160). Of these five, four are upstanding, although their edges are being increasingly damaged by the plough. The fifth (160e) has been badly damaged by ploughing; so much so that following a survey of all scheduled barrows in the county, it was considered that this was the most threatened of the surviving scheduled mounds, which include many of the once best preserved examples in the county. Two of the unscheduled barrows are in a similar condition, while the remaining example is in the middle of a wood. As a result of the threat the Inspectorate of Ancient Monuments granted permission and the use of funds for excavation.

Before excavation began, early in October 1973, a full survey contoured at 10 cm. intervals was made to establish the probable limits of the barrow. This was necessary as the mound had been reduced to a height of less than half a metre since the 1930's, when regular cultivation first took place on the heath on which the barrows until that time had stood.

The contour survey (Fig. 15) revealed that the existing mound made little impression on the shape of the slight spur on which the barrow had been built. However, a rise of nearly 30 cm. could be detected. The highest point (79.69 m. O. D. L'pool, 1904) was taken as the centre of the excavation and a reference grid established around this point. The intention was to excavate the mound in four quadrants (Van Giffen's method). But to establish the dimensions of the mound and to locate any surrounding ditches, a 2 m. wide trench was dug from the centre westwards. This showed the mound to be much smaller than originally thought, but the trench was continued for 25 m. to see if a ditch occurred beyond a wide berm as with a disc-barrow. A similar 2.5 m. wide trench was dug eastwards. Two sherds of beaker and a barbed and tanged arrowhead were found in this trench at the base of the ploughsoil but outside the assumed limits of the barrow.

The only evidence for a ditch appeared in the sections of the west trench, at a distance of c. 4.5 m. from the centre of excavation where a feature with four layers (layers 2 to 5) was sectioned (Fig. 17). The four layers of loamy sand did not have the characteristics of deposits slowly accumulating in a natural silting process, but appeared rather disturbed with the admixture of some angular flints. The layers were sterile.

HARPLEY, NORFOLK.

160e

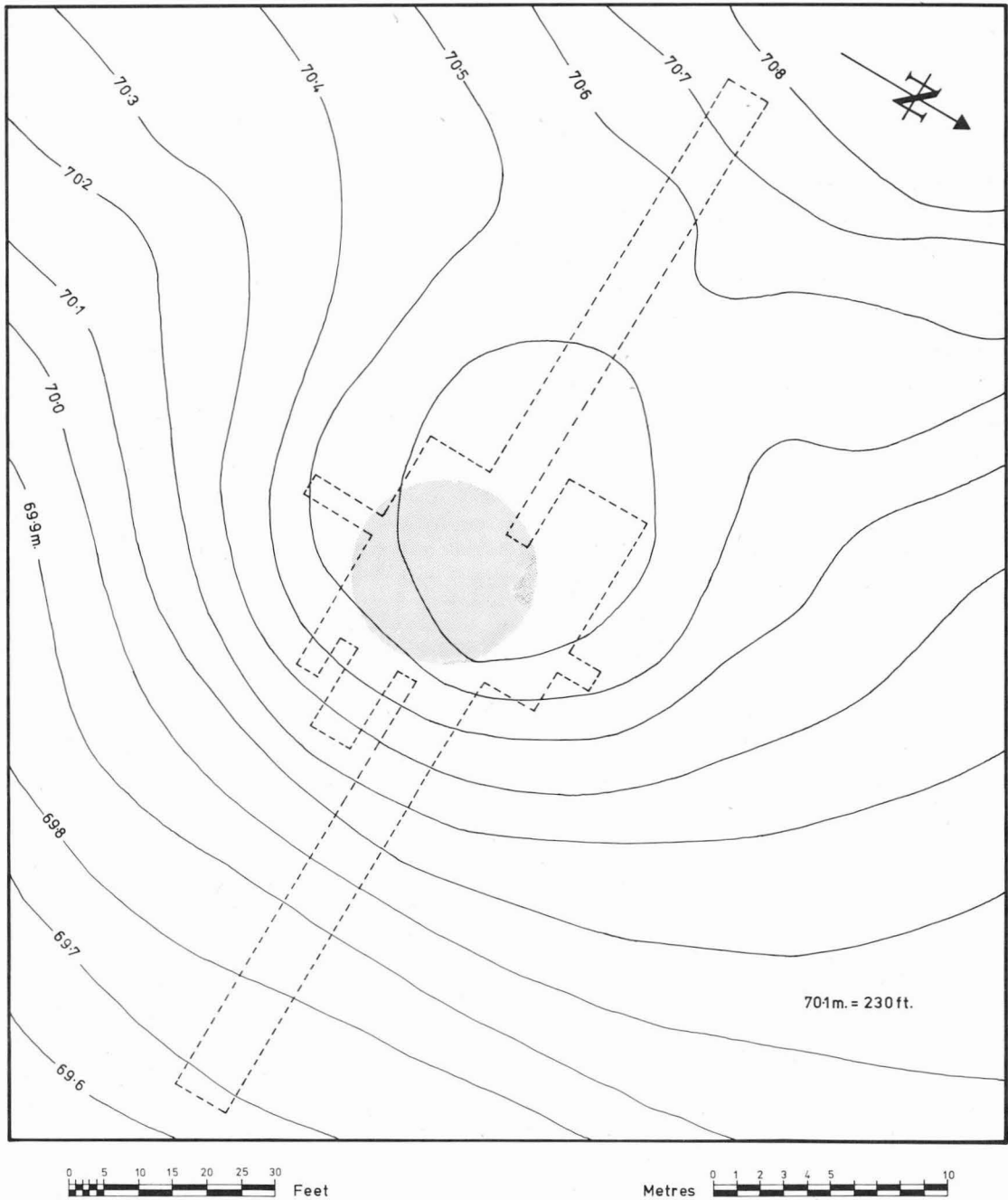


Fig. 15. Contour survey, limit of 1973 excavation and estimated area of barrow.

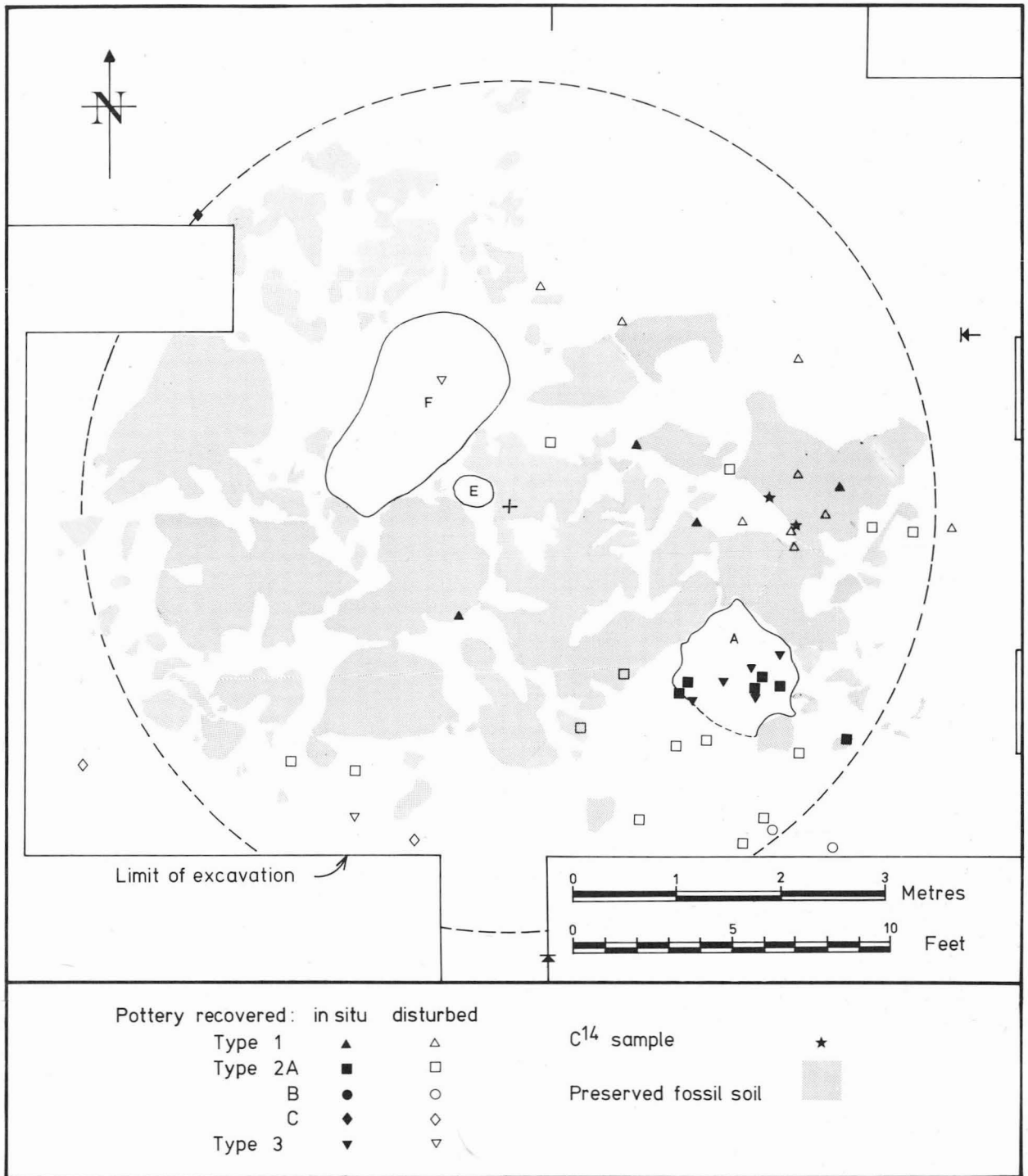


Fig. 16. Distribution of finds.

Further excavation showed this 'ditch' to have no regular configuration, and its extent was confused by later disturbance (as the section 1m. to the south, reversed in Fig. 17, shows). It was, however, confined to the strip of glacial loamy, medium sand on which the barrow stood, and did not cut into the chalk on the periphery of the barrow on the north and south sides where there was little or no sand. A disturbance on the east side, containing a flint blade and a piece of burnt clay at its base, removed any evidence for a ditch on that side. This disturbance had a mixed sandy fill, (layer 22). The quarry for the mound material may therefore have been an irregular scoop into the sand, probably on the west and east sides, but not on the north and south sides, where the sand did not occur.

The topsoil of the mound was removed by hand. This labour was rewarded by the finding of a number of sherds, flint flakes and tools, within and at the base of the ploughsoil. The removal of the ploughsoil showed patches of redeposited strong brown (Munsell 7.5YR 5/8) sand (layer 6), which were found to overlie a degraded acid brown soil (10YR 4/3) (Fig. 17), which was archaeologically sterile. The maximum thickness of these sandy patches was 5 cm., but was more usually 1-2 cm. This is all that remained of the barrow, the rest having been removed by the plough (plough furrows could still be seen crossing the subsoil at a depth of 35 cm. below the present ground level). Layer 6 contained several sherds of three different wares, representing a collared urn, and two other vessels, as well as thirty flint flakes none of which had secondary working. The mound had obviously been a sanctuary for burrowing animals, as local witnesses testified. Local game-keepers and rabbiters had also added to the destruction by digging after these animals.

The fill of these disturbances was usually a yellowish brown (10YR 4.5/5) loamy sand, indistinguishable from the soil beneath the ploughsoil and above the chalk or sand outside the assumed area of the barrow, i. e. layer 1; consequently this is also referred to as layer 1. Layer 1 contained the majority of the finds, both pottery (prehistoric, medieval and modern) and struck flints.

The extent of the mound material (layer 6) and underlying subsoil (layer 7), makes it possible to suggest a minimum diameter of 8.25 m. for the mound, with its centre nearly 2 m. south of the centre of excavation and in the south west quadrant (Fig. 16).

In some places the apparent super-positioning of turves was recorded (e. g. Fig. 17B) though it cannot be stated with confidence that there had been a turf stack core (and see next page for negative pollen evidence).

The base of layer 6 produced several pieces of charcoal, and two juxtaposed samples combined (nos. 95 and 96) were large enough to be submitted for C14 analysis, giving a result of 3720 \pm 90 years b. p. (1770 b. c.).

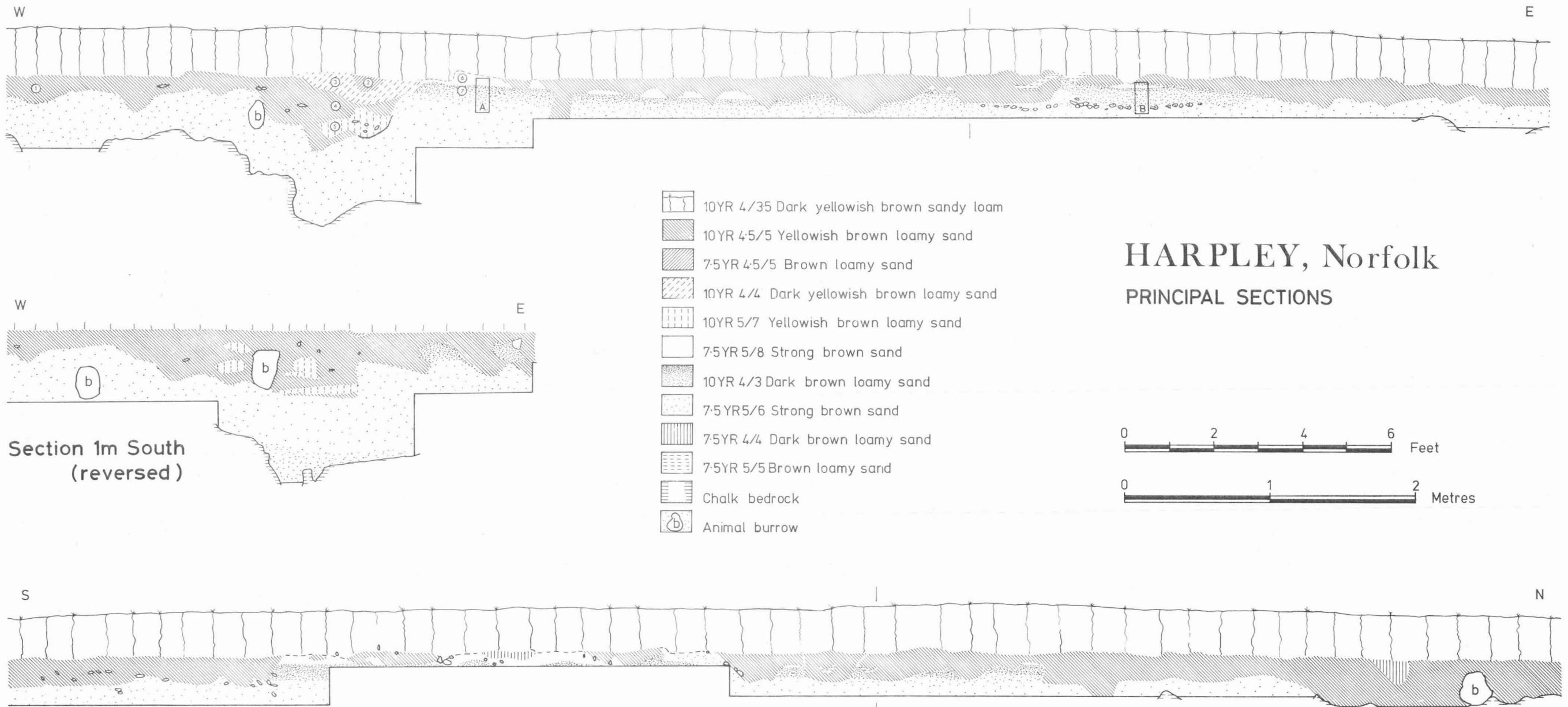


Fig. 17. Principal sections.

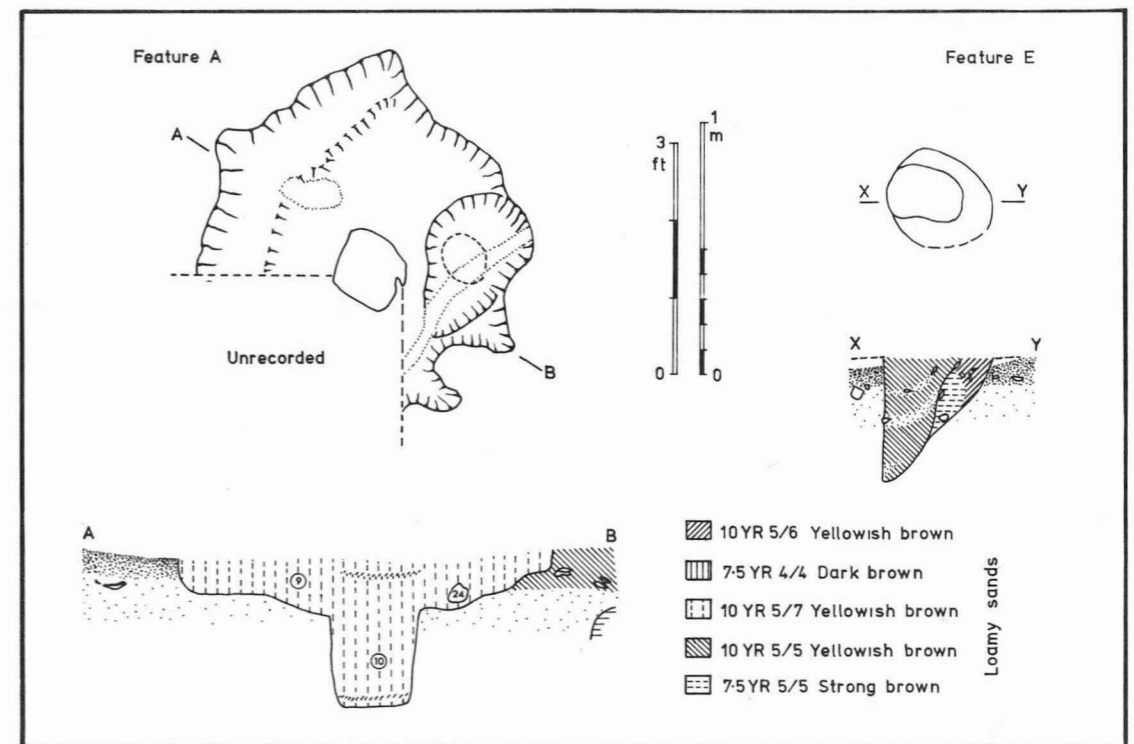


Fig. 18. The excavated features.

Before the baulks were removed towards the close of excavation, two soil samples, passing through the mound material (layer 6) and underlying old ground surface and subsoil (layer 7) were taken for pollen analysis (A and B, Fig. 17). The results (A. M. Lab. ref. 7310731-2) were unfortunately negative, the pollen fragments being too fragmentary and insufficient for counting. This result was surprising, and assuming pollen transport is slow through an acid soil profile¹, it can only be concluded that the plants were removed and the soil profile truncated before the charcoal fragments already mentioned were deposited. It is all the more puzzling that a few sections (including pollen sample B) cut through what appeared to be stacked turf. This may be misinterpretation by the observer.

V. THE EXCAVATED FEATURES

During the excavation a number of features were investigated but only three (A, E and F) were not burrows (Fig. 18).

Feature A was a large square post hole 58 cm. deep, set in a squarish pit 1.42 m. x c. 1.3 m. in the south east quadrant. The fill of both pit and post hole, (layers 9 and 10) was a yellowish brown (10YR 5/7) loamy sand, with occasional lenses of different loamy sands. Although the post-pit cuts the ancient soil it is impossible to say whether or not the post hole was contemporary with the construction of the barrow as no mound material was preserved in this area. However, the Bronze Age pottery of the post pit is of similar fabric to that found on the old ground surface (viz. types 2A and 3 below, p. 54 and 56 respectively), and consequently could be contemporary. The pit also contained three small flint flakes.

The east side of the feature was disturbed by a burrow (24) which introduced a rabbit tibia, and confused what may have been a second, smaller post hole, only 4 cm. deep, within the same pit. This disturbance also contained a small flint flake, two large flakes and a blade.

Feature E was an oval post hole (29 x 21 cm.) set in a rounded pit (40 x 40 cm.). The post pipe narrowed to a point at a depth of 50 cm. The fill of the post pipe was yellowish brown (10YR 5/5) loamy sand, interrupted by lenses of lighter strong brown (7.5YR 5/8) sand, while the post pit contained strong brown (10YR 5/6) loamy sands mixed with small flints.

This feature is situated very close to the assumed centre of the mound, but is not, as originally thought, a marking out post, as it post-dates the mound, cutting the mound material. There were no associated artefacts.

Feature F was a modern, rectangular pit (2.05 x 1.25 m., 1.06 m. deep), in the south west quadrant and extending below the west baulk, containing two cartridges and a rabbit snare.

The only evidence for funerary deposits found was three small fragments

of burnt bone (nos. 14, 32, 79). One, from the base of layer 6, may have come from a cremation now dispersed by ploughing, or which had been scattered before construction of the mound, as layer 6, apparently undisturbed, also contained fragments of collared urn. Inhumed bone would not have survived due to the acidity of the soil.

VI. THE FINDS

POTTERY (Fig. 19)

In the early stages of excavation the provenance of pottery in the topsoil was not accurately recorded, but as it became more apparent that many sherds had been incorporated into this layer all subsequent find-spots were triangulated. Consequently, the first seventeen prehistoric sherds and four medieval sherds found have neither small-find numbers nor precise locations².

Prehistoric Pottery

This pottery, excluding beakers, can be divided by macroscopic inspection into three wares.

Types 1 and 2 are of the same fabric, with a medium quartz-sand filler. The sherds are divided into the two types on general appearance, colour and firing.

Type 1; Twenty six sherds, soft in texture and buff to grey in colour. In section (1-1.5 cm. thick) the outer half is light in colour, whilst the inner half is black with the interior surface again being light. One sherd, No. 46 (Fig. 19, 1), has a simple rounded rim, but is too small for the size of vessel to be estimated. No sherd is decorated. All are less than 2.5 cm. (maximum dimension), except No. 60 which is 9.0 cm. long and forms part of a bowl.

(Small-find Nos: Topsoil: 21, 39, 46 and nine sherds unprovenanced;
Base of topsoil: 4, 8; Layer 1: 13, 38, 42, 45, 48, 53b, 56, 87, 93;
Layer 6: 60, 84, 91)

Type 2; Sherds harder than Type 1 and orange-brown in colour. The cross-section (c. 1 cm. thick) shows that only c. 1.5 mm. at the outer surface is light in colour, the rest being black. The sherds can be divided into:

- A - Undecorated (twenty two sherds)
- B - Decorated with finger impressions (two sherds)
- C - Decorated with impressed twisted cord (three sherds)

All examples of Type 2A are undiagnostic body sherds, but No. 17 (Fig. 19, 2) comes from a strongly curved shoulder, and No. 41 (Fig. 19, 9) from Feature A, which is a flat, slightly out-turned rim. All sherds are less than 3.5 cm. maximum dimension, except for No. 17 which is 5.5 cm. long.

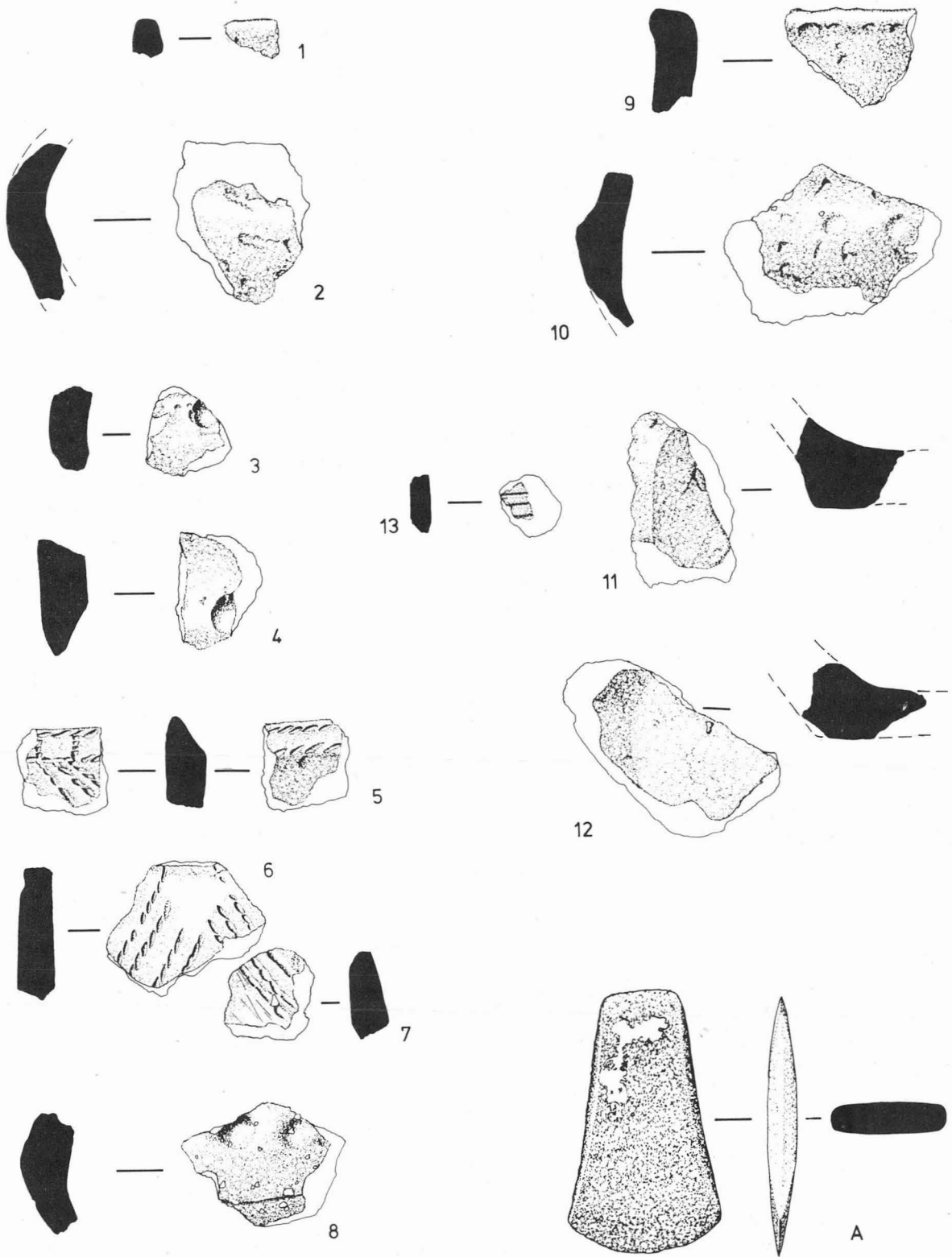


Fig. 19. Pottery from the barrow: 1, type 1; 2, type 2A; 3-4, type 2B; 5-7, type 2C; 8, type 3. Pottery from feature A: 9, type 2A; 10-12, type 3. Other pottery: 13, beaker.

19A. Bronze flat axe.

Scale $\frac{1}{2}$

(Small-find Nos: Topsoil: 17, 19, 20, 31 and six unprovenanced sherds; Base of topsoil: 43, 76, 77; Layer 1: 24, 25, 47, 53a, 75, 88; Layer 6: 64, 67 and one unprovenanced; Feature A, Layer 9: 29, 30a, 37, 41, 52, 58 and one unprovenanced)

In Type 2B both sherds are body sherds. No. 62 (Fig. 19, 4) has a definite impression, but No. 35 (Fig. 19, 3) is less certain. Both sherds are from the topsoil.

Type 2C probably represents a Collared Urn. Sherd No. 2 (Fig. 19, 5) is a pointed rim with internal bevel, decorated with two horizontal cord impressions. Externally the decoration has two horizontal impressions of twisted cord near the rim, with intermittent, short, vertical impressions of whipped cord, and beneath diagonal impressed lines of twisted cord. This sherd comes from the base of the ploughsoil. Sherds 11 and 51 (Fig. 19, 7 and 19, 6 respectively), from the collar carry groups of parallel impressions, diagonally opposed. The two sherds may join, but were found widely separated, with No. 11 coming from layer 1, while 51 comes from layer 6.

Type 3; Nine badly fired sherds with a filler of poorly sorted sand including large (up to 3 mm.) grains. Only the surfaces of the sherds are reddish-brown, while the remainder is black. No. 1 (maximum dimension 5.3 cm.) is from the shoulder of a vessel and carries poor finger impressions (Fig. 19, 8). This sherd is from the base of the topsoil, while No. 18 (maximum dimension 4.0 cm.), comes from the topsoil, and No. 12 (maximum dimension 2.5 cm.) comes from layer 1. From Feature A come six larger sherds (2 - 8 cm; Nos. 23, 30, 40, 44, 57, 61). No. 44 (Fig. 19, 10) is from the shoulder of a carinated bowl, perhaps with impressed decoration on the angle, but damage makes this uncertain. Nos. 40 and 57 (Fig. 19, 12 and 19, 11 respectively) are thick (up to 2 cm.) base fragments. The form of the base cannot be reconstructed, as these two sherds are markedly different.

From diagnostic fragments at least three vessels can be distinguished; a. a collared urn (Type 2C)
 b. a vessel with shoulder decoration of finger impressions (Type 2B)
 c. similar to b, but with coarser fabric (Type 3)

The undecorated fragments from Types 1 and 2A may all belong to vessel b, especially as the colour and firing of prehistoric pottery is notoriously variable in a single vessel. However, the distribution of finds is virtually exclusive, and on these grounds it would be better to associate Type 2 and 3 together. It is possible all the sherds of Type 2A may belong to vessel b. Nine sherds were too small to classify (Small-find Nos. 5, 7, 27, 28, 48, 50, 72, 74, 89).

Beaker

Two sherds, nos. 5 and 7, were found. Both are small (less than

The Finds

than 2 cm.) and of a uniform reddish-orange fabric with grit filler. The surfaces are smoothed and No. 5 (Fig. 19, 13) is decorated with three parallel impressed grooves.

Early Medieval Pottery

Four sherds of Grimston Thetford type ware were found in the topsoil, and another two early medieval unglazed sherds (nos. 10 and 22) came from layer 1.

BURNT CLAY

Four small (less than 1 cm.) pieces were found but none in an undisturbed position.

FLINT

The precise provenance of each flint was not recorded, unless the find had been secondarily worked and was in an undisturbed layer. The industry was struck from poorish quality grey flint, often containing fossiliferous inclusions. Such flint is readily to hand and clearly the knappers were not highly selective, nor did they travel far for better raw material.

One hundred and fifty nine flint flakes and tools were found, which can be divided as follows in Tables 1a and 1b.

Quadrants:	SW	SE	NE	NW	N baulk	E baulk	TOTAL
Flakes with cortex	6	2	5	-	1	1	15
Flakes without cortex	16	11	23	3	3	2	58
Pointed flake	1 (Fig. 20, 1)	-	-	-	-	-	1
Blades	-	1 (Fig. 20, 2)	3 (Fig. 20, 3-5)	-	-	-	5
Blade segments	-	-	-	2	-	1	3
Denticulated blade	-	-	2 (Fig. 20, 7-8)	-	-	-	2
Hollow scraper	-	-	1 (Fig. 20, 7)	-	-	-	1
Arrowhead (B & T)	-	-	1 (Fig. 20, 9)	-	-	-	1
TOTAL	23	14	35	5	4	5	86

TABLE 1a. THE DISTRIBUTION OF FLINTS IN TOPSOIL

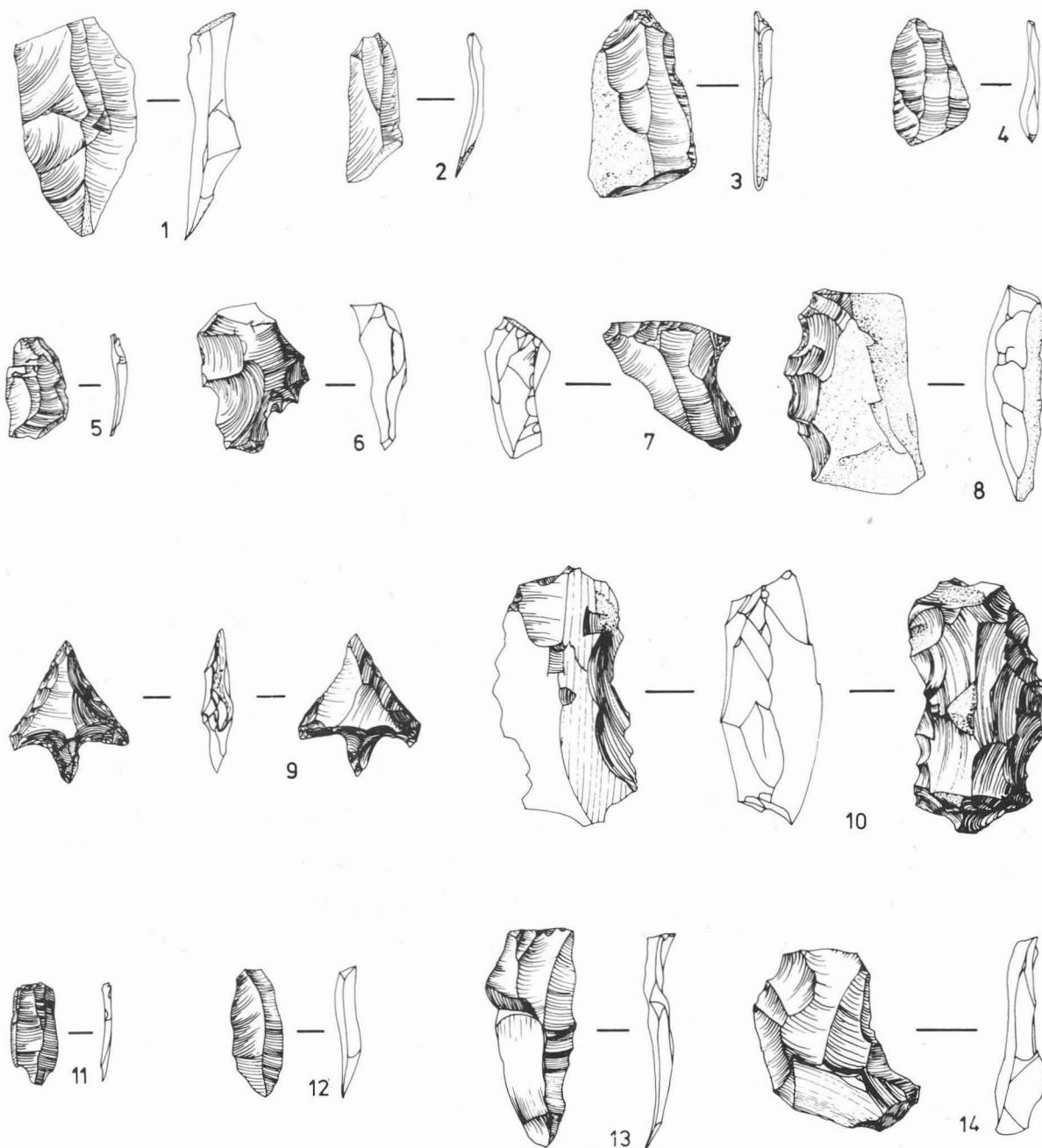


Fig. 20. The flint industry: 1-8, topsoil; 9 (S. F. No. 3), base of topsoil; 10-12, layer 1; 13 (S. F. No. 22), layer 22; 14, feature A. Scale $\frac{1}{2}$.

The Finds

Quadrants:	SW	SE	NE	NW	N baulk	E baulk	TOTAL
<u>Layer 1</u>							
Flakes with cortex	7	1	2	-	-	-	10
Flakes without cortex	10	7	6	-	-	-	23
Blades	2 (Fig. 20, 11-12)	-	-	-	-	-	2
Core	-	-	1 (Fig. 20, 10)	-	-	-	1
TOTAL	19	8	9	-	-	-	36
<u>Layer 6</u>							
Flakes with cortex	-	1	-	-	-	-	1
Flakes without cortex	2	27	-	-	-	-	29
TOTAL	2	28	-	-	-	-	30

Layer 22 (the scoop on the east side of the mound), one blade (Fig. 20, 13).

Feature A: Layers 9 and 10, three small flakes.

Layer 24, one small flake and one large flake (Fig. 20, 14) and one blade.

TABLE 1b. THE DISTRIBUTION OF FLINTS IN STRATIFIED CONTEXTS

The large number of flakes from the ploughsoil may be misleading as some of these could have been struck by the plough or other agricultural machinery, such as a rotavator, producing a flake indistinguishable from an artefact.

CREMATED BONE

Two fragments (nos. 14 and 32) were found in layer 1, whilst no. 79, the largest (2.8 x 1.5 cm.) was found at the base of the mound material, layer 6.

Dr. Calvin Wells writes:

No. 14. 'This has the texture and appearance of human bone. It cannot be precisely located but is probably a splinter from the shaft of a major long bone'.

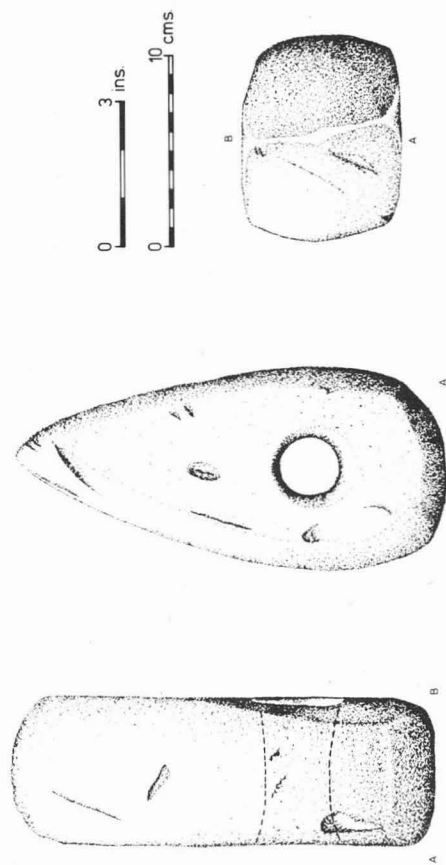


Fig. 21. Axe-hammer found near the barrow. Scale $\frac{1}{4}$.

No. 32 'It is extremely difficult to decide about this fragment. On balance it is probably not human, but great uncertainty remains here'.

No. 79 'This is a fragment of human bone. It is probably from the popliteal region of a femur'.

CHARCOAL

Eighteen fragments were collected; all were very small, except nos. 95 and 6 which were submitted for C14 analysis, but the following identifications were made:

Hazel (Coryllus avellana) nos. 43, 63, 65, 73, 78, 81, ?92;

Oak (Quercus sp) nos. 68, 69, 80, 83;

Birch (Betula sp) nos. 82, 86.

All are species associated with sandy soils.

Of these, all were from layer 6, with the exception of nos. 43 (topsoil), and 73, 86 and 92 (layer 1).

MODERN FINDS

These consisted of four shotgun cartridges, two iron boxes, a rabbit snare, four rabbit bones, one ploughshare, a whetstone and fragments of bottle glass and tile. Such finds from the topsoil and layer 1 indicate the fate of the barrow.

OTHER FINDS FROM THE AREA

Apart from the finds from the excavation, two other objects must be taken into consideration. The first is an axe-hammer of Ashbee's³ Type I (Fig. 21) brought up by ploughing 'more than thirty years ago' in the area of the barrow, though the precise position is not known. The second is a bronze thick-butted flat axe (Fig. 19. A). Such axes are said to be of Irish origin⁴, though the Harpley examples do not have the flared cutting edge of these⁵. The axe-hammer remains unsectioned. The flat axe has not been analysed, but some interesting measurements were taken from this before it was returned to its owner. The weight was 187.72 gm., and volume 21.73 ml., giving a specific gravity of 8.60. The specific gravity of copper is 8.95, and that of tin 7.29. If we assume the axe to be a binary alloy it would contain 81.3% copper and 18.7% tin, an unusually high proportion of tin (of hypereutectic proportions).

Both of these finds may have been removed at some stage from the barrow, or may just indicate other early Bronze Age activity in the immediate vicinity.

VII. CONCLUDING REMARKS

Perhaps the most useful result from this excavation is the C14 date of 3720 ± 90 years b. p. (1770 b. c.) (using the 5568 ± 30 years half-life) ⁶. It was hoped that this analysis would be in a more useful context, associated with barrow structure, burial rite, and environmental background which are found to be lacking. However, the date gives us a terminus post quem for the barrow construction which incorporates, amongst other vessels, a Collared Urn, perhaps broken and scattered with a cremation. The origin of Collared Urns is clearly earlier than previously thought (Longworth suggests a terminus post quem of 3450 ± 100 b. p.) ⁷, and the contemporaneity of late Neolithic, Beaker, Food-Vessel and Urn Traditions is becoming more apparent with the increase in the number of available C14 dates. 1770 b. c. is the same date as that obtained from Brightwell Heath, Ipswich ⁸, and older than that from Eriswell, Suffolk (3470 ± 155 b. p.; 1520 b. c.) ⁹, and other dates for associations with Collared Urns.

The excavation of Harpley 1005 is only the second modern systematic scientific investigation of a round barrow in Norfolk, the first being that by F. F. Peterson at Weasenham in 1971 ¹⁰. Both excavations produced similar results, but it is dangerous to generalize on the construction of all Norfolk barrows from two investigations. Early accounts of explorations (as above) show that barrows in this area have differing and perhaps culturally significant structures. Only a programme of intensive study would clarify such problems. Recent excavations in Suffolk at Martlesham Heath ¹¹, have shown a Beaker barrow to have a similar structure to that of Harpley, and here also no trace of burial was found.

The result of this excavation shows the totality of destruction of the mound. The evidence was minimal although the mound was still visible as a surface feature. The barrow was obviously prone to destruction due to its sandy structure, and an immediate target for rabbits and their pursuers. Fig. 13 indicates the number of barrows recorded in this area. Many are now destroyed, or are being destroyed, despite their probably more solid structure. Preservation, or ultimately rescue excavation, should be carried out before these monuments deteriorate to the state of Harpley 1005. No settlements of this period are known in the vicinity, and we cannot afford to lose the evidence of this aspect of Bronze Age society.

December 1974.

REFERENCES

1. Dimbleby (1969), 172.
2. Throughout this report the original excavation small find numbers for pottery, bone and charcoal have been retained.
All finds from the excavation are on permanent loan to the Norfolk Museums Service (Accession No. L.1975.3), and stored at Norwich Castle Museum.
3. Ashbee (1960), 107.
4. Britton (1963).
5. Harbison (1969), fig. 6, 85.
6. HAR - 486.
7. Longworth (1961), 290.
8. NPL - 133, Radiocarbon (1972), 184.
9. BM - 315, Radiocarbon (1969), 285.
10. Unpublished.
11. Martin (1975).

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Photo: Andrew Lawson

TF9438/H/AAU14

Plate XII. Wighton: aerial photograph of the enclosure from the west showing soil marks of the eroded bank.

Excavations at Whey Curd Farm, Wighton

by Andrew Lawson

I. SUMMARY

A D-shaped enclosure located in 1974 on Whey Curd Farm, Wighton, site 1113, was excavated in the same year by the Norfolk Archaeological Unit. This excavation, to assess the state of preservation of the site, showed that the encircling bank had been almost totally destroyed, and the exterior ditch fully silted. Several phases of activity were represented. All were probably of Roman or post-Roman date. The overlying bank was not securely dated but C14 dates of 1900 ± 120 b.p. (a. d. 50) and 1710 ± 70 b.p. (a. d. 240) for earlier phases suggest a late- or sub-Roman date for its construction. The purpose and date of the enclosure and extent of settlement both within and around it can only be demonstrated by further excavation.

II. ACKNOWLEDGEMENTS

The excavation was made possible by the permission of Mr. Edward Coke, the landowner, who has also generously presented all the finds to the Norfolk Museums Service on permanent loan. For help in obtaining this permission I would like to thank Mr. I. Whitworth and his staff of the Holkham Estates Office. All possible co-operation and help was received from Mr. T. G. Green, the tenant, and his family, for which I am deeply grateful.

My sincerest thanks go to all those, too numerous to name, who helped on the site and in the preparation of this report, but especially Mr. Peter Donaldson, the staff of the Archaeology Department at Norwich Castle Museum, and my colleagues of the Norfolk Archaeological Unit. The C14 samples were analysed with the help of Dr. Helen Keeley of the Ancient Monuments Laboratory; the soil flotation was conducted by Mr. Andrew Jones; the human remains were examined by Dr. Calvin Wells, and the library research assisted by Dr. W. O. Hassall.

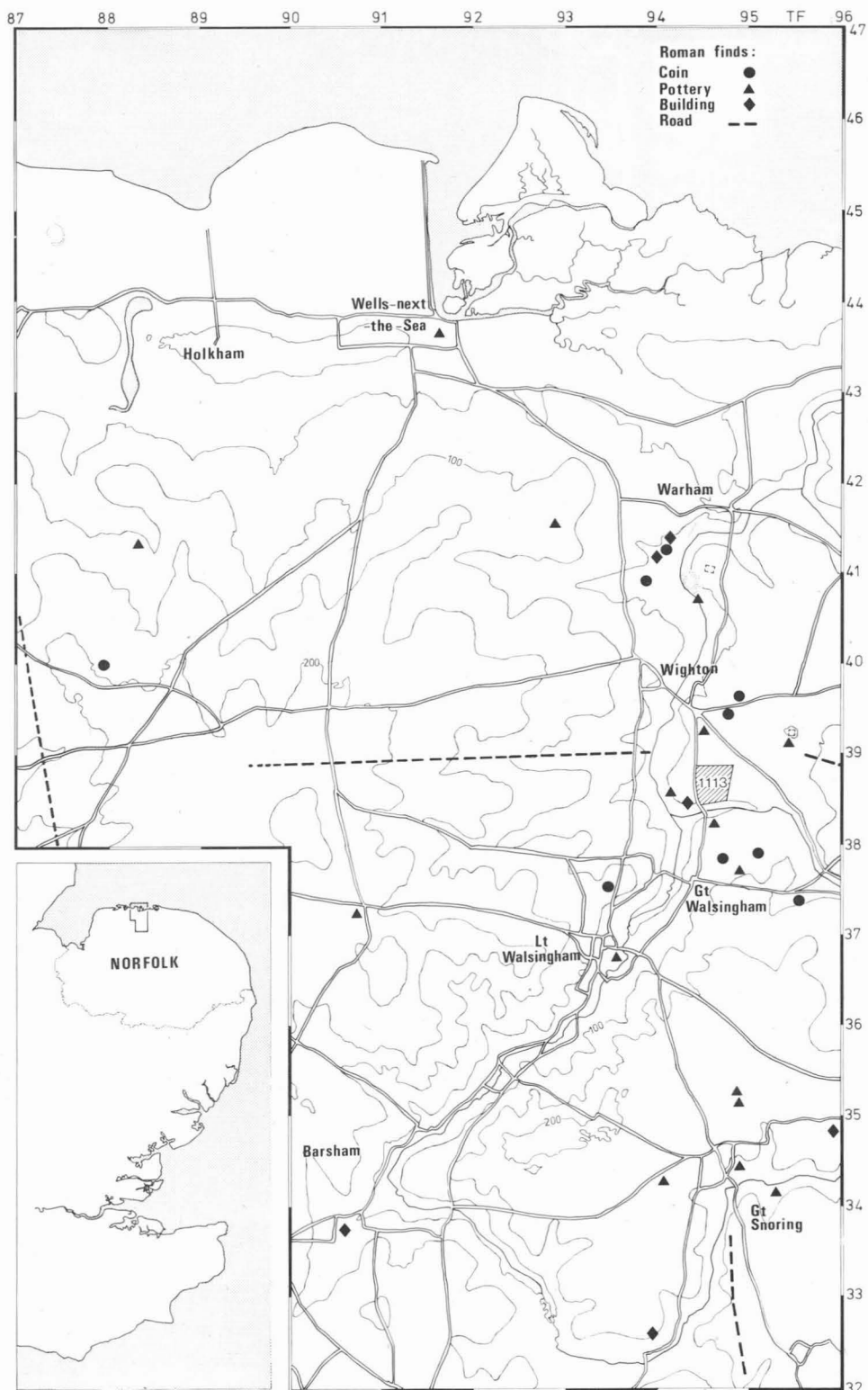


Fig. 22. Distribution of Roman finds in the Stiffkey valley.

III. INTRODUCTION

The enclosure was located from the air on 12th February 1974 by Christopher Green of the Norfolk Archaeological Unit ¹. Surface scatters of Roman material have been collected for many years yet no-one had previously reported the low bank, which shows as a light soil-mark on aerial photographs (Plate XII) and can be seen on the ground in the northern of the two fields in which the 8.75 hectare (20.11 acre) enclosure lies. In the southern field the bank is less distinct, but the external ditch shows most clearly as a crop-mark (Plate XIII) ². The aerial photographs also indicate a break, probably an entrance, in the ditch circuit in the north-west corner of the enclosure.

The site (TF 944384, Fig. 22) lies at the southern end of Wighton parish, North Norfolk, in the Stiffkey valley. It is on the southern slope of a low chalk hill above a small stream, which joins the Stiffkey south-west of the site and which was formerly flanked by water meadows. The site belongs to Whey Curd Farm, part of the Holkham Estate which enclosed the farm in the early nineteenth century. No map of the parish, even the earliest one dated 1736 ³, indicates the banks and ditches. Neither does an early road respect the site; in the eighteenth century one crossed the site from north-east to south-west, although the road which runs northwards from Great Walsingham does even now swing round the south-west corner. However, the site is described in Blomefield's topographical description of Norfolk (1775) as a 'fortification ... (where) several Roman coins have been dug up' ⁴. At this time the defences were presumably still up-standing and there was a local knowledge of the site's existence.

By 1737 a windmill stood in the north-west corner of the site. The northern of the two fields which the site now occupies is still called Mill Close, while the southern field is Balland Close. This mill is shown on Faden's map of Norfolk (1797), but had been demolished by the time of Bryant's map of 1825.

The siting of this mill may explain why the bank is indistinct in the north-west corner, but this is due in part to the digging of a 5ft. diameter well close by. On the aerial photograph (Plate XII) two dark lines cut the enclosure ditch approaching the mill site from the south and the south-east. These may be connected with the mill in some way, although later aerial photographs (Plate XIII) indicate that the entrance to the enclosure may also be in this north-west corner.

The nature of the oval site led to its initial interpretation as an Iron Age fort, especially as coarse 'prehistoric' pottery accompanied Roman pottery in the surface scatters collected by a dozen field-workers since 1944. Within the Stiffkey valley is the well preserved bivallate fort at Warham (TF 942408) and two rectangular enclosures at Warham Burrows (TF 946412) and Copy's Green, Wighton (TF 955393). Warham has been excavated by H. St. George Gray ⁵ and R. Rainbird Clarke and shown to be dated probably to the first half of the first century A. D. Clarke also conducted excavations at the other two

WIGHTON, NORFOLK: site 1113

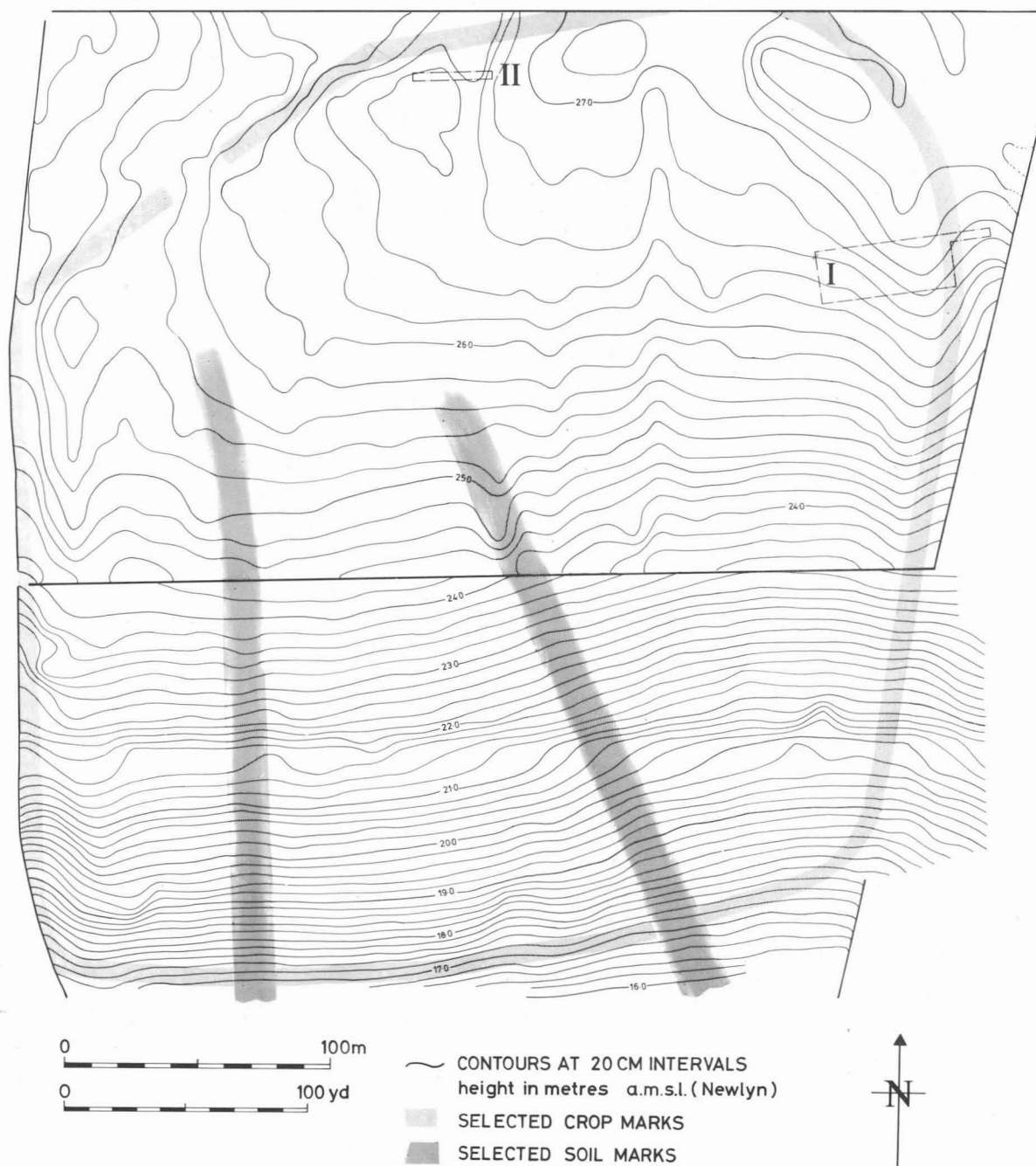


Fig. 23. Contour survey and selected crop marks and soil marks.

sites and reinterpretation indicates a second to third century B. C. date for Warham Burrows and a late first century B. C. to early first century A. D. date for Copy's Green ⁶. Throughout the Stiffkey valley is a concentration of Roman surface finds, while another fort, probably of Iron Age date, is to be found west of the estuary of the Stiffkey at Holkham ⁷ (TF 873446, Fig. 22).

The contour survey of site 1113 with readings taken at 10 m. intervals displays a number of anomalies (Fig. 23). The bank and ditch can be traced (more easily in the northern field), while the line of the southern bank had to be obtained by plotting the soil marks. This, together with a study of aerial photographs shows the west side to be straight for some 220 m. before turning through 60° to the north-east into another straight section 150 m. long with a break, probably an entrance, midway. From then on the bank and ditch form a continuous curve, though again rather straight on the east side, rejoining the west side in the south-west corner at almost a right-angle. The enclosure is thus somewhat D-shaped.

The contour survey also shows a linear feature in the southern field running due east-west, and in the northern field several slight undulations running north-south. The early estate maps record no division of land here. The dark lines seen on the aerial photographs crossing the site from the south and south-east do not register in the survey. Due to the destroyed nature of the bank, the constant threat from ploughing and the lack of knowledge of the Iron Age in Norfolk, excavation was undertaken by the Norfolk Archaeological Unit.

IV. THE 1974 EXCAVATION

In the first season during August and September 1974 two cuttings were made in the northern field to assess the state of preservation of the site and the need for a large scale excavation. The northern field was chosen as the bank here was better preserved and sub-soiling had only been carried out once. The southern field had been sub-soiled more frequently and previously gyrotyned, resulting in the complete destruction of the bank.

TRENCH I (Fig. 24)

A cutting 50 m. x 20 m. was placed in the north-east corner of the enclosure, with the northern section (extended by a further 15 m. across the ditch) cutting the highest part of the bank. Excavation revealed several phases: a small bank and ditch, a line of inhumations, a cremation and two hearths all sealed beneath the main bank which had been constructed of material derived from an outer ditch.

The small bank and ditch

The ditch (11) (1.95 - 2.80 m. wide; 2.0 m. max. depth) ran obliquely north-south across the trench, lying almost parallel to the front of the overlying main bank and sealed by it. The north end of the small ditch was cut by

WIGHTON, NORFOLK TRENCH I

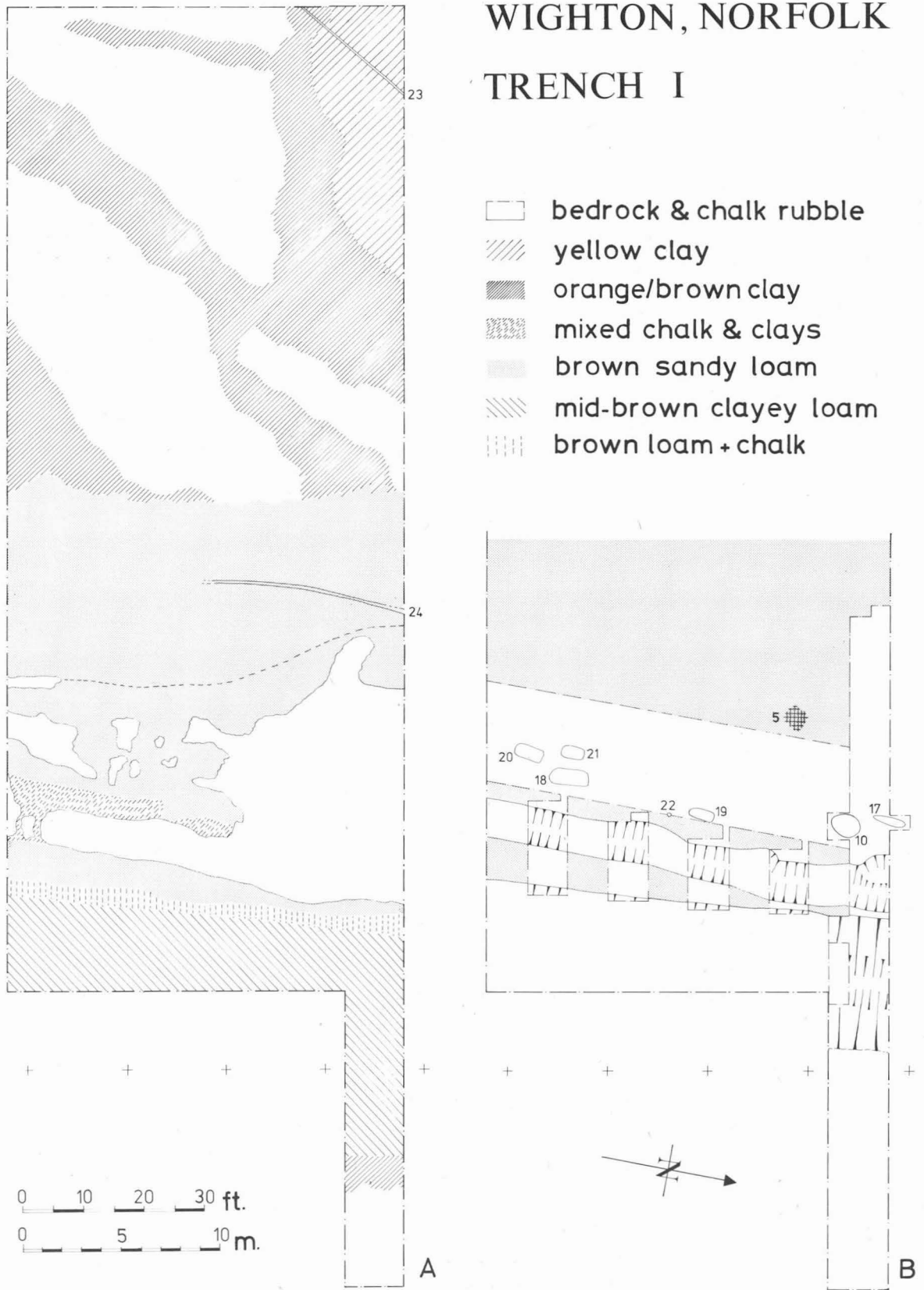
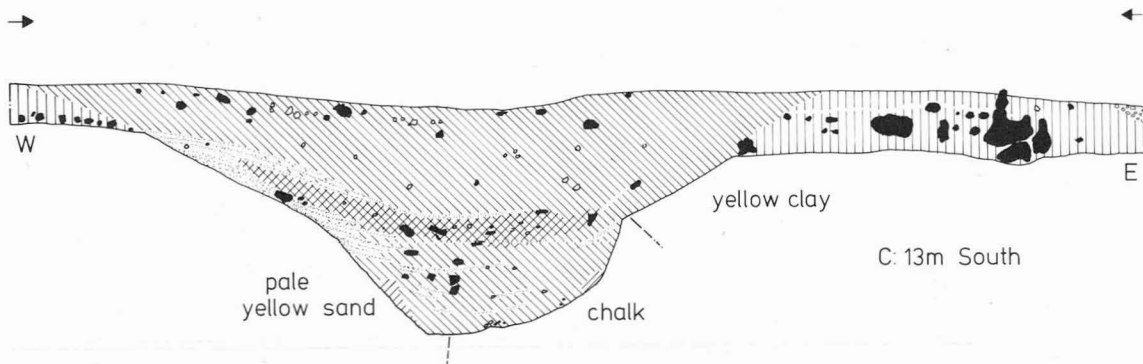
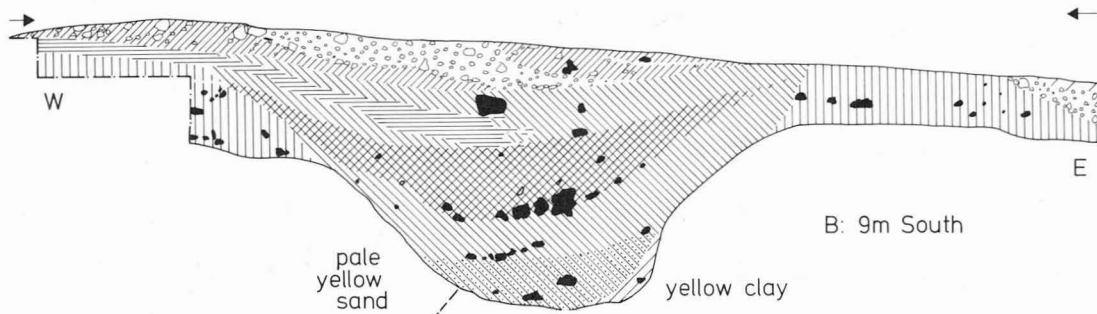
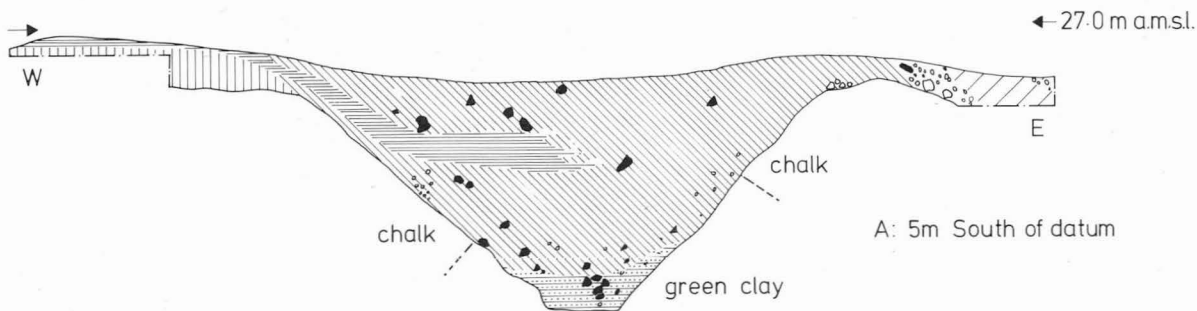


Fig. 24. Plans of Trench I.



-  ginger-brown sandy loam
-  mottled green/orange clay
-  yellow-brown sandy clay
-  green clay + brown sand
-  grey-brown chalky loam
-  brown sandy clay
-  humic yellow-brown sand
-  pale yellow-brown sand
-  pale yellow sand
-  yellow clay
-  flint
-  chalk

0 1m

0 3ft

WIGHTON, NORFOLK TRENCH I

SECTIONS ACROSS EARLY DITCH

Fig. 25. Sections of ditch 11.

the inner weathered lip of the main ditch. Had the ditch been cut on a berm between the main bank and ditch, the berm would have had to have been at least 6 m. wide. However, the main bank material showed no break that would suggest a revetment, and consequently the material sealing the small ditch is probably bank material proper and not later collapse.

The fill of the ditch (Fig. 25) was arbitrarily divided into three layers (11a, 12 and 13), though three distinct layers were not always visible. In the sections 5 m. and 9 m. south of the datum and base of 11a was marked by a layer of green and orange clay, more prominent near the inner western lip of the ditch. This clay represents slip from a bank of similar material (9a) on the west side of the ditch. This bank could only be recognised beneath the main bank where it consisted of these clays, as elsewhere the quarry ditch cut chalk, which appeared the same as that of the overlying main bank.

Throughout the section 13 m. south of datum many fine lenses of sand indicate a slow natural silting of this ditch. The profile of the ditch was variable though there was insufficient evidence to suggest recutting.

Layer 11a contained twelve sherds of Roman coarse ware, bone, shell and three iron fragments. Layer 12 contained five prehistoric sherds, twenty Roman coarse ware sherds, bone, shell and an iron nail. Layer 13, the primary silt, contained eighteen sherds of Roman coarse ware (twelve from one vessel), bone, shell and fragments of a lava quern. The reconstructable vessel is a late first century A. D. type. A date of 1900 ± 12 b. p. (a. d. 50) resulted from the C14 analysis of ox bones from layer 12 ⁸.

The inhumations (Fig. 26)

Five graves (17 - 21) ⁹ were sealed by the ancient soil beneath the bank (Fig. 28). Half of grave 17 lay under the northern baulk, which had to be removed to expose the full length of this extended inhumation. Graves 18 - 21 contained contracted inhumations. No grave contained grave-goods, nor shared a common rite, although the head of each skeleton was placed to the north, thus positioning the graves parallel to the early ditch (11). One contracted skeleton (18) lay on its left side, one (19) on its back, and two (20 and 21) on their right sides. C14 analysis of the limb bones of the skeleton from grave 19 gave a date of a. d. 240 ± 70 ¹⁰.

On stratigraphical grounds the relative dating of the small ditch and the graves is speculative. It seems possible that the graves, assuming them all to be roughly contemporary, could pre-date the ditch. The graves were sealed by a soil indistinguishable from that which underlay the small bank. This bank material (9a) did not spread far enough to cover or to be cut by the graves. In the principal section (Fig. 25) the thin soil (6) covering grave 17 was cut by the ditch and did not continue across the silted profile, nor did this soil cover the eroded small bank. However, the graves do lie parallel to the

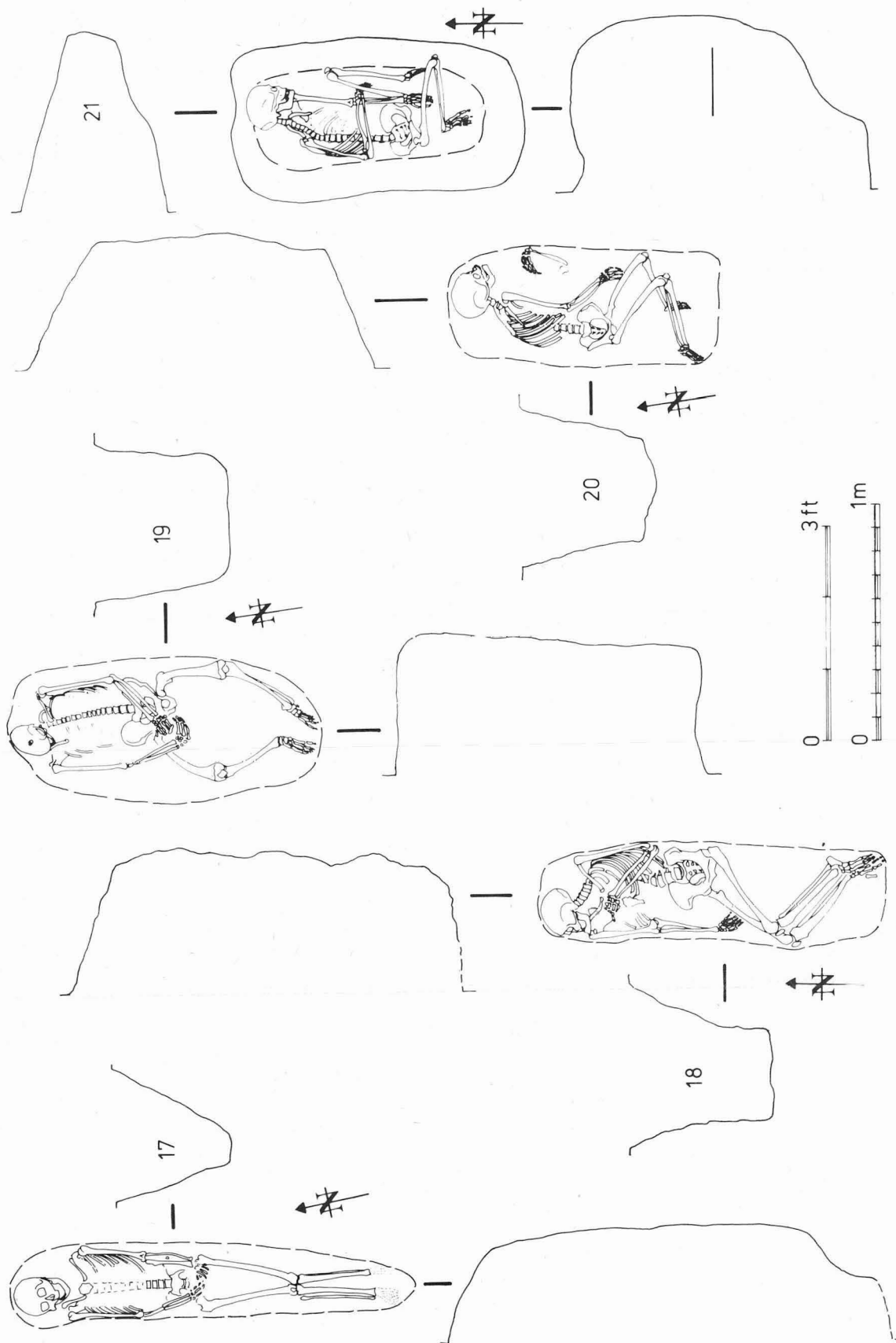


Fig. 26. The Inhumations.

ditch perhaps indicating that they post-date it, and although at one standard deviation the C14 dates overlap, the graves could be considerably more than two hundred years later than the ditch (especially as the earlier C14 analysis gave a rather weak result). It was not possible to show if the graves cut the small bank as it had been eroded by the time it was covered by the main bank.

The 'hearths' and the cremation (Fig. 27)

Sealed beneath the main bank two 'hearths' (5 and 22) and a cremation were found cutting the old ground surface. Hearth 5 was merely a scatter of minute fragments of charcoal and bone in a hollow (1.20 m. x 1.40 m; 18 cm. deep). Hearth 22 was a circular hollow (20 cm. dia; 3 cm. deep), lined with blackened and reddened soil filled with greyish yellow loam. Neither hearth contained any finds.

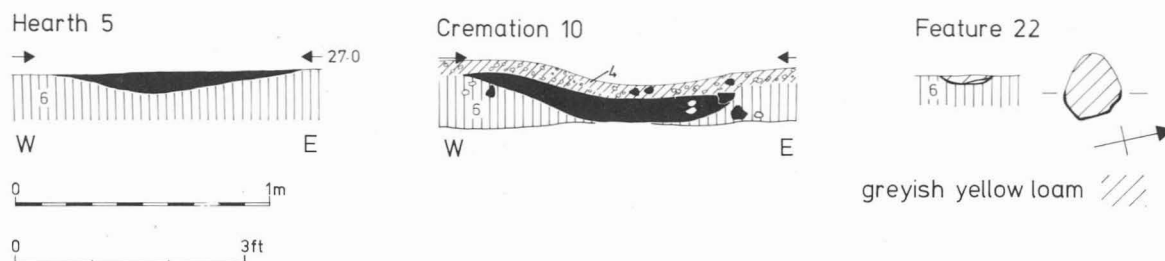


Fig. 27 Sections of the hearths and cremation.

The cremation (10) occupied a small shallow pit (1.15 m. x 1.45 m; 20 cm. deep). The fill was a mixture of ash, stained soil, pieces of bone, flint and burnt clay, while the finds include two iron nails and one sherd of grey coarse ware. The organic material was separated by flotation (p.95) and the bone identified as that of a young adult woman (p. 93-95).

The main ditch and bank

The main weathered quarry ditch was shown to be V-shaped, c. 7 m. wide (perhaps 5 m. when originally cut) and 3.17 m. deep (Plate XIV).

The primary silt (34) consisted of interdigitated layers of hard, small chalk rubble and greyish-brown clayey silt. The remaining fill was completely devoid of chalk rubble and appeared almost homogenous during excavation. This was arbitrarily divided into four layers (30 - 33). In section some variation in stratigraphy could be appreciated (Fig. 25).

Layer 30 contained Roman coarse ware together with post-medieval glazed ware, brick, shell, fragments of a quern, an iron staple and a hob-nail. Layer 31 contained one sherd of coarse ware, brick, bone and a fragment of bronze. Layer 32 contained a fragment of glass and a coin of Constantine II. Layer 33 had four sherds of coarse ware and an iron nail.

The scarcity of finds makes dating extremely difficult. The single Constantinian coin from the secondary silting hardly offers an accurate



Photo: Derek Edwards

TF9438/AL/ADP20

Plate XIII. Wighton: aerial photograph of the enclosure from the north showing crop marks of the ditch and entrance in north west side.



Photo: Andrew Lawson

MC6

Plate XIV. Wighton: the excavated section across
ditches and bank in Trench I.

WIGHTON, NORFOLK : TRENCH I PRINCIPAL SECTION 1m SOUTH OF DATUM

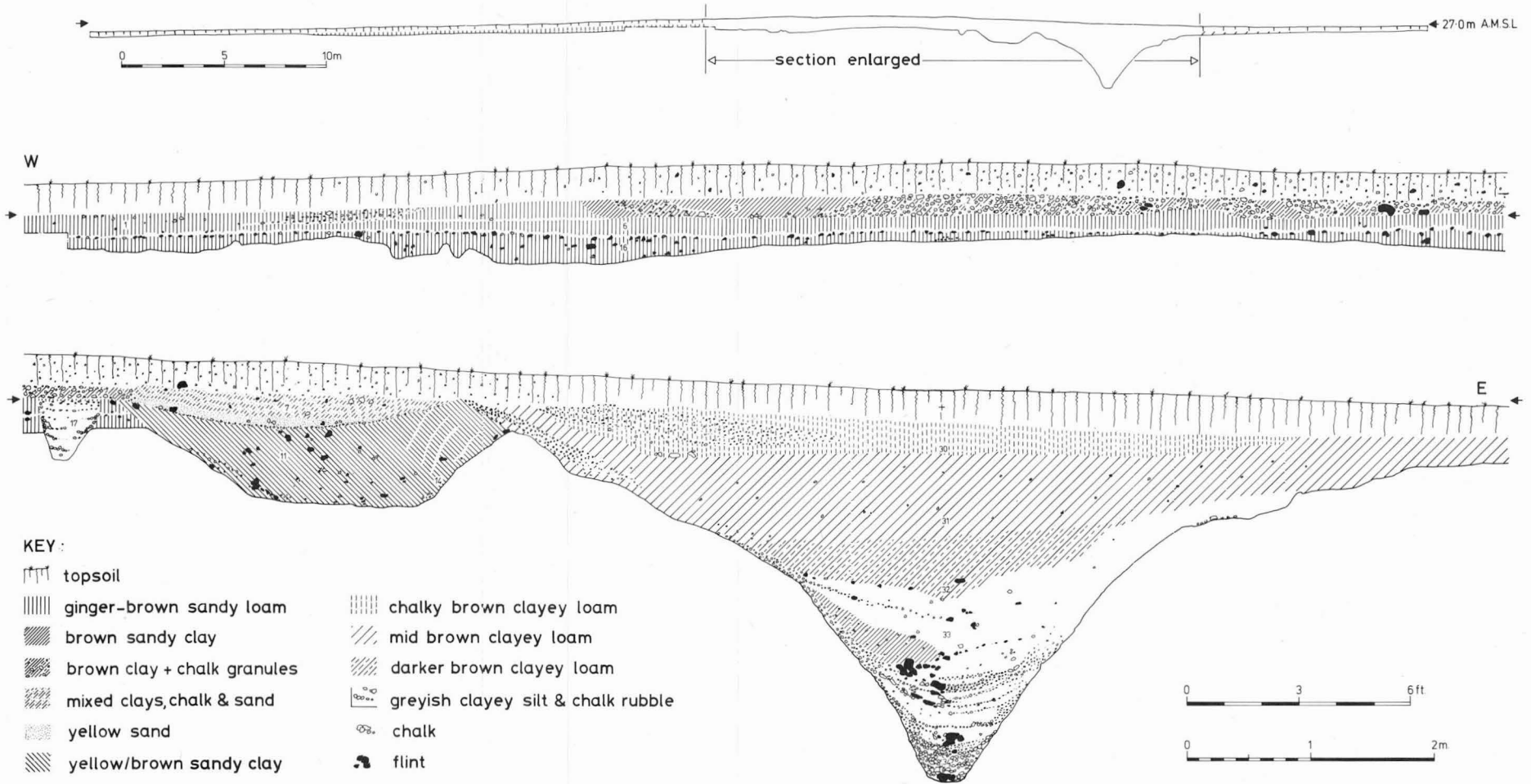


Fig. 28. The principal section.

terminus ante quem for the cutting of the ditch.

Flotation samples were analysed from four different levels in the ditch fill, but none of these produced evidence of the contemporary flora.

The main bank was identified immediately below the ploughsoil as a spread of mixed chalk and clay up to 10.5 m. wide covering half the width of the trench and occurring discontinuously across the remainder. The bank covered a ginger-brown sandy loam, Layer 6, which projected 10 m. behind the bank across the width of the trench. Elsewhere in the trench the chalk bedrock exposed was covered by thin patches of yellow clay and disturbed by periglacial frost-wedges. Two small, straight, archaeologically sterile, gullies with a maximum depth of 10 cm. (23 and 24) cut the chalk behind the bank.

By removing the bank in 2 m. wide strips it was possible to show that it was of a simple dump construction. The rear of the bank was marked by a dump of soil (presumably from the initial cutting of the ditch) indistinguishable from the underlying loam (the pre-bank soil 6). The base of the pre-bank soil was marked by a layer of stones, formed by the action of earth-worms¹¹, showing that this soil had not been a ploughsoil immediately before the construction of the bank. The ancient soil had been preserved by the bank and slip behind the bank which could be recognised as a mixture of brown loam and fine chalk granules.

The bank was made up of layers of mixed brown clay and chalk (2), brown sandy soil (3) and chalk mixed with varying proportions of brown and green clays (4, 7, 8 and 9), quarried from the main ditch.

The quantity of finds from the bank and underlying soil was small. The dump layers (2, 3, 4, 7, 8 and 9) contained in total thirteen sherds of prehistoric pottery and twelve sherds of Roman coarse ware. Layer 3 (itself mainly ancient soil) contained fragments of brick, two iron nails and a fragment of bronze. Layer 8 also contained an iron nail. The ancient soil (layer 6) contained two prehistoric sherds, thirty Roman coarse ware sherds (some of which were smaller than 5 mm.), bone and five fragments of iron, including two nails. Two coarse ware sherds had intruded into the sub-soil (16) beneath layer 6. A flotation sample from layer 6 provided no evidence of the pre-bank flora.

None of the finds provide an accurate date for the construction of the bank, although they do demonstrate that it is Roman or later.

The extent of the bank material showed the bank to have had an original width of 12.5 m. The maximum thickness of the preserved material was 18 cm. In Trench I no structure for stabilizing or revetting the bank was found. Although the position of the bank was visible from the air as a continuous, chalky soil-mark, it is obvious that much of this chalk is simply suspended in the ploughsoil. In many areas no further bank material can now remain. It is fortunate that the site was discovered before this material was

totally dispersed.

It is difficult to understand why the bank should be so flattened, yet the ditch not contain any chalk rubble. The chalky primary silt (34) derives from the weathering of the lips of the ditch. As the lengths of the bank and ditch are known, also the cross-sectional area of the ditch, the volume, and subsequently, the height of the bank can be calculated assuming an expansion factor of 1.75¹². Assuming there to have been a berm 1 m. wide, (allowing for the weathering of the ditch) the base of the bank would have been 13 m. wide, and then the height 2.13 m.¹³. This means that 1.75 m. of the bank has been lost. If there had been a surmounting palisade c. 1.5 m. high not more than a further 50 cm. would have been sunk into the bank (Fig. 29). As more than 70 cm. more than this had been lost it is not surprising that no evidence of a palisade was found.

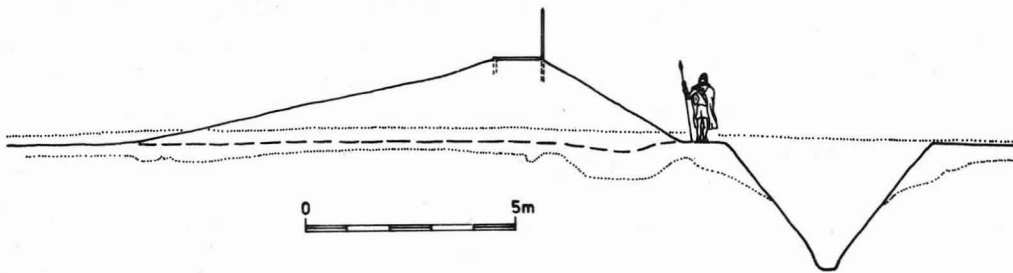


Fig. 29. Reconstruction of main bank and ditch.

A possible explanation for the disappearance of the bank is that during the agricultural practice of marling, the decayed chalk of the bank was easier to quarry than digging the usual marl pit, a feature of almost every Norfolk field. The bank may have been deliberately removed but without record after Blomefield's observations of 1775, perhaps as part of the land enclosure and improvement schemes of the Holkham Estate. The site is recorded as only a pasture in 1735.

By the time the bank was almost levelled the ditch had silted to the middle of layer 30. Now the bank could be ploughed over, and this ploughing introduced the chalk granules into the upper silt on the west side of the ditch fill.

TRENCH II (Fig. 30)

Parallel to the north side of the site an east-west cutting, 30 m. x 3 m. was opened in a markedly irregular area of the bank, where it was thought at the time an entrance might lie. Several features were revealed: two pits, a very large pit or irregularity of the main ditch circuit, and two parallel gullies.

The pits

Pit 53 (3 m. wide, 60 cm. deep) though archaeologically sterile, had an interesting fill with layers of clay with small chalk lumps, black ashy soil and reddened clay.

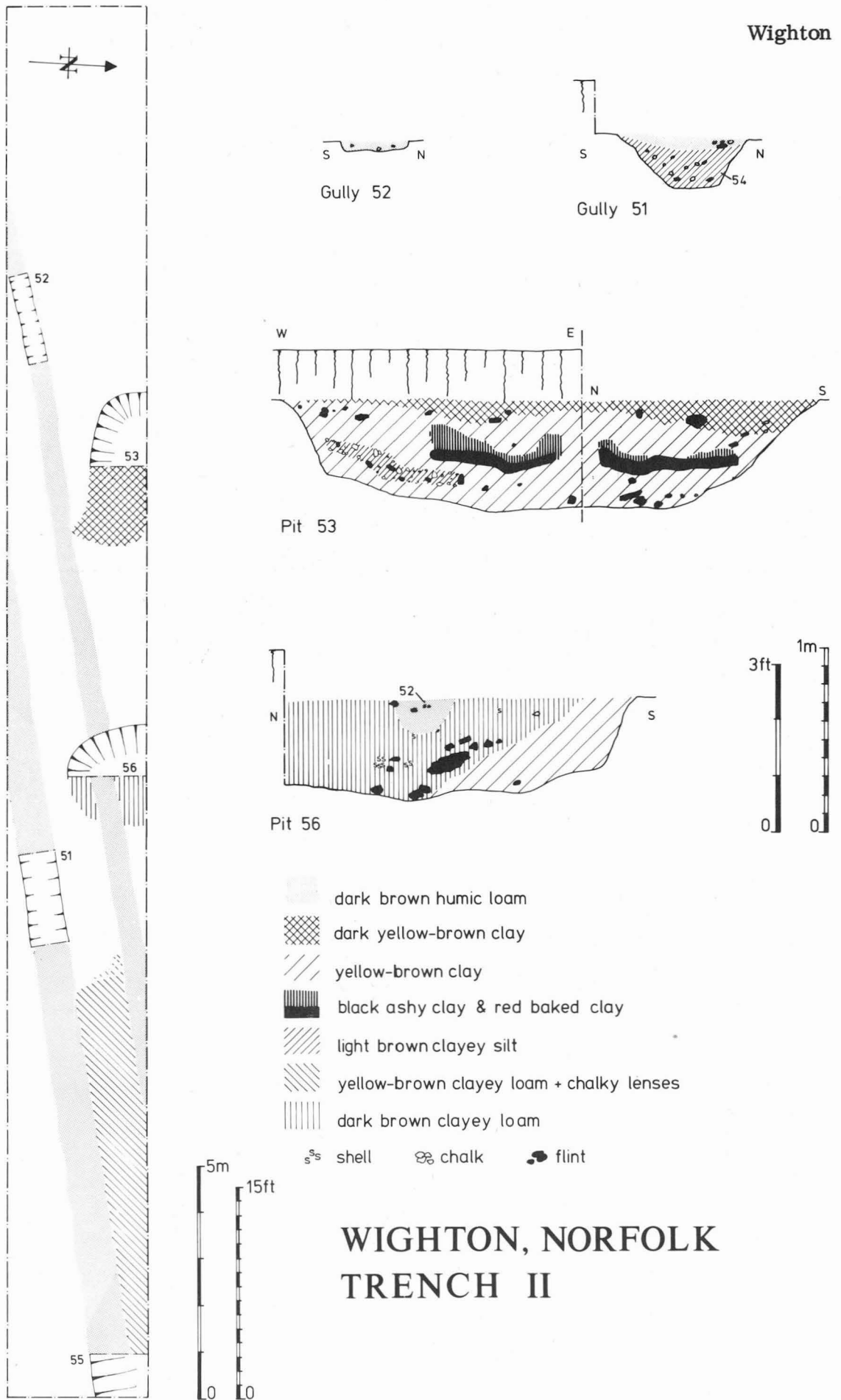


Fig. 30. Trench II: plan and sections of features.

Pit 56 (2 m. wide, 55 cm. deep) contained more finds than any other feature on the site including Samian, coarse ware possibly of late first or early second century date, nails, and an iron spearhead. A flotation sample taken from this pit produced no certain evidence of botanical remains.

The purpose of these pits is uncertain. Their date relative to the bank and ditch cannot be proven as neither pit is situated in ditch fill or covered by bank material (which did not survive in Trench II).

The (?) large pit

Feature 55 was originally thought to have been part of the main ditch. A sondage in the eastern end showed all the characteristics of the upper silts seen in Trench I (layer 30). The west end of this feature was not clearly defined.

Air photographs of cropmarks taken since the excavation (Plate XIII) suggest that the main ditch lies to the north of Trench II, and hence feature 55 could only be part of the main ditch if this makes a minor excursion at this point. The feature must otherwise be a large pit. Finds from the sondage, which also cut gully 51 (below), include coarse ware, bone and shell.

The two gullies

Gully 51 (80 cm. wide, 30 - 50 cm. deep) cut the (?) large pit (Feature 55) and another pit (56) and contained Samian, Roman coarse ware, brick, bone, shell and iron nails.

Gully 54 (40 cm. wide, 5 - 20 cm. deep) contained only four iron nails within its fill.

These two gullies appear to be late in date, cutting all other features in the trench, which they cross obliquely. As the gullies are almost parallel and c. 1.5 m. apart they could be cart ruts leading to the eighteenth century mill. The incorporated Roman material was presumably residual.

V. THE FINDS ¹⁴

THE SMALL FINDS

Coins

S. F. No. 4, Layer <u>1</u> ; Ae4	
Ob. FLIUL CON [STAN] TIUS NO [BC]	Constantine II
Re. illegible [GLORIA EXERCITUS]	1 standard
arelate	LRBC I 400
<u>P CON [ST]</u>	Arelate Period IIIa 335 - 7.

S. F. No. 38, Layer 32; Ae4
 Ob. _____ NOBC
 Re. [GLORIA E] XERCITUS
 mint mark illegible

Constantine II?
 1 standard
 as LRBC I 226
 Lugdunum? Period IIIa 335-7.

Iron objects

The majority of the iron objects were nails, those from layers 1 and 30 were doubtless modern as was the staple (S. F. No. 24) from layer 30.

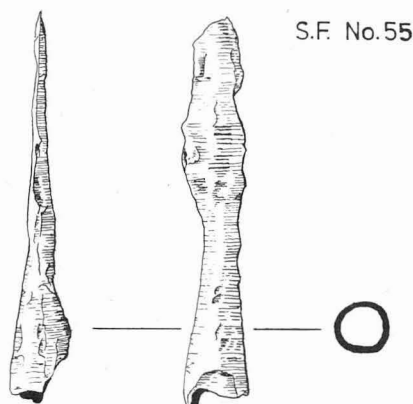


Fig. 31. Socketed spearhead. Scale $\frac{1}{2}$.

Fig. 31 (S. F. No. 55) Socketed spearhead with 'split' socket; 10.4 cm. long. Pit 56. Associated pottery suggests a late first or second century A. D. date. A similar spearhead at Longthorpe ¹⁵ is of mid-first century A. D. date.

All other iron fragments were undiagnostic.

Bronze objects

Apart from a pig-ring from the sub-soil of Trench II (layer 50) all fragments were too small to be identified.

THE POTTERY

The majority of the finds from the site are sherds of Roman grey coarse ware. Nearly all have a sand or grit filler and are hard fired. The surface colour varies from light grey (Munsell (dry) 5YR 5.5/1) to dark grey (7.5 YR 3/1) without any clear division, although occasionally the section may be reddened in the middle. Most sections are a homogenous grey. An assemblage from a single kiln firing could produce this range. Few vessels are reconstructable.

The Finds

TRENCH I (Fig. 32)

The ancient soil (Layers 6 and 16, Fig. 31, Nos. 1-2)

- Prehistoric: two sherds, one black, with sand filler, one buff/black with flint filler.
- Roman: grey ware; fifteen body sherds, three rims, one base; another four sherds (together with six minute sherds recovered from the flotation residue) had dark grey surfaces with reddened interior; two rusticated sherds. buff ware; one sherd shell tempered.

The early ditch (Layers 11a, 12 and 13: second half of the first century A.D. Fig. 31, Nos. 4-11)

- Prehistoric: four sherds of undecorated black/brown flint gritted ware; one sherd of similar ware with pinched plastic decoration.
- Roman: grey ware; twenty six plain body sherds, one body sherd with raised cordon, one sherd of a dimpled beaker, nine rims and twelve sherds of a slack shouldered jar with lattice decoration. pink ware; one thin sherd calcite tempered, two sherds chalk tempered.

The main bank (Layers 2, 3, 4, 7, 8 and 9: post second century. Fig. 31, No. 3)

- Prehistoric: thirteen sherds of flint gritted, poorly fired, fairly hard buff/black ware.
- Roman: grey ware; eleven body sherds, one rim.

The main ditch (Layers 30 - 34, Fig. 31, No. 12)

- Layer 30: Roman grey ware; three body sherds.
buff ware; one thin body sherd.
Post-medieval glazed wares; three sherds.
- Layer 31: Roman grey ware; one body sherd, one base sherd.
- Layer 33: Roman grey ware; two body sherds.
- Layer 34: Roman grey ware; two body sherds, two base sherds.

TRENCH II

The gullies (Features 51 and 54, Fig. 31, Nos. 13 and 14)

- Roman: Samian; one body sherd, one rim sherd ?Form 18/31.
grey ware; thirty two body sherds, four rims, two bases.

The (?) large pit (Feature 55)

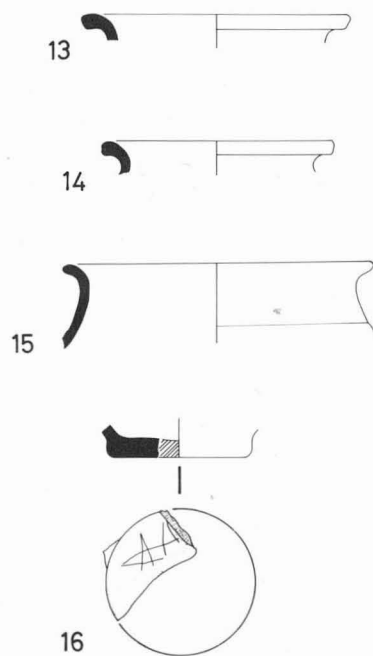
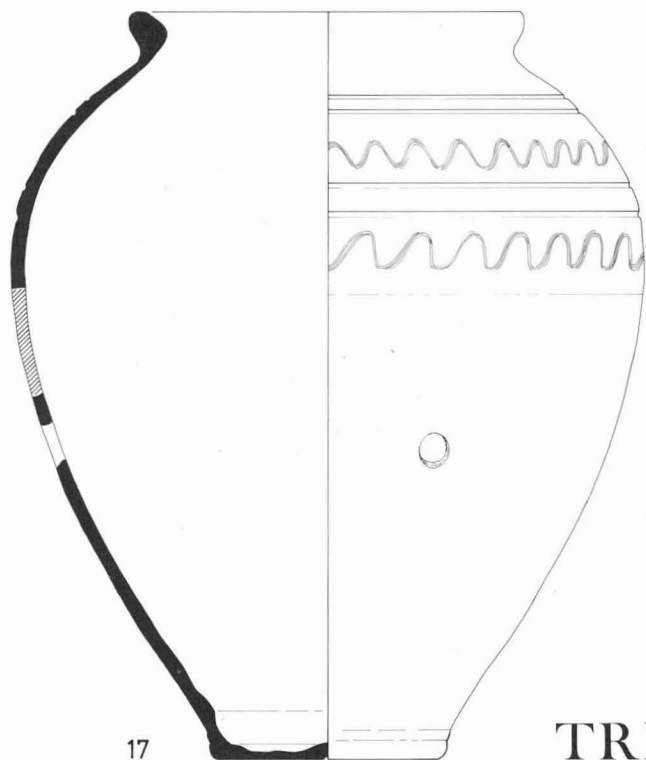
- Roman: grey ware; seven body sherds, one rim, two base sherds.
reddish brown ware; one body sherd.

Pit 56 (Late first or second century. Fig. 31, Nos. 15-17)

- Roman: Samian; one body sherd.



WIGHTON 1974
TRENCH I



TRENCH II

Fig. 32. The pottery. Scale $\frac{1}{4}$.

grey ware; thirty two sherds of one large decorated jar, thirty three body sherds, two bases, one with graffitti.
Late first or second century A. D. 16.
buff ware; one soft body sherd.

FIGURE 32; The Pottery

All rims and bases are illustrated. All vessels are Roman, except no. 9.

1. Flaring neck of jar; coarse dark grey ware, fine grit filler, surface with fine micaceous sparkle, hard fired. Pre-bank soil, layer 6.
2. Small base; ware as no. 1. Pre-bank soil, layer 6.
3. Simple flaring neck of jar; medium grey ware, fine grit and comminuted chalk filler, hard fired. Bank material, layer 8.
4. Flaring neck; medium grey ware, fabric as no. 1. Small ditch, layer 11a.
5. Slightly flaring neck of straight sided bowl; light grey ware, fabric as no. 1. Decoration of combed horizontal wavy line. Small ditch, layer 11a.
6. Simple flaring neck of jar; medium grey ware, fabric as no. 1. Small ditch, layer 11a.
7. Expanded base of medium sized jar; pink, fairly hard coarse ware, chalk filler. Small ditch, layer 12.
8. Thickened rim of small dish; light grey ware, fabric as no. 1, slight micaceous sparkle. Small ditch, layer 12.
9. Body sherd; black/brown, flint gritted coarse ware, poorly fired. Pinched plastic decoration. Prehistoric. Small ditch, layer 12.
10. Neck of narrow mouthed jar; dark grey ware, interior grey/brown, fine grit and sand filler, hard fired. Smoothed surface except zone with rough surface bearing shallow incised lattice decoration. Late first or second century A. D. Small ditch, layer 13.
11. Squared everted rim of jar; medium grey ware, fabric as no. 1. Small ditch, layer 13.
12. Small base; light grey ware, fabric as no. 1. Main ditch, layer 34.
13. Squared everted rim of jar; dark grey ware, fabric as no. 1. Gully 51.
14. Squared everted rim of jar; dark grey ware, fabric as no. 1. Gully 51.
15. Simple neck of jar; dark grey ware, fabric as no. 1. Pit 56.
16. Base; light grey ware, fabric as no. 1. Graffitti. Pit 56.
17. Large jar; light grey ware, fabric as no. 1. Shoulder decorated with two horizontal combed wavy lines separated by two horizontal incised lines and below two horizontal incised lines. Lower belly pierced after firing. Late first or second century A. D. Pit 56.

ANIMAL BONE

Much of the bone was too fragmentary to be diagnostic, but the following species were represented;

Context	Species
<u>1</u>	<u>Bos</u> , M ₃
<u>6</u>	<u>Equus</u> , M ¹
<u>11a</u>	<u>Bos</u> , metapodial.
<u>12</u>	<u>Bos</u> , Metacarpal, two humeri.

<u>31</u>	<u>Bos</u> , three incisors.
<u>33</u>	<u>Ovis</u> , two molars, one unerupted molar.
<u>50</u>	<u>Bos</u> , horn-core fragment.
	<u>Ovis</u> , tibia, humerus, three molars.
<u>51</u>	<u>Ovis</u> , M ₃
<u>54</u>	<u>Bos</u> , phalanx.
	<u>Ovis</u> , two molars.
<u>56</u>	<u>Ovis</u> , mandible, tibia, phalanx, metacarpal.
	Bird

SHELL

Although both terrestrial (Zonites, Helix, etc.) and freshwater snails (Planorbis) were recovered, samples were not taken to examine the whole range of Mollusca. The snails recovered from flotation may provide an insight into the changing environment of the ditch during its silting. Those snails recovered by hand represent only the larger examples and as they are not indicative of the whole range they are not dealt with here.

Marine shells: all specimens represent edible species available along the Norfolk coast, which is only some 5 km. to the north.

Context	<u>Ostrea</u>	<u>Cardium</u>	<u>Mytilus</u>	
<u>1</u>	2	6	-	
<u>11a</u>	2	2	-	
<u>12</u>	1	2	-	All shells (whole or
<u>13</u>	1	-	-	fragmentary)
<u>50</u>	20 ^x	29	1	x; one has two bored
<u>51</u>	5	18	3	holes
<u>54</u>	5	10	-	
<u>56</u>	1 14	321	-	

VI. NOTES ON THE INHUMATIONS AND
THE CREMATION

by Calvin Wells

Skeleton 17

Adult, 45-55 years. Male

This consists of a skull; all vertebrae; pelvis; fragments of ribs, scapulae and sternum; clavicles; all long bones, most of them damaged; bones of hands in good condition, of feet in poor condition.

The skull is a blunt ovoid in norma verticalis. Brow ridges are moderately developed, the frontal bone rises fairly steeply and is slightly bulbous. The mid-sagittal plane passes back in a smooth curve to an occiput with no tuber occipitale. The nuchal muscle markings are strong. Mastoid processes heavy.

Notes on the Inhumations and the Cremation

The mandible is moderately heavy, with slight gonial eversion.

Teeth:

.	C	. 2 3
. 7 . 5 4 3 0 6 . .
C C		

Attrition is heavy. All the caries cavities are interstitial. Moderate deposits of tartar are present.

The following cranial measurements were taken:

L	176.8	S 3	122.2
B	149.1	S'1	113.5
B'	99.1	S'2	98.7
B''	122.1	S'3	96.2
H'	137.2	EOW	108.3
OH	103.5	IOW	98.0
Q'	303.5	U	521.3
S	363.7	100 B/L	84.3
S 1	134.1	100H'/L	77.6
S 2	107.4	100H'/B	92.0

Despite the defective post-cranial skeleton it was possible to record a few long bone measurements:

	L	R
C1L1	-	148.3
IluL1	319.8	-
U1L1	-	267.0
RaL1	-	246.8
FeL1	447.1	444.9
FeD1	26.7	28.0
FeD2	35.1	35.2
TiD1	36.6	35.7
TiD2	25.0	24.1
Meric Index	76.1	79.5
Cnemic Index	68.3	67.5

This would correspond to a stature of about 1690 mm. (5 ft. 6½ in.)

Pathology. Osteoarthritis and osteophytosis are widely spread in this skeleton.

Early osteoarthritis is present on both mandibular condyles. It is moderately severe in the vertebral column, where it affects 3 cervical, 2 thoracic and 2 lumbar vertebrae (L 4-5). All the lumbar vertebrae are also grossly deformed by osteophytotic lipping and the condition affects all but the first two cervicals. L3 and L4 have some cavitation of the superior surfaces of the body.

Osteoarthritic change is also slight on all 4 surfaces of the sacro-iliac joints; on the acromion of the R. clavicle; on the glenoid surface of the L. scapula; the head of the L. humerus and the semilunar surface of the R. ulna. It is moderately severe on the lateral articular facet of at least 3 ribs; the base of the L. 1st metacarpal and the head of the L. 2nd metacarpal. It is severe on the distal articular surfaces of the L. ulna and radius. These wrist and hand lesions appear to be due, at least in part, to secondary effects after a fall on the hand. The scaphoid is much deformed and although it is arthritic there is considerable evidence to suggest that it had been fractured. Lying between this bone and the 1st metacarpal is the os multangulum majus, which in this wrist is grossly deformed and appears to have sustained a severe compression fracture with secondary arthritic remodelling.

The R. forearm and hand are also severely deformed by trauma (Plate XV). There has been a mid-shaft fracture of the ulna and radius which has resulted in a somewhat unusual lesion. The ulna is firmly repaired, though angled and with the distal part displaced medially, but the distal fragment of the radius has also fused with it in a solid cross union of the two bones. By contrast, the proximal radial fragment remains ununited to the rest of the bone, with which it now forms a pseudarthrosis or false joint. Normal pronation and supination of the forearm would have been impossible after this cross union. The distal extremities of both bones show extensive osteoarthritis, which is also severe throughout the carpus.

The multangulum majus is especially deformed, there is much lipping at the base of the 1st metacarpal, whilst the 5th metacarpal has been fractured in its distal third.

Skeleton 18

Adult, 55-65 years. Male

This consists of a skull in good condition; all vertebrae; pelvis; most ribs; sternum; L. and R. scapulae, clavicles, humeri, ulnae, radii, femora, patellae; tibiae, fibulae and most small bones of the hands and feet.

The skull is a long ovoid in norma verticalis. The frontal bone rises, not very steeply, from moderate brow ridges to pass in a smooth curve through the vertex and descend to a well rounded occiput with no tuber. The mastoid processes are fairly long but not heavy. The orbits are more asymmetrical than is usual; so are the maxillae but this is partly due to the extent of alveolar absorption after loss of most posterior teeth.

Teeth:

8 3 2 1	1 2 3
. . 6 5 0 5
P	P

Attrition is very heavy. No caries. Heavy deposits of tartar on 8 and 6.

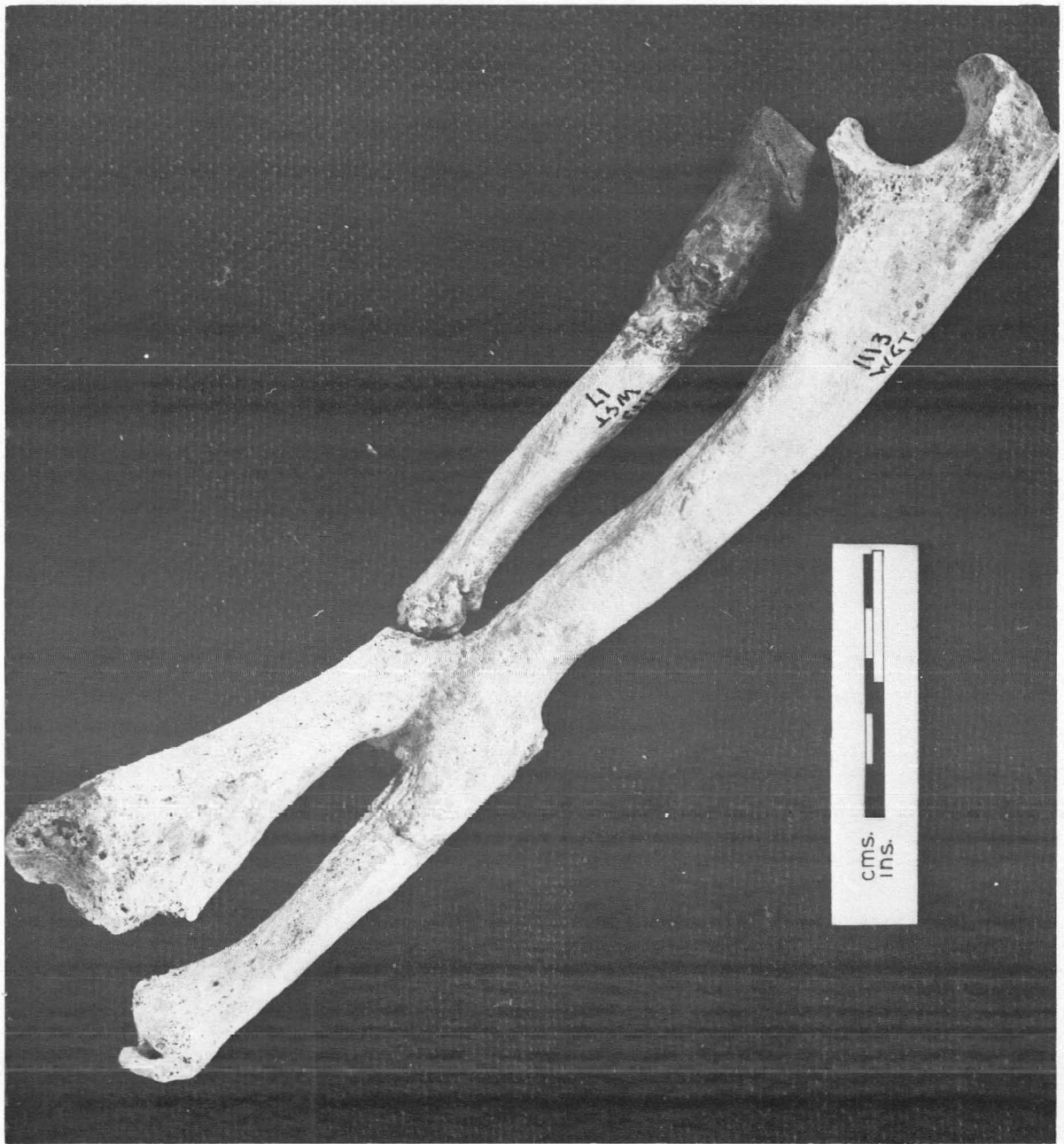


Photo: Andrew Lawson

RD6

Plate XV. Wighton: skeleton 17, the deformed right forearm with proximal end of radius reconstructed.



Photo: Andrew Lawson

RD8

Plate XVI. Wighton: skeleton 19, depressed fracture
of the skull.

Notes on the Inhumations and the Cremation

The following cranial measurements were taken:

L	194.5	GL	99.0
B	132.1	EOW	106.8
B'	97.2	IOW	100.1
B''	111.6	J	131.2
H'	133.8	GB	96.2
OH	110.3	01	44.3
Q'	298.7	02	31.0
S	377.3	NH	47.6
S 1	127.1	NB	26.1
S 2	123.5	U	519.5
S 3	126.7	100B/L	67.9
S'1	113.8	100H'/L	68.8
S'2	112.6	100H/B	101.3
S'3	103.0	1000 ₂ /01	76.7
G'H	63.7	100 NB/NH	54.8
LB	104.6		

Long bone measurements were recorded as:

	L	R
C1L1	164.3	164.6
HuL1	326.8	328.4
U1L1	281.2	-
RaL1	254.9	256.3
FeL1	456.3	454.0
FeD1	26.5	26.7
FeD2	37.6	37.7
TiL1	380.0	375.8
TiD1	38.1	38.8
TiD2	29.1	29.7
Meric Index	70.5	70.8
Cnemic Index	76.3	76.5

This corresponds to a stature of about 1721 mm. (5 ft. 7 $\frac{3}{4}$ in.).

Anomalies and Pathology. The L 5 vertebra has a detached neural arch. The sacrum consists of six segments. Both 1st costo-sternal cartilages are fully ossified.

Osteoarthritis is widespread in this skeleton. It is extensive on the following vertebrae: C 4-6, T 4, L 2-3; with osteophytotic lipping on T 3-5, T 7-12, L 2-5 (especially marked on L 2-4). Osteoarthritis is also present on the heads of at least 4 ribs; on all 4 surfaces of the sacro-iliac joints; on both scapular glenoid fossae and the heads of both humeri. It is mild at the distal articulations of both radii and the L. ulna; in both carpalia; and in the R. tarsus where it affects the talus, calcaneus, navicular and cuboid.

Small irregular exostoses are present on the anterior surface of the L. pubis. These are probably due to tearing of the aponeuroses of muscles which are attached in that area, i. e. the Rectus abdominis, the Pyramidalis and the Adductor longus.

Notes on the Inhumations and the Cremation

The following long bone measurements were taken:

	L	R
C1L1	-	141.7
HuL1	318.1	328.1
U1L1	267.3	268.2
RaL1	242.2	-
FeL1	421.0	420.1
FeD1	25.6	24.3
FeD2	38.3	37.3
TiL1	343.2	341.0
TiD1	37.2	36.0
TiD2	24.1	22.1
Meric Index	66.8	65.1
Cnemic Index	64.7	61.4

This corresponds to a stature of about 1632 mm. (5 ft. 4 $\frac{1}{4}$ in.).

Pathology. There is a depression of the outer table of the cranial vault in the antero-superior region of the parietals. This is roughly elliptical, with its long axis in the coronal plane, and measures 36 x 20 mm. It straddles the sagittal suture and involves the two parietals almost symmetrically. There is a slight heaping of the bone (c. 1-2 mm.) along the posterior margin of this depression. Endocranially there is a corresponding but very slight protrusion of the inner table of the vault. This lesion is almost certainly a depressed fracture of the skull due to a blow from a blunt weapon such as a hammer head. The surrounding bone is very slightly roughened by post-inhumation erosion but there is no evidence that the lesion became significantly infected (Plate XVI).

Osteoarthritis is widespread in this skeleton. It is slight on the R. mandibular condyle. In the vertebral column it affects C 2-3, C 5-6, L 4-5. This is accompanied by extensive osteophytosis of C 2-6, T 5-12, L 1-5 with synostosis of C 3-4. In life the intervertebral discs were probably much reduced in thickness. The iliac surfaces of both sacroiliac joints are arthritic. Arthritis is also slight on the heads of both humeri, well marked on the condyles of both femora and both tibiae, and slight on the R. talus and cuboid.

The R. 4th metacarpal has a well healed fracture with negligible deformity; the R. 5th metacarpal has also been fractured through the shaft but, although firmly healed, shows moderate deformity.

Skeleton 20

Adult, 45-55 years. Female

This consists of a skull; all vertebrae; pelvis; ribs, scapulae and clavicles; L. and R. humeri, ulnae, radii, femora, patellae, tibiae, fibulae (all these bones slightly damaged); small bones of L. hand and both feet in poorish condition; the R. hand good.

The skull is ovoid in norma verticalis; brow ridges moderate; the frontal bone rises moderately steeply; the mid-sagittal plane passes in a smooth curve to an occiput with no tuber; muscle markings are weak; the mastoid processes are small; the orbits are squarish and set almost level; the dental arcade is U-shaped; the mandible lightly built.

Teeth:

. . . 5 4 3 2 1		P	1 0 0 4 5 . 7 -
8 7 . . 4 3 2 1		P C	1 2 3 4 5 . 7 8

Attrition is gross. Caries of $\overline{8}$. Periodontal abscess cavities around the missing $\underline{3}$ and $\overline{7}$. Slight tartar is present.

The following cranial measurements were taken:

L	186.5	S 3	118.4	02	36.8
B	143.0	S'1	115.1	N H	51.0
B'	98.1	S'2	111.7	N B	24.4
B''	117.2	S'3	95.7	E O W	103.4
H'	133.5	G'H	71.2	U	527.0
O H	113.8	L B	98.2	100 B/L	76.6
Q'	314.3	G L	87.3	100H'/L	71.5
S	365.4	J	135.0	100H'/B	93.4
S 1	122.7	G B	93.0	10002/01	92.2
S 2	124.3	0 1	39.8	100NB/NH	47.8

The following long bone measurements were taken:

	L	R
C1L1	139.2	-
HuL1	280.8	291.8
U1L1	229.9	231.0
RaL1	209.5	211.7
FeL1	-	400.5
FeD1	22.1	22.1
FeD2	33.3	32.1
TiL1	325.0	-
TiD1	28.8	28.1
TiD2	21.0	22.6
Meric Index	66.4	68.8
Cnemic Index	72.9	80.4

This corresponds to a stature of about 1540 mm. (5 ft. 0½ in.).

Anomalies and Pathology. Acetabular crease is present bilaterally. Some osteoarthritis is widespread in this skeleton. It is present on the costal facets of the bodies of at least 4 vertebrae, with osteophytosis on T 6, T 8-11, L 4-5. There is synostosis of the L. sacro-iliac joint. Arthritic changes are also present on the heads of at least 3 L. and 3 R. ribs; it is slight on both humeri distally; well marked proximally on both ulnae. It is present in several metacarpo-phalangeal and inter-phalangeal joints of the R. hand.

Notes on the Inhumations and the Cremation

There is a well healed 'parry' fracture of the shaft of the L. ulna and another well healed fracture of the proximal fifth of the L. fibula.

The state of this woman's pubic region suggests that she had borne 3 - 5 children.

Skeleton 21

Adult, 40-55 years. Female

This consists of a broken skull; all vertebrae; fragments of pelvis, ribs, scapulae and sternum; all long bones; many bones of hands and feet. The general condition of these remains is not good; almost all bones are much damaged.

The skull is ovoid in norma verticalis, with a steeply rising frontal bone. The mid-sagittal curve passes smoothly back to an occiput with no tuber.

Teeth:

. . 6 5 4 . . 1	1 0 0 . 5 6 . ?
? 7 . . 4 3 2 1	1 2 3 . 5 . 7 ?
	C C

Attrition is gross. The caries is occlusal. Light tartar is present.

The following cranial measurements were taken:

L	176.8	S 3	116.7
B	136.7	S'1	108.8
B'	97.0	S'2	111.1
B''	113.2	S'3	95.0
H'	127.2	E O W	101.6
O H	113.7	I O W	92.2
Q'	313.3	U	509.0
S	365.3	100B/L	77.3
S 1	121.5	100H'/L	71.9
S 2	127.1	100H'/B	93.1

The following long bone measurements were taken:

	L	R
HuL1	304.4	-
U1L1	233.0	-
RaL1	218.3	219.1
FeL1	419.5	-
FeD1	20.7	-
FeD2	34.8	-
TiD1	31.1	31.5
TiD2	19.3	19.2
Meric Index	59.4	-
Cnemic Index	62.1	60.9

This corresponds to a stature of about 1577 mm (5 ft. 2 in.).

Pathology. Osteoarthritis is present in the vertebral column on C 2-5, L 4-5, with osteophytosis of T 6-7, T 9-11 and L 1-5. Most vertebrae are damaged and the disease was probably more widespread than can now be seen. It is also present mildly on the L. scapular glenoid fossa and is well marked on the base of both 1st metacarpals.

The distal inter-phalangeal joint of the L. index finger is ankylosed, probably from a hair-line fracture which involved the joint.

There is an extensive irregularity, postero-medially, at the distal end of the L. fibula - at, and just proximal to, the malleolus. It appears to be the result of an osteochondroma.

SUMMARY

This group of five inhumations consists of three men and two women. For an ancient population they are remarkable for their longevity. Based on the mean of the age range given for each person the mean age at death for the group is 52 years, being 54.2 for the men, 48.7 for the women. An unusually high figure such as this might suggest that the area in which these persons were buried was reserved for 'senior citizens' or those who, by their longevity, had survived to achieve a dominant position in the community.

They are too few to offer much information about their physical type or racial affinities but it can be said that they were very variable and undoubtedly drew on a wide genetic pool. Their Cranial Index ranges from the 67.9 of Inhumation 18, a narrow dolichocranial, to the 84.3 of Inhumation 17, well up in the brachycranial category. Similarly for other features and indices. Moreover, the general configuration of these skulls varies from a low vaulted type with a receding frontal bone (Inhumation 19) which may have Iron Age affinities to a type with a higher vault (Inhumation 21) which has numerous characters often found in Anglo-Saxon skulls. At present their origin and associations must remain uncertain as far as the osteological evidence is concerned.

They were of medium stature. The men ranged from 1632 - 1721 mm., the women being 1540 and 1577 mm. They were of moderate muscular development. Of 6 tibiae in which the feature could be examined 3 (in two persons) had small or medium squatting facets.

Few developmental anomalies were found and none were unusual: Inhumation 18 had a 6-piece sacrum and a detached neural arch of the L 5 vertebra.

The dental condition of these people was not good. Attrition of the teeth was very heavy in all the males, gross in both women. Of 157 identifiable tooth positions 85 (54.1%) had been lost during life. Two (11.8%) of 17 third molars were unerupted. Of the 64 surviving teeth 6 (9.4%) are carious.

Notes on the Inhumations and the Cremation

This caries rate is fairly high for the period; the ante-mortem loss rate is extremely so. They must have had a tough or gritty diet to produce the severe attrition, whilst some of the loss and caries was probably due to this attrition having opened the pulp cavity.

Every individual had osteoarthritis and osteophytosis. This was sometimes extensive, with the spinal column being the most affected region. This was presumably the result of leading an active and energetic life with a fair amount of physical strain, though in view of their age this had probably not been excessive. Lesions as severe as these are not uncommon in Anglo-Saxons still in their twenties.

Miscellaneous lesions were few: some periostitis/osteitis (Inhumation 18); an osteochondroma (Inhumation 21) and a few trivias.

The outstanding pathological feature of the group was the number of fractures present. Inhumation 21 had one in the L. index finger; the others had at least two or three each which are described above. The ulnar fracture of Inhumation 20 is a typical L. forearm 'parry' injury occurring, as so often, in a woman. It may reflect something of the general social relationships between the sexes in this group or be no more than an isolated episode between this woman and her man. (We cannot know her status but she had certainly borne children). The Colles' and Pott's fractures of Inhumation 18 were almost certainly accidental in origin: the result of one or two falls. The complicated fractures of Inhumation 17 were probably accidental although the severe injury to the R. forearm might have been due to a savage cudgel blow. The skull injury of Inhumation 19 is much more likely to have been due to deliberate aggression than to any accidental mishap. The ankylosed finger fracture of Inhumation 21, about which there is some slight uncertainty, could have resulted from a deliberate hit or have been self inflicted by a misdirected hammer blow, etc.

We can sum up by saying that the overall evidence of these fractures undoubtedly points to a vigorous life style ... and probably a bickering one.

Cremation 10

These remains consist of a few hundred fragments of cremated bones. Almost all are very small: the largest is a piece of humeral shaft 54 mm. long. They mostly consist of flakes and splinters from the shafts of long bones. Very few articular surfaces are present but fragments from the heads of humerus, femur and phalanges are recognizable. The long bone shafts are lightly built, with fairly thin cortex and weak muscle markings. A short length of linea aspera is also poorly developed.

Few fragments of cranium are present. The largest, which is a piece of vault 36 x 27 mm., is probably from the posterior part of the L. parietal. It shows a short length of unfused lambdoid suture. A few other tiny scraps of vault also have wholly unfused suture and none are recognizable with any fusion. Almost nothing survives from the cranial base except a broken

fragment of the R. petrous temporal bone and the roof of the L. external auditory meatus including McEwen's triangle and the root of the zygomatic process.

A small scrap, 23 x 11 mm., of the lingual surface of the mandible survives. It seems to show that the 54321 teeth were present in the jaw at death, although the sockets are now empty. No other dental positions are recognizable. Three tooth roots survive: probably a mandibular lateral incisor and two premolars. Their crowns have been broken off by the heat of the cremation pyre.

Almost no vertebral fragments survive except a few tiny pieces of body and neural arches. Pelvic fragments can be identified only with much uncertainty.

The heads of three finger phalanges are present. Other hand and foot elements are doubtfully represented.

No certainty is possible but it seems likely that the fragments of humeral and femoral heads had already fused with the diaphyses. This would indicate that this person was fully adult. The positive finding of wholly unfused cranial sutures and the absence of any evidence of fusion suggests that this individual was fairly young: between 20 and 30 years would be a probable age range.

The lightness of the long bone shafts, the smallness of articular surfaces and a scrap of supra-orbital margin with a moderately sharp edge indicate that this is likely to have been a woman.

No anomalies or pathology were detected.

No trace of anatomical duplication was found and the evidence points to this having been the cremation of a single person.

No fragments of animal bone were found.

The firing of these bones was only moderately efficient. A number of underfired fragments are present including flakes of cranial vault (? occiput), of the proximal end of the femur and of tibia. These findings suggest (a) that the body was probably laid on its back under the pyre and (b) that the pyre was small, inadequately stoked and of a relatively low temperature.

The collection of the remains from the pyre (or at least their retention) seems to have been performed in a perfunctory manner.

Whether the relatively poor firing was related to the sex of the deceased, to a low social status, to shortage of timber, to the exigencies of the ritual or to other causes cannot now be known. Likewise the scant survival of remains may represent a true incompetence of collection, a ritual more concerned

with burning than with retrieval, or it may indicate that the interred fragments are all that was left after others had been given to relatives and friends as a memento mori.

VII. FLOTATION REPORT

by Andrew Jones

METHODS AND MATERIALS

Soil samples of fifteen litres each were processed through a simple flotation tank based on that described by Williams¹⁷. One millimetre mesh was used in the suspended net and in the flot sieve.

Results

Table 2a is an overall picture of the finds:

Context No.	Pottery	Metal	Charcoal	Seeds & Cereals	Shell	Bone
6				x	x	
10	x	Iron Nail (S. F. No. 60)	x	x	x	Large quantity of cremated bone
Sample A, 31				x	x	
Sample B, 31				x	x	
33	x				x	x
34					x	
53			x	x	x	

x = present in sample

TABLE 2a. MATERIALS RECOVERED BY FLOTATION.

Very little pottery was found in the residue of floated soil but it and the nail demonstrated how, even with careful excavation by hand, small artefacts are overlooked.

The shells are at present being studied. The large amounts of cremated bone from Context 10 have been examined by Calvin Wells, (see p.93-95).

The charcoals were too fragmentary for identification.

THE SEEDS AND CEREALS

Species of Plant		Context				
Latin Name	Common Name	6	10	31(A)	31(B)	53
<i>Chenopodium album</i>	Fat hen	16	4	7	8	3
<i>Fumoria sp.</i>	Fumatory	1			1	
<i>Polygonum convolvulus</i>	Black bindweed	1			2	
<i>Hordeum vulgare</i>	6 rowed barley		1			

TABLE 2b. NUMBER OF SEEDS AND CEREALS RECOVERED FROM FLOTATION.

The above figures refer to the number of individual seeds identified.

With the exception of one grain of barley from cremation 10, all seeds found were uncarbonised. Two had germinated as a result of the conditions of the flotation process. No seeds were found in the deeper layers of the ditch (33 and 34). This evidence indicates that probably all the seeds are of a modern date and became lodged in the soil as a result of natural agents and are of no archaeological significance.

The cereal grain is carbonised and is certainly within its archaeological context. The small amount recovered makes it impossible to draw any conclusions regarding the agricultural or dietary habits of the occupants of the site beyond providing positive evidence for the use of barley.

VIII. CONCLUSIONS

The excavations showed conclusively that the irregularly shaped enclosure at Wighton was not of Iron Age date, for Roman material was found in all contexts, though some previous prehistoric activity is indicated by pottery. Unfortunately dating evidence is meagre, but several phases of activity were demonstrated. The earliest phase was probably represented by ditch 11, dug in the second half of the first century A.D. Further activity at this time was demonstrated in Trench II by pits 53 and 56. Some military involvement at this time could be postulated from the spearhead in pit 56. This was followed by the line of burials perhaps early in the third century A.D. Once ditch 11 had silted, after an unknown length of time, the main unrevetted earth bank was quarried from the irregular, V-shaped external ditch. In one place this bank covered a cremation (10). The Constantinian coin from the middle silts of the ditch may provide a fourth century terminus ante quem, though there is no reason why this coin should not be residual. It is possible that the defences were even sub- or post-Roman.

The cause of destruction of the earthwork is not certain, though it is possible that the bank was removed during the late eighteenth or early nineteenth century for land improvement. It is recorded as an earthwork

Conclusions

as late as 1775.

The excavation was successful in assessing the destruction of the bank, showing this to be almost total, but failed to date the enclosure or show its purpose. The area of the interior stripped in Trench I was sterile. As this area was chalk we must not fail to consider that soil solution may have caused shallow features to disappear. Should the enclosure be a small Roman town one might expect structures, even if not substantial. The presence of Roman buildings is indicated by quantities of brick, tile and window glass among the surface scatter of material. The extent of these buildings cannot yet be assessed. At least one building lies outside the enclosure to the south-west. The date of this building is not known. Nor is it clear whether the embanked area is less than that of the original settlement, in a similar way to towns such as Venta Icenorum. Some of the linear anomalies of the contour survey may represent a road system. Industrial activity is indicated by slag, though this is found only in the ploughsoil, and not in any sealed context.

The economy is illustrated by the usual range of domesticated animals, with some dependence on shell-fish, and possibly barley. The examination of the skeletons shows the population to have lead a strenuous life. Dental wear indicates a tough diet, while limb fractures point to a high accident rate. Whether only senior citizens were buried here cannot be stated with certainty as only a small sample was available for examination. A later change in funerary rite may be indicated by the cremation.

Trench II did not locate an entrance. A single entrance probably lies in the north-west corner of the site.

Clearly further excavation is essential to discover the purpose of this defence, what it encloses, the date of its construction, its duration, its fate, and how much of the settlement pattern survives.

September 1975.

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2. Reference TF9438/AL/ADP 20.
3. Holkham Estates Office Strong Room, Map No. 29.
4. Blomefield (1775), V, 785.
5. Gray (1933).
6. I am grateful to Mr. A. Gregory for this information prior to his forthcoming publication of these sites.
7. Possibly that referred to in Tacitus (Annals, Book XII, 30-1; Penguin ed., (1971), 265) when describing the suppression of the Iceni in A. D. 47.
8. HAR - 1143.
9. Grave 17; 1.70 m. x 30 cm; 50 cm. deep.
18; 1.45 m. x 40 cm; 60 cm. deep.
19; 1.32 m. x 63 cm; 60 cm. deep.
20; 1.15 m. x 48 cm; 57 cm. deep.
21; 1.21 m. x 64 cm; 76 cm. deep.
10. HAR - 1142.
11. Atkinson (1957).
12. Ashbee (1961), 133.
13. Height of bank = $\frac{\text{Volume of ditch} \times \text{expansion factor}}{\text{Length of bank} \times \frac{1}{2} \text{ base width of bank}}$
Volume of ditch = $\frac{1}{2}$ width x depth x length.
Hence, height of bank = $\frac{0.5 \times 3.06 \times 4.91 \times 127.7 \times 1.75}{121.4 \times 0.5 \times 13}$ metres
= 2.13 m.
14. All finds are deposited in Norwich Castle Museum (accession No. L.1975.23), on loan from Mr. Edward Coke.
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Excavations at Langhale, Kirstead

by Keith Wade

I. SUMMARY

Excavations in 1970 on site 5108 revealed a Saxo-Norman pottery kiln producing Thetford-type ware, dated to the eleventh century; its technological and economic implications are discussed. In addition, traces of a late eleventh/early twelfth century building and a series of ditches dating from the late twelfth to thirteenth centuries were uncovered. The settlement which they represent is put into the context of a dispersed settlement pattern as revealed by fieldwork in the parish.

II. ACKNOWLEDGEMENTS

Special thanks must go to the landowner, Mr. M. Aylmer, whose kind help and enthusiasm made the excavation far more efficient and enjoyable. I am also indebted to my Assistant Supervisor, Miss. J. Hassall and my Site Assistants, Mr. F. Pryor and Mr. J. Goldsmith. Others whose help was much appreciated were Nicholas Smithson, Douglas and Mary Veltre, Sylvia Pryor and Mr. R. A. Powell. Accommodation was kindly provided by Mr. Douglas and the Seething Parish Council. Finally, I would like to record a special thanks to Mr. Maxwell Fleming, whose dedication and spirit did more than anything to defy the autumn weather and ensure the efficient progress of the excavation.

DESTINATION OF FINDS

All the finds from the initial discovery, excavation, and surface collections have been deposited by Mr. Aylmer in the Norwich Castle Museum¹.

III. INTRODUCTION

The site is situated in the hamlet of Langhale in the parish of Kirstead, eight miles to the south-east of Norwich, in the heavy boulder clay region of south-east Norfolk (TM 304971). It was discovered by the landowner and farmer, Mr. M. L. Aylmer, whilst cleaning out a field drainage ditch by machine (Fig. 33). Norwich Castle Museum were informed and Miss. Barbara Green and Mr. W. F. Milligan visited the site and identified the structure as a kiln and the associated pottery as Thetford-type ware. The present author was then asked to excavate the kiln and excavations took place in October 1970 on behalf of the Norfolk Research Committee and the then Ministry of Public Building and Works. A magnetometer survey was carried out by Mr. David Haddon-Reece of the Ancient Monuments Laboratory both of the area excavated and that adjacent to it. The ploughsoil was stripped by machine and the exposed features excavated by hand.

IV. THE SITE SEQUENCE

The main features exposed during the excavation were the pottery kiln, a building, a large boundary ditch, a series of three parallel drainage ditches, and a group of post holes (Fig. 34). Both the kiln and the building, on stratigraphic evidence alone, are earlier than the three drainage ditches as the ditch (F. 11/20) cuts them both. The associated pottery reveals that the kiln and the building belong to the Saxo-Norman period and the series of ditches to the medieval period. The suggested sub-division of features is as follows:

Saxo-Norman (c. A. D. 850-1150):	Phase i: Kiln
	Phase ii: Building
Medieval (c. A. D. 1150-1250):	Phase i: Ditch F. 11/20
	Phase ii: Ditch F. 3/10, Ditch in copse, post holes
	Phase iii: Ditch F. 1

The kiln is assumed not to be contemporary with the building owing to its proximity to it, and earlier than the building owing to the presence of Thetford-type ware of identical fabric to that found in the kiln in the fillings of the beam slots of the latter. As neither excavation nor the magnetometer survey revealed any further kilns in the area it must be assumed that this pottery was derived from the excavated kiln. No stratigraphic relationship could be determined between the medieval ditches; and their chronology hinges on the subjective interpretation of the pottery in their fillings. Ditches F. 11/20 and F. 3/10, the ditch in the copse, and the post holes all contained only coarse wares belonging to the late twelfth century and/or the early thirteenth century before medieval glazed pottery was widely available. Ditch F. 1, which contained glazed wares, is probably thirteenth century². This assumes that the ditches followed each other

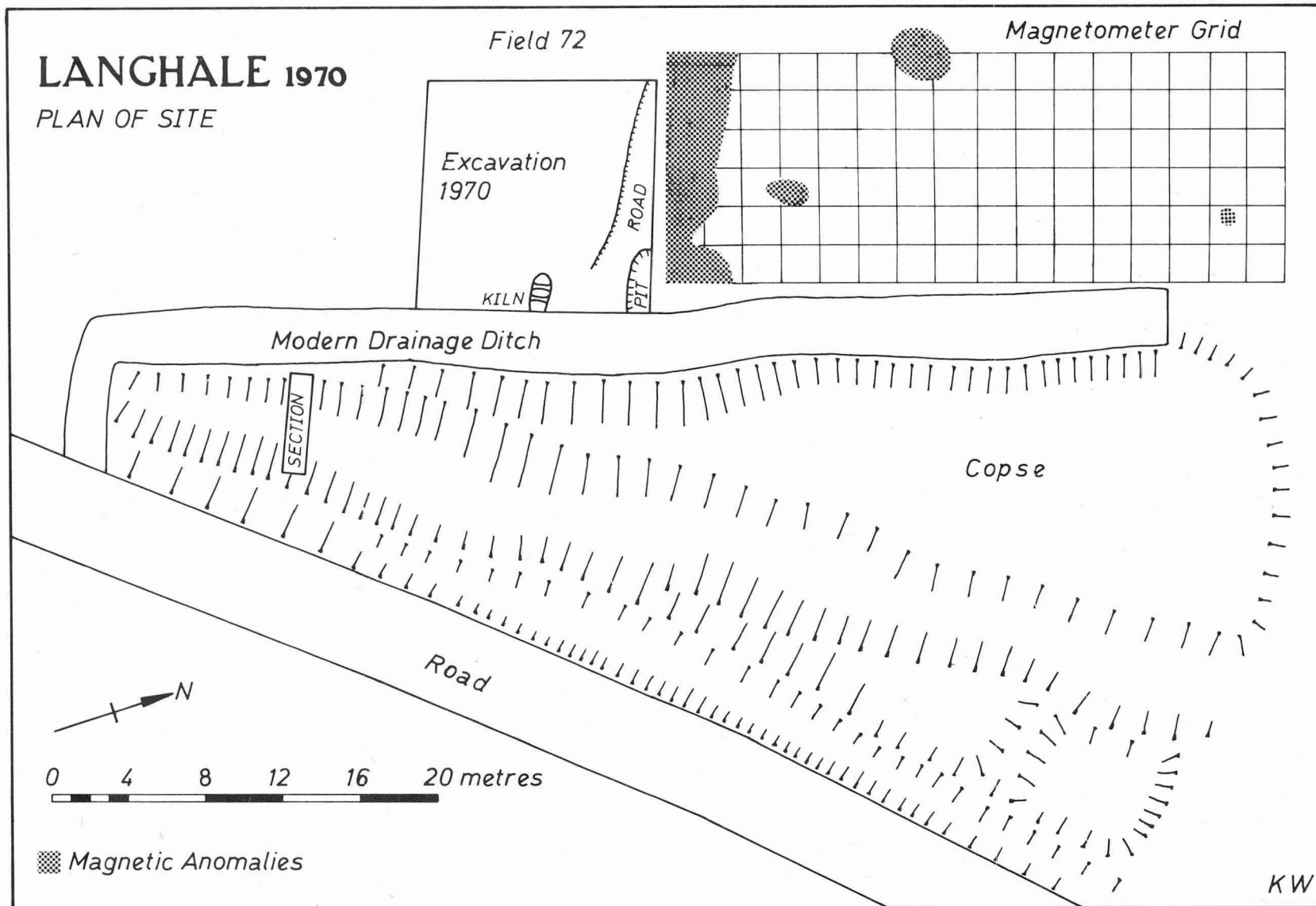


Fig. 33. Site plan including results of magnetometer survey in area adjacent to excavation.

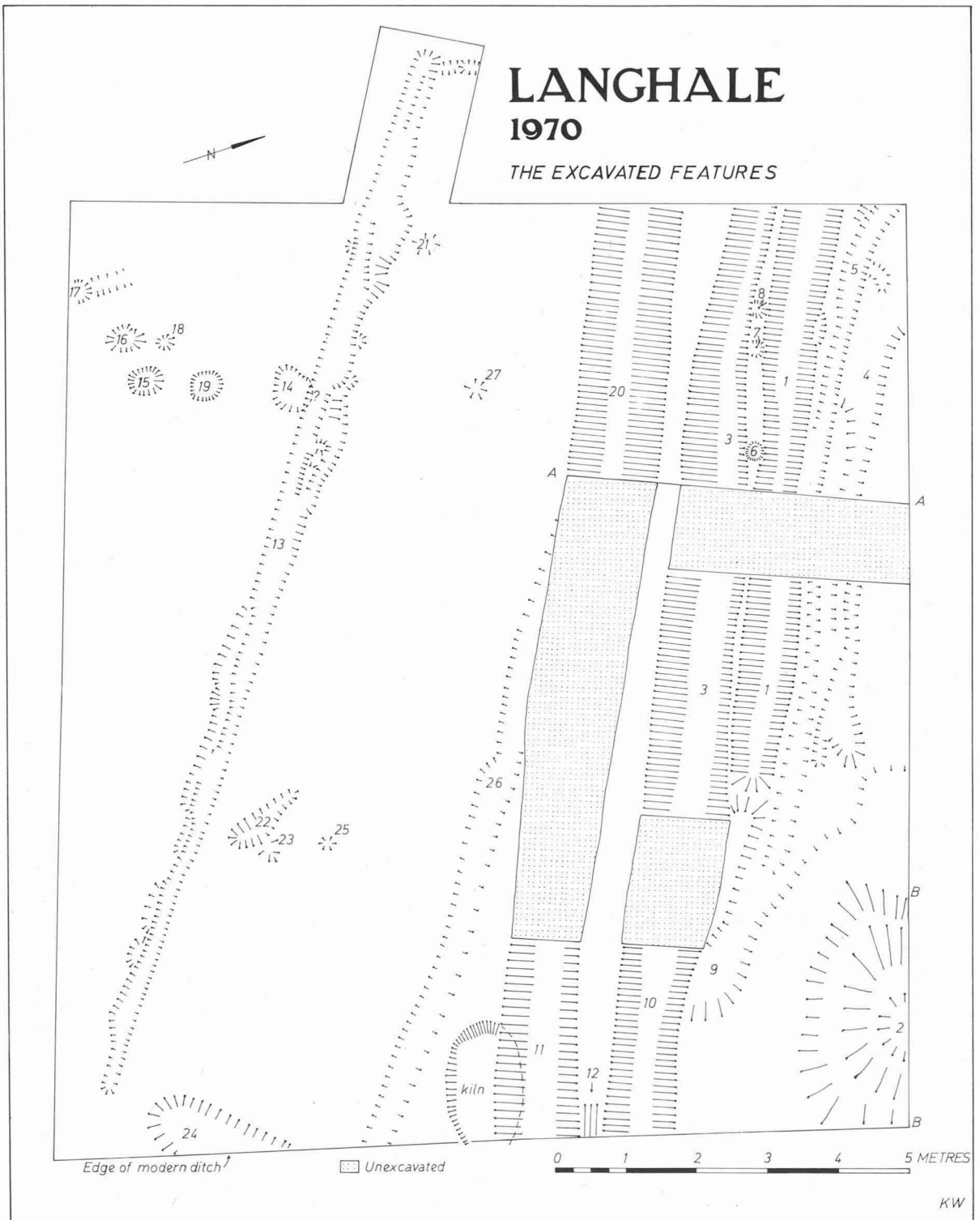


Fig. 34. Excavation plan.

The Site Sequence

with little by way of a chronological break. The pottery appears to support this conclusion in that little variation in rim form can be seen between each group of coarse wares.

V. THE SAXO-NORMAN KILN

TECHNOLOGICAL DATA

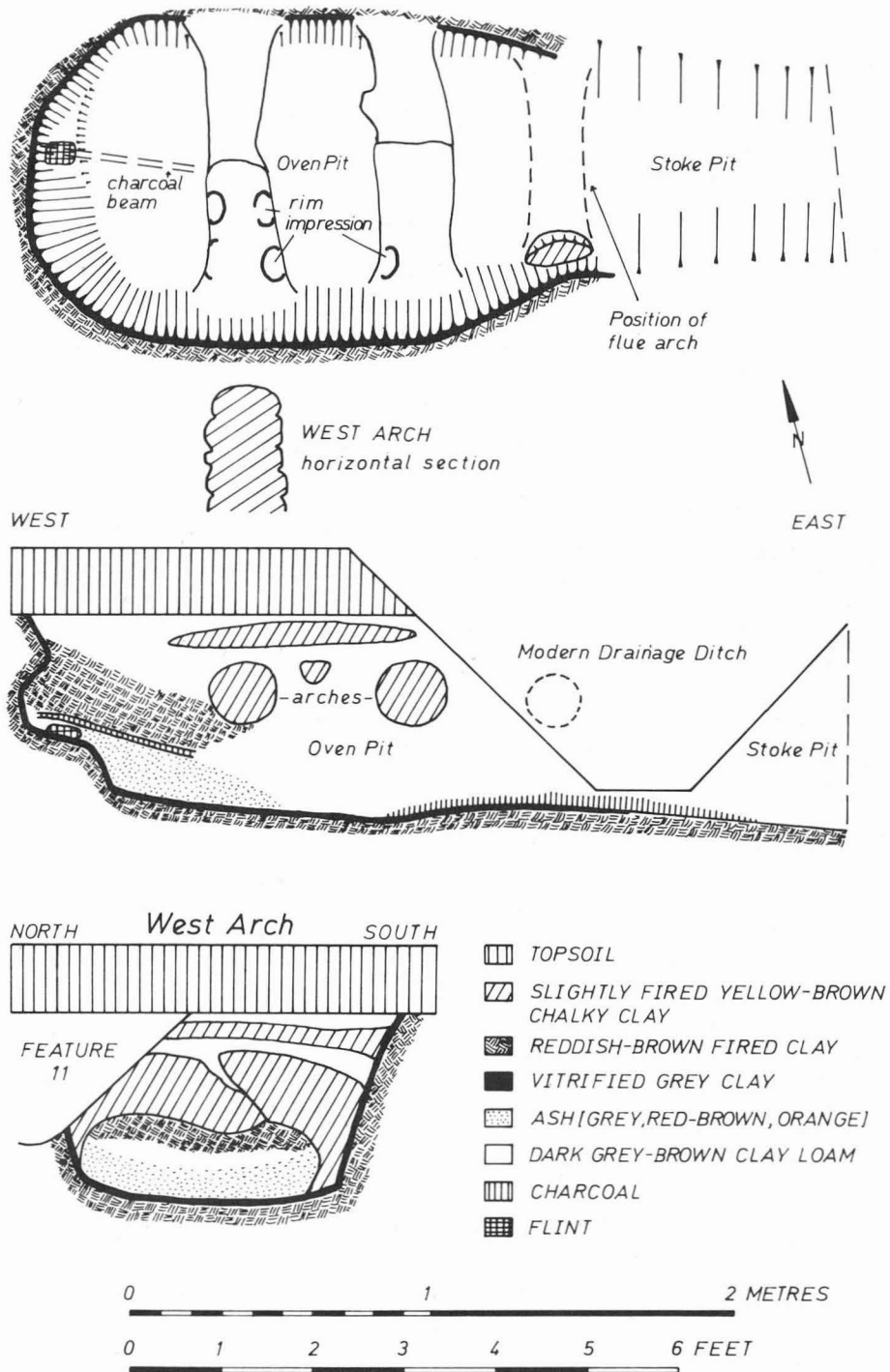
Damage to the kiln by the later ditches was slight. The medieval ditch (F. 11) cut away the upper part of the kiln and arches on the north side and the modern drainage ditch removed most of the stoke pit and flue arch on the east side. The oven pit was virtually intact and measured 1.70 m. long by 1.10 m. wide, with a depth of 65 cm. remaining below ploughsoil (Fig. 35).

Within the oven pit two arches survived in situ although both had cracked through subsidence. They were made of clay strengthened internally by a framework of hazel withies (p.127). Both arches were hardened by fire, but nowhere near as intensely fired as the walls and floor of the kiln, suggesting that the kiln had been fired more than once (the arches being replaced from time to time). This is further supported by the discovery of three sherds of Thetford-type ware, of the same fabric as that found in the kiln, within the walls of the oven pit during its destruction at the end of the excavation. There were, however, no observable relinings of the oven pit walls although they could well have been patched.

In the west wall of the kiln was a curious niche, with a large fire-cracked flint on its base. Running from this up to the western arch were the charcoal remains of a wooden beam which seems best interpreted as a support for the arches when stacked with pots. This seems a strangely crude arrangement and one which is unknown on similar kiln sites elsewhere. It seems fair to assume that normally the arches in such single-flue updraught kilns were fired in order to strengthen them sufficiently to take the weight of pots above before all the pots were stacked, and presumably therefore before the dome was built over the oven pit. If this is so then the Langhale arrangement could well be a time saving invention, in that it made an initial firing unnecessary by supporting the dried arches during firing (already stacked with pots) until they were sufficiently fired to bear the weight without additional support.

After constructing the arches on a framework of withies and allowing them to dry for a while the beam was put into position, running from the niche under the arches to the stoke pit, where it would have been supported in some way. The pots would then have been stacked in the kiln. The rim impressions visible on the arches show that the first tier of pots were stacked with their mouths on the inner edges of the arches and their bases presumably touching in the gap in between. The impressions in which they

LANGHALE 1970 Saxo-Norman Kiln



KW

Fig. 35. Plans and sections of the Saxo-Norman Kiln.

rested were deep and were made by pressing the mouths of the pots into the clay whilst it was still wet to ensure a tight fit. The deep impressions may indicate the use of already fired pots in the first tier. When stacking this must have been of the utmost importance as it was this tier of pots which supported all those above. Once the arches had dried all the pots were stacked on top of each other, the dome constructed, and firing then took place. By the time the beam supporting the arches had burnt they were hard enough to support the load. The accumulation of ash under the charcoal remains of this beam presumably represents this early stage of firing and the charcoal retrieved from this layer revealed that alder and hazel only were chosen for the initial firing (p. 127). Neither of these two woods occurs in the main body of the kiln; in fact only silver birch was found both in this area and in the stoke pit, suggesting that it was the sole wood for the main firing.

What went wrong with the last firing is difficult to say. The arches remained intact (if the flue arch had not it is doubtful that the draining ditch would have removed it). What is certain, however, is that the whole stack of pots collapsed, and remains of the dome covered it stratigraphically. The great wedge of red-brown burnt clay at the west end of the kiln oven shows that this area, between the west arch and the end of the kiln, was relatively free from pots, as was the area under the arches. This allowed a good through draught, and probably represents the fallen chimney area of the kiln. The charcoal from this burnt layer included sweet chestnut, beech, and silver birch, presumably a mixture of firing material and any wood actually used in the superstructure of the dome. It would appear that the oven pit floor was free of pots during firing with the exception of a few odd-shaped vessels (pitchers and very small cooking pots) presumably because they were difficult to stack.

The main problem of interpretation, and one which is crucial, is that of the unfired clay layer at the top of the oven pit filling. Although it would seem probable that this represents part of the clay dome, just underneath it and lying between the two supporting arches was another fragment of wattle-marked clay, definitely not part of the remaining arches. It could have been part of a once higher arch used to strengthen the dome, but if not then it must be seen as part of a group of rubbish from an earlier firing of the kiln either included in the rubbish heaped over the dome during firing or dumped into it after its final abandonment. If the latter is the case then the pottery also found at this level in the kiln is also waste from a previous firing. As the evidence is equivocal the following estimates of the number of pots fired in the kiln must remain speculative.

QUANTITY OF VESSELS

Only one complete vessel (a cooking pot) was found in the kiln (Fig. 36, No. 2), plus one nearly complete after reconstruction (Fig. 36, No. 1) and a similar one from the portion of the stoke pit removed by the modern drainage ditch (Fig. 36, No. 3). The fragmentary nature of the pottery made reconstruction of vessels an impossibility and an obvious waste of time.

LAYER	RIMS				BASES		SHERDS			TOTAL
	Cooking pots	Ginger jars	Bowls	Pitchers	Complete	Incomplete	Total	No. Decorated		
								Thumb-strip	Wavy-line	
0-10 cm.	34	0	0	1	3	11	330	3	0	379
10-30 cm.	138	1	0	2	32	56	1200	11	6	1429
30-60 cm.	42	0	3	0	16	19	211	3	2	291
60-65 cm.	158	2	0	3	20	32	927	1	2	1142
Stokepit	11	1	2	0	0	10	341	1	0	370
F. 11 (residual)	12	0	0	0	5	8	94	0	0	114
TOTALS	395	4	5	6	76	136	3103	19	10	3725

TABLE 3. THE CONTENTS OF THE KILN

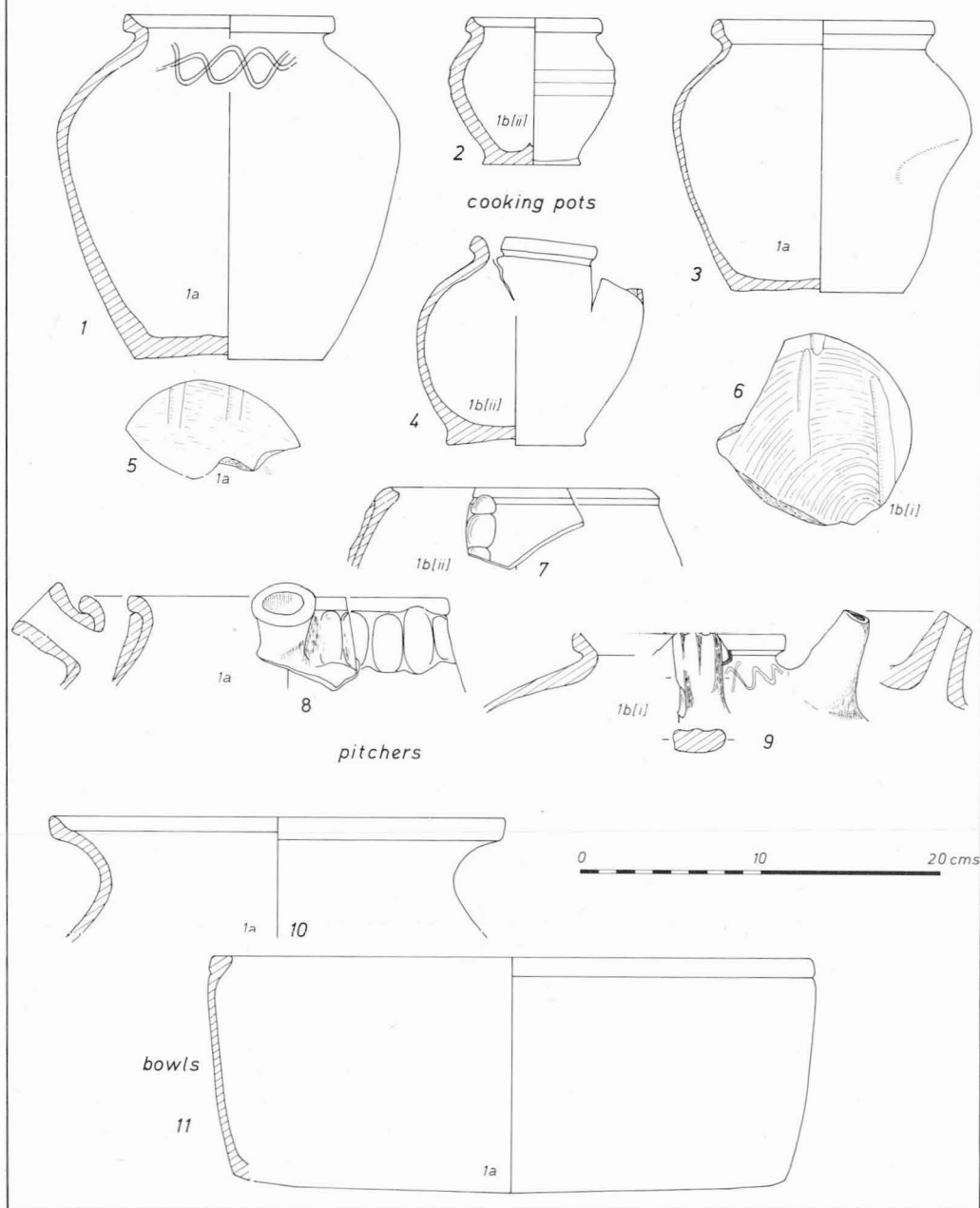


Fig. 36. The pottery from the Saxo-Norman Kiln. Scale $\frac{1}{4}$.

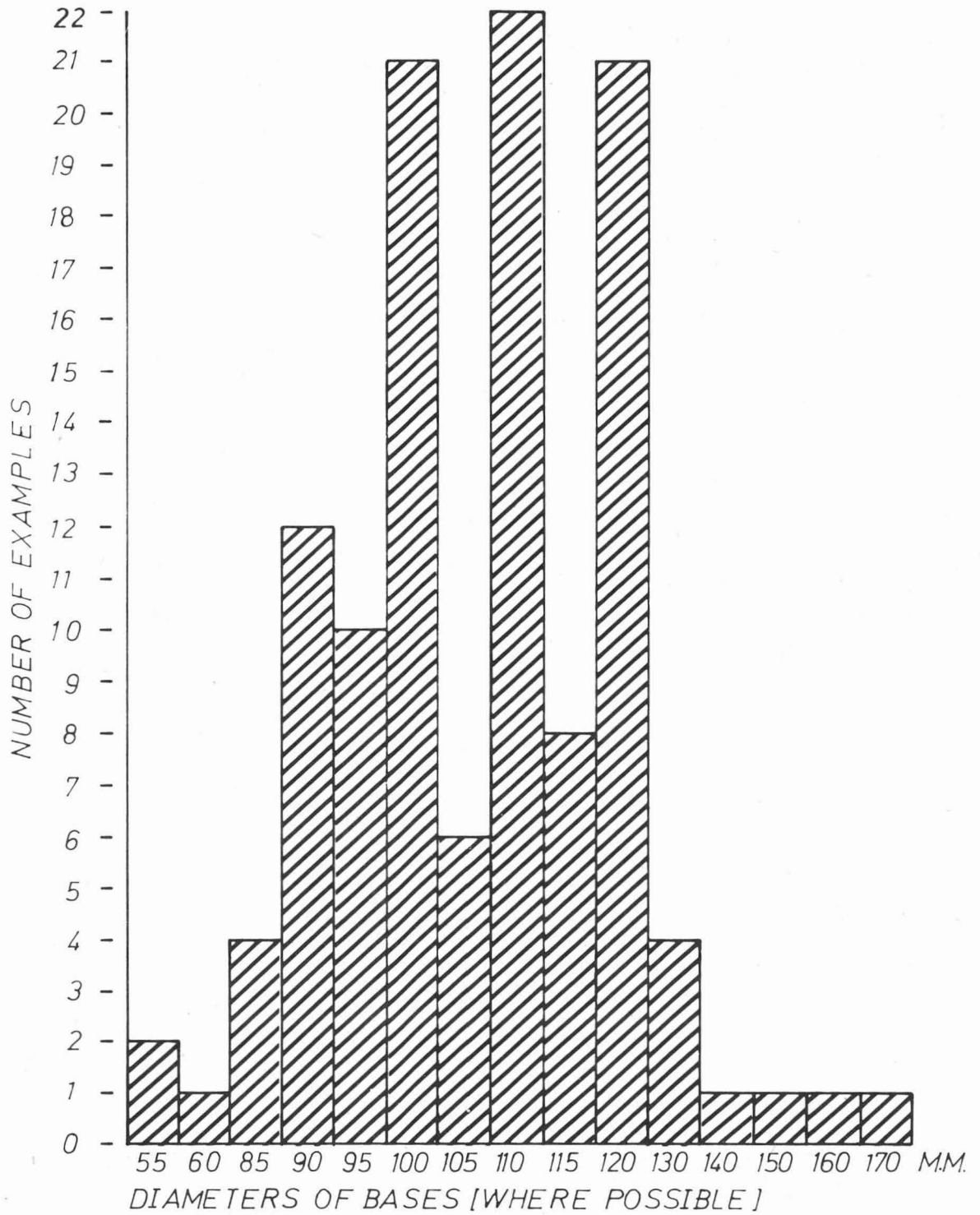


Fig. 37. Analysis of base sizes from Saxo-Norman Kiln.

The Saxo-Norman Kiln

Two complications prevent an accurate assessment of the number of vessels inside the kiln at the last firing. Firstly, it is impossible to estimate the quantity of pottery removed by both the modern drainage ditch over the years and by the medieval ditch (F.11). Secondly, if the upper filling of the kiln represents rubbish from previous firings then it is impossible on stratigraphic grounds to separate this material from that actually fired in the kiln at the last firing. However, if it is assumed that the group is closed and that the unfired clay layer at the top of the kiln represents the fallen dome, then an estimate can be made.

There were certainly more than seventy six vessels (the number of complete bases) and out of the remaining 136 incomplete bases, forty were half bases representing at least twenty pots, and the remaining ninety six probably represent ten to twenty pots. Thus we can postulate 100-120 vessels for the kiln load.

TYPE OF VESSEL

The contents of the kiln were excavated and recorded in arbitrary horizontal layers and the 3,725 sherds recovered are analysed in Table 3. Cooking pots formed 92% of the whole, 4% were pitchers, 2.5% were 'ginger jars', and only 1.5% were bowls.

Cooking Pots (Fig. 36, Nos. 1-6)

Bases: Only two examples of sagging bases (incomplete) were found, all the rest being flat. An analysis of the diameters of the flat bases show that the 100 mm., 110 mm., and 120 mm. diameter bases formed 60% of the whole (Fig. 37). These probably reflect the most popular cooking pot size range of the time, if one accepts that the base is a necessary reflection of the volume of the pot, and only a few examples of very small or very large bases were present.

Many of the bases had grooves in them, cutting through the cheese-wire markings. As they must have been acquired during drying they presumably represent a wattle drying rack with the pots being dried the right way up (Fig. 36, Nos. 5 and 6). One example showed only one sector of cheese-wire markings with the rest deleted. The wire-marked sector was raised in relation to the plain sector and the division between the two was a straight line, indicating that the pot had been dried on a plank or similar flat surface with part of the base hanging over the edge.

Rims: The rim forms fall into two categories, both of which are everted. They are the simple rolled rim and the rolled rim hollowed on the inside. It seems fruitless to try and divide each of these categories any further, although minor differences occur in shape. Surely any small differences which occur in a closed group of material such as this, manufactured at the same time, reflect only the human element in their production and have no more significance other than to display the individuality of the potter.

Ginger Jars (Fig. 36, No. 7)

Only four rim sherds, representing three vessels, could be recognised. The rims were all simple, thickened in form, with a slight groove below the thickening on the outer surface. These vessels with inturned rims have been allotted a separate category from the cooking pots on the basis that their function was more for storage than for cooking, having no suitable rim for suspension over a fire.

Bowls (Fig. 36, No. 11)

Five rim sherds, representing two or three vertical-sided deep bowls, were found. The rim form in all cases was an upright wedge-shape with a horizontal groove just below the rim on the outer surface.

Pitchers (Fig. 36, Nos. 8-10)

Six rim sherds and two spouts representing four or five vessels were found. It is also likely that the two strap handles found belong to the illustrated pitcher as the rim diameters of all three are the same (Fig. 36, No. 9). The flared, everted, rim (Fig. 36, No. 10) is also thought to represent a pitcher by analogy with the pitchers from Grimston, Norfolk, which have a similar rim³, although no pouring lip or spout was found in the kiln to go with it.

DECORATION OF VESSELS

Incised Wavy-line

Twelve examples (nine cooking pots and three pitchers) of wavy-line decoration, incised below the rim on the outer surface, were noted.

Applied Thumbed-strips

Seventeen examples were noted restricted to the ginger jars and pitchers only with certainty, as these were the only vessel types where rims were associated with the sherds bearing the decoration. The pitchers have the decoration on an applied horizontal band immediately below the rim and the ginger jars have it applied vertically in strips on the body of the pot.

There were only twenty nine examples of decoration out of 3,725 sherds, that is less than 1%.

THE FABRIC

The list of Thetford-type ware fabrics present in the kiln (p. 122) is based on an examination of 1,418 out of the 3,725 sherds retrieved from the kiln. In common with all the wares from the site they were sandy showing variation only in colour. Simplifying these variations three main types seem obvious: the buff wares, the grey wares and the 'sandwich wares'. The latter is used to describe the fabrics displaying a colour

variation between core and surfaces. Of those sherds examined the buff ware formed 47% of the total, the grey wares 42% and the sandwich wares 11%.

The variation in fabrics in one kiln is surprising. They do vary in hardness with the buff fabrics being the softest and the grey fabrics the hardest. The two facts are connected, in all probability, in that the variations may be due to differential firing rather than any difference in clays, which in this part of Norfolk covered uniformly with boulder clay is unlikely. This poor firing cannot be due to the termination of the firing before all the pots were fired, as over half the pots were properly fired. It must instead be due to poor air-mixing in the oven during firing possibly caused by the overloading of the kiln. This aspect of the fabrics is more fully discussed below during a consideration of the economic implications of the kiln (p. 114).

VI. LANGHALE THETFORD WARE AND THE THETFORD WARE TRADITION

The unifying criteria of the potteries grouped under the general heading of the 'Thetford Ware Tradition' are both technological (updraught kilns, fast-wheel, and sand tempering) and typological (cooking pots, pitchers, lamps, bowls, jars, costrels, etc, of similar forms) ⁴.

The Langhale kiln is best paralleled at Thetford ⁵, but the lack of any kiln plans from the other production centres in East Anglia, in particular Norwich, diminishes the significance of the similarity. Finding parallels for the vessel types is superficially a much easier task, as there are large groups of material from each production centre, but in reality it is difficult owing to the small and biased sample from each centre in relation to the buried whole. The Thetford-type ware cooking pot is a very standard product and the Langhale examples are not at variance with the other centres. The predominance of flat bases at Langhale, however, is a characteristic of the Norwich and Ipswich kilns only. The Langhale bowls are extremely difficult to parallel, but they are similar to those from the earliest levels of the medieval pottery industry at Pott Row, Grimston, Norfolk, presumably of twelfth century date ⁶. The ginger jars are paralleled only in Norwich both from the Pottergate industry and from contexts in the town. Individuality is the keynote to the manufacture of pitchers and the Langhale examples are little more than cooking pots with spouts and handles added. The pitcher with a large flared rim (Fig. 36, No. 10) is unusual and the only parallels are those from the Grimston Thetford ware industry ⁷. The decorative motifs used on the few decorated pots from Langhale are common in the Norwich, Thetford and Ipswich industries.

VII. THE DATING OF THE KILN

It must be said at the outset that no more precise a date than the established range of Thetford-type wares (c. A. D. 850-1150) can be

convincingly demonstrated. In default of an independent scientific date (which was not possible at Langhale) one must resort to conventional archaeological reasoning. It does seem worthwhile, however, to speculate on a narrower dating for the kiln in view of its economic implications.

The postulated site sequence (p.102) suggests that the kiln predates the building, which in turn predates the ditch (F.11). The building was constructed during the period when Early Medieval ware was in use (c. A. D. 1000-1150)⁸, as this type of pottery was retrieved from its foundation trenches, and the ditch (F.11) was filled with pottery dating in all probability to the late twelfth century. The conclusion must be that the building was constructed at the latest in the early twelfth century leaving a date-range of c. A. D. 850-1100 for the kiln. Typological parallels suggest a narrower date-range. The ginger jars in Norwich have only been found in association with Early Medieval ware and the parallels to the Langhale bowls and pitcher occur at Grimston in levels similarly attributed to the eleventh and twelfth centuries⁹.

It is interesting that the closest parallel to the Langhale kiln is the group from Thetford archaeomagnetically dated to the early eleventh century¹⁰. Thus we may conclude from the available evidence that the Langhale kiln belongs to the eleventh century.

VIII. THE ECONOMIC IMPLICATIONS OF THE LANGHALE KILN

Certain peculiarities about the Langhale kiln require explanation. At this stage this seems best served by an hypothesis suitable for future testing.

Basic Data:

1. The kiln appears to be an isolated example in the parish:
 - a) no further kilns were detected by the magnetometer survey;
 - b) there are no indications, as yet, of a pottery industry elsewhere in the parish;
2. The nature of the kiln and its pottery show both a proficiency at potting and a very close familiarity with the Thetford ware tradition;
3. The firing of the kiln was not as proficient as at Thetford:
 - a) the makeshift nature of the wooden beam, lodged in a niche at the end of the kiln, is so far unique in the kilns of the Thetford ware tradition;
 - b) over half the kiln products were sub-standard with the other half being well-fired and comparable to the products of the town based industries;

Initially there are two main questions:

- i) who made the kiln and its contents?
- ii) was the sub-standard firing intentional or accidental?

The proficiency of the potting and familiarity with the techniques and styles of the Thetford ware tradition seems to rule out an ambitious local peasant and suggest the work is that of a professional potter. The question then revolves around whether the potter was settled in Langhale or whether he was itinerant in the area to the south-east of Norwich. If one accepts the latter hypothesis then the other peculiarities about the kiln and its products seem capable of an economic explanation.

The cause of the poor firing appears to have been an overloading of the kiln leading to bad air-mixing. The Thetford kilns contained forty to fifty vessels and are of comparable size (slightly larger in fact)¹¹, whereas the Langhale kiln may have contained around 100-120.

The fact that the poorer quality fabrics do turn up in the surface scatters of the parish shows that there was both a market for such pottery and that the practice of producing such wares was an operation undertaken repeatedly, and therefore one must assume intentionally.

Why such a practice of intentionally producing poor quality fabrics existed can only be explained in terms of the lowering of costs per unit of production, and the makeshift arrangements for initial firing can also be seen as economies in time of production. Competition with the large town industries may well be the keynote to an understanding of the raison d'etre of the Langhale kiln. After all the urban production of Thetford-type ware had an established competitor during the eleventh and early twelfth centuries in the form of Early Medieval ware, and the poorer quality Thetford-type wares could have been an attempt to catch the less wealthy market of the rural areas.

If the itinerant potter theory is correct why have no more isolated kilns been found in south-east Norfolk? This question could be readily explained by the nature of Langhale itself. There were no surface indications on the ploughed field of its existence and it was discovered through ditch digging.

The prevalence of industrial competition at this period, one would expect, would have depended almost entirely on demand and the area to the south-east of Norwich was the most densely populated part of Norfolk according to the Domesday survey¹². It therefore may well be the only area of Norfolk where such itinerant production was viable.

IX. THE SAXO-NORMAN BUILDING

The structure (Fig. 38), interpreted as a building, measured 4 m. wide by 15.75 m. long. The filling of the foundation trenches was homogenous and no traces of constructional detail were observed. The pottery contained within them and the two post holes (F. 25 and F. 27) was Early Medieval ware and Thetford-type ware of identical fabric to that found in the kiln. The building can therefore be assumed to have been built in the late eleventh or early twelfth century.

NOTES TOWARDS A RECONSTRUCTION OF THE BUILDING

by John T. Smith

Since the evidence is too fragmentary to permit even a tentative reconstruction, all that can be done here is to comment on certain features of the building. Indeed, as is the case with a number of other sites of this period, so incomplete are the traces that some justification is needed for regarding it as a building at all; and this can be found on two grounds, namely, that no more likely purpose can be assigned to the three trenches in question, and that the excavator, whose opinion is paramount, thought so.

The south ¹³ trench can be construed as four more or less straight lengths, those at each end being about 2.75 - 3.0 m. long, while the two in the middle had a total length of about 8.5 m; the latter have the curious appearance of running side by side for about 1.5 m. One side of each trench, as the sections show, seems to have been vertical or very nearly so, whereas the other side was stepped up above the bottom of the trench and sloped at more or less an acute angle. Because the vertical face changes from the south side in the east part of the trench to the north side in the west part, it can hardly be supposed that the step or ledge is connected with the original construction unless it is something to do with either the mode of digging the trenches or the removal of whatever timbers were placed there. In these circumstances it is reasonable to suppose that the four sections of the south trench, which had throughout a flat bottom at a uniform level, were dug to receive straight timbers of varying lengths, and that provided one side of the trench was vertical the other did not matter.

A comparable trench existed on the north side, but ploughing and the downward slope of the ground in that direction had left fewer traces to be found by excavation. It is clearest at the east, where a slight change of direction about 2.75 m. from the end corresponds to one in the south trench, although the irregular line of digging presumed to result from construction or demolition can be traced for another 6 m. or so.

At the west end the beginning of another trench was observable which presumably formed the gable end. It was not at right angles to the south trench and appeared to curve slightly, although how much significance should be attached to the latter feature in so short a length is uncertain;

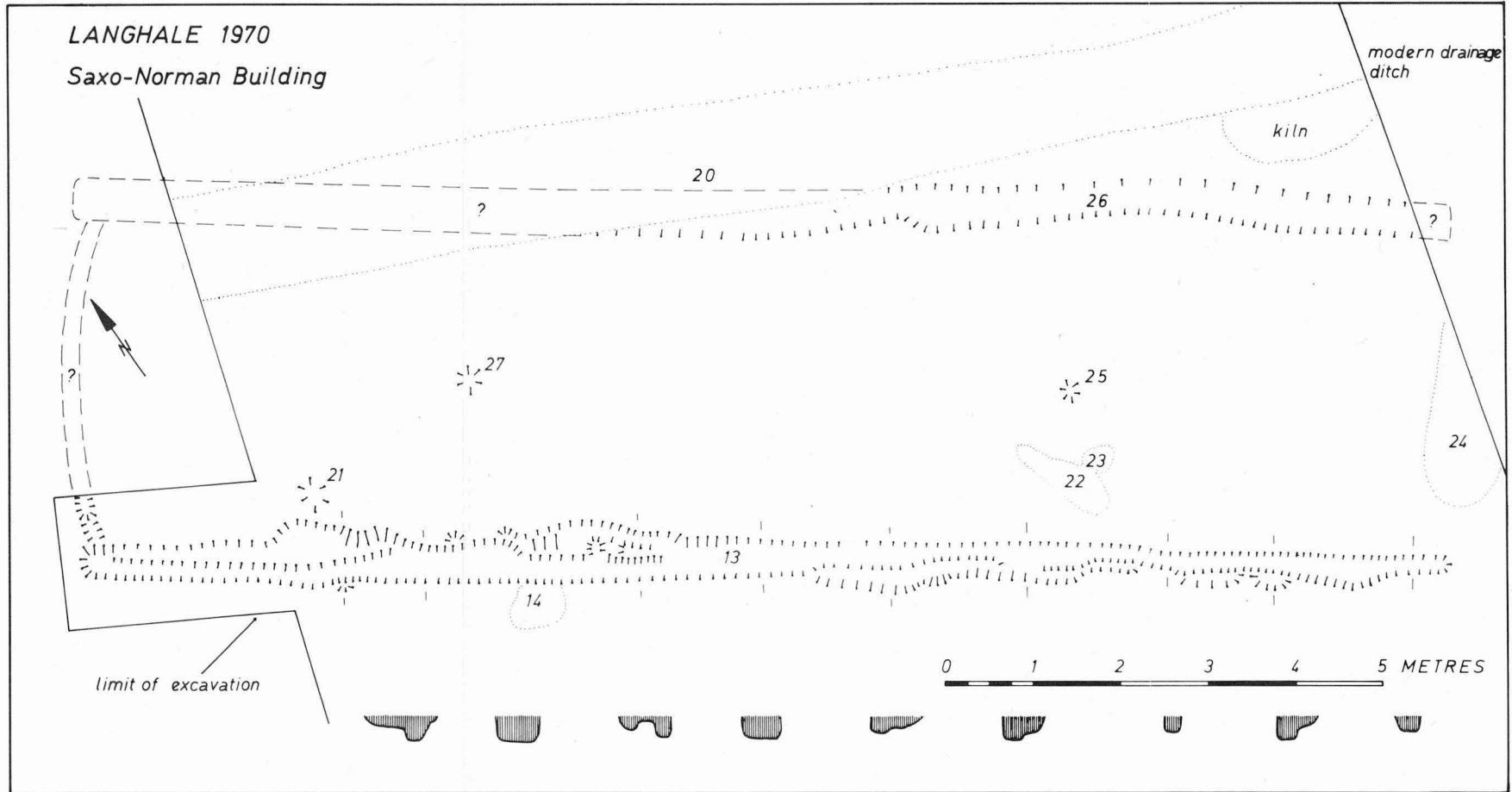


Fig. 38. Plan of the Saxo-Norman building.

compare, for example, the last end of the adjoining section of the south trench.

Internal soil traces were absent. There were no post-holes, only the kind of shallow depression to which Mr. Philip Barker has given the appropriate name 'post positions'. Two such features, Nos. 25 and 27, show near the axis of the building at approximately equal distances from the presumed ends; they are only 8 cm. deep. Another one No. 21, stood about 1 m. in from the south side, near the supposed position of two lengths of trench. Lastly, no traces of building material were found.

In considering what the building may have been like, the first need is to justify the suggestion made above that the trenches were intended for horizontal timbers rather than a series of posts. As Sir Ian Richmond pointed out, in Roman building construction the so-called 'sleeper-trench' commonly has a bottom so rough that no sill-beam or sole-plate would lie in it, and he concluded that 'such sole-plates were rare, though examples are not lacking' ¹⁴. It is the level bottom of the south trench, the absence of individual post-traces in it, its formation in straight lengths, and the existence throughout of one vertical side which, taken together, provide a strong contrast with the many foundation trenches found in recent excavations which have quite irregular edges and frequently show the depressions formed by the individual posts which stood in them. Bearer trenches, to give them the name coined for the kind of trench found at Langhale, are not uncommon on late Saxon sites and also appear on a few Middle Saxon sites ¹⁵, from which it appears that they represent a definite stage in the progress of building construction. This stage has been explained as an improvement on what is known as palisade-construction, in which the wall is formed of a continuous row of posts; 'where palisade construction was adopted it seems naturally to have led to the further development of continuous foundation-slots or trenches as the preferable alternative to series of separate post-holes. Decay of the earth-fast ends of wall-timbers would ultimately suggest the advantage of stepping them into horizontal foundation-beams (ground sills) laid in the slots' ¹⁶. This explanation is open to question. An earth-fast ground-sill, especially one under an outside wall, would be liable to decay just as fast as posts, and when that happened it would certainly have been more difficult to replace than the individual post. Ground-sills are more likely to have been introduced because they offered some structural advantage over earlier methods or were more easy to erect - perhaps both. Viewed thus they represent part of the slow change in timber construction whereby a multiplicity of structural members is gradually reduced in number through the increased use of timber joints and the development of ever more complicated forms of joint. Now given the use of earth-fast posts the task of alligning the heads of a row of posts, whether continuous or spaced some distance apart, sufficiently well to fit a wall-plate above them would have been difficult ¹⁷. However, tenoning the posts into a sill-beam would ensure that a plate could be fitted easily on top, and all the members comprising the wall would have been united, and if one further refinement be envisaged, whereby sill-beams for the

end gable walls were notched over those of the long walls, something approaching a true timber-framed building emerges. This kind of structure was proposed for a building at St. Neots (Hunts.)¹⁸.

The Langhale building was certainly not framed together as completely as that; its end walls, in so far as they could be traced, resembled those of many other earth-fast structures in being independent of the long walls. Since they did not play any part in giving transverse strength to the structure at ground level, as those presumed to have existed at St. Neots would have done, the long walls must have been made strong enough to resist the outward thrust of the roof by other means, one of which was probably the setting of the ground sill in a trench and then packing it tight with earth. It sounds a rather inadequate procedure in the light of later developments and so it no doubt was, but to judge the expectation of late Saxon builders by the standards deducible from surviving vernacular buildings is anachronistic and futile.

This point can be illustrated by analogy. In the twelfth and early thirteenth centuries not a few great churches were provided with roofs which had no other lengthwise stiffening than that provided by the tiling laths¹⁹. By later standards this is fantastically inadequate provision against the racking of the rafters to one end or other, and indeed that is precisely what happened to virtually every surviving roof of this simple type, yet to the carpenters working on the best buildings of the time such a rudimentary check on lengthwise movement must have seemed perfectly adequate. It is therefore possible to regard the use of ground-sills set in trenches as one form of provision against lateral movement, however inadequate this may seem today.

The separation of the west and south wall trenches illustrates a point not infrequently observable in excavated buildings, that the end walls were not integrated with the load-bearing long walls being, structurally, little more than screens. If the walls really were curved then the only possible reconstruction is one using posts set directly in the trench, but so slight is the evidence that further discussion would be unprofitable. On the archaeological evidence, therefore, the only possible sources of structural strength are posts standing in post-positions, principally the two on the sides of the building and just conceivably others at the junctions of the several lengths of ground-sill; although no real evidence of the latter remained. Clearly at this point the uncertainties are so great that it would be pointless to go into detail, yet one general point emerges. Given that the only probable means of supporting the building was to put the ground-sills and the posts above them in trenches to a depth of at least 30 cm. and probably somewhat more, some system of bracing must have been evolved to keep it upright. This is the implication to be drawn from the two axial posts set into quite shallow holes which can never have been more than 30 cm. deep at most, and this may be an over-generous estimate.

February 1974.

X. THE MEDIEVAL FEATURES

THE DRAINAGE DITCHES (Figs. 34 and 42)

The three parallel ditches (F. 11/20, F. 3/10 and F. I) appear to have followed one another from the second half of the twelfth into the thirteenth century as roadside ditches. Whether they also formed a boundary to a medieval toft to their west, surrounding the medieval building of which traces were excavated (see below), is uncertain, but the pottery in their filling indicates domestic occupation nearby. The cart tracks to their east indicate a track rather than a road and no metalling was found on its surface.

THE POST HOLES (Fig. 34)

The group of post holes in the north-west corner of the excavation (features 14-19) and features 22-24 contained coarse wares dating to the late twelfth century, and it seems unlikely that they represent additions to the eleventh/early twelfth century building, as identical wares fill the ditch (F. 20) which cuts through the foundations for this building. It therefore seems likely that they represent some separate structure which replaced the early medieval building.

THE DITCH IN THE COPSE (Figs. 33 and 42)

This ditch, initially thought to be a hollow way, contained pottery dateable to the twelfth century and cut through a fired clay feature containing early medieval ware. Its significance is discussed below.

XI. THE DESERTED VILLAGE OF LANGHALE

The only clue to the location of the now deserted village of Langhale is 'Langhale House', the home of the farmer (Fig. 39). However, two local farmers have collected Saxo-Norman and medieval pottery from their fields and its distribution reveals more about the precise nature and location of the village. One concentration lies around the moat at Moat Farm (Fig. 39, site A) and the other to the east of Bethel Farm (Fig. 39, site B). This latter spread included building rubble and bones (which the farmer believed to be human) and it could represent the site of the parish church. The excavated site (Fig. 39, site C) produced evidence of a third nucleus of Saxo-Norman and medieval occupation. These three nuclei are all apparently quite unconnected by intermediate settlement and presumably therefore represent a dispersed settlement pattern.

A fourth feature of the medieval landscape is a ditch which shows as an earthwork running from the pasture fields west of Langhale House, eastwards, parallel to and abutting onto the present road, as far as the copse adjacent to the 1970 excavation. The dating of its construction, based on the excavation adjacent to the main site, must be late eleventh or early twelfth century provided that the sherds contained in its fill are not residual.

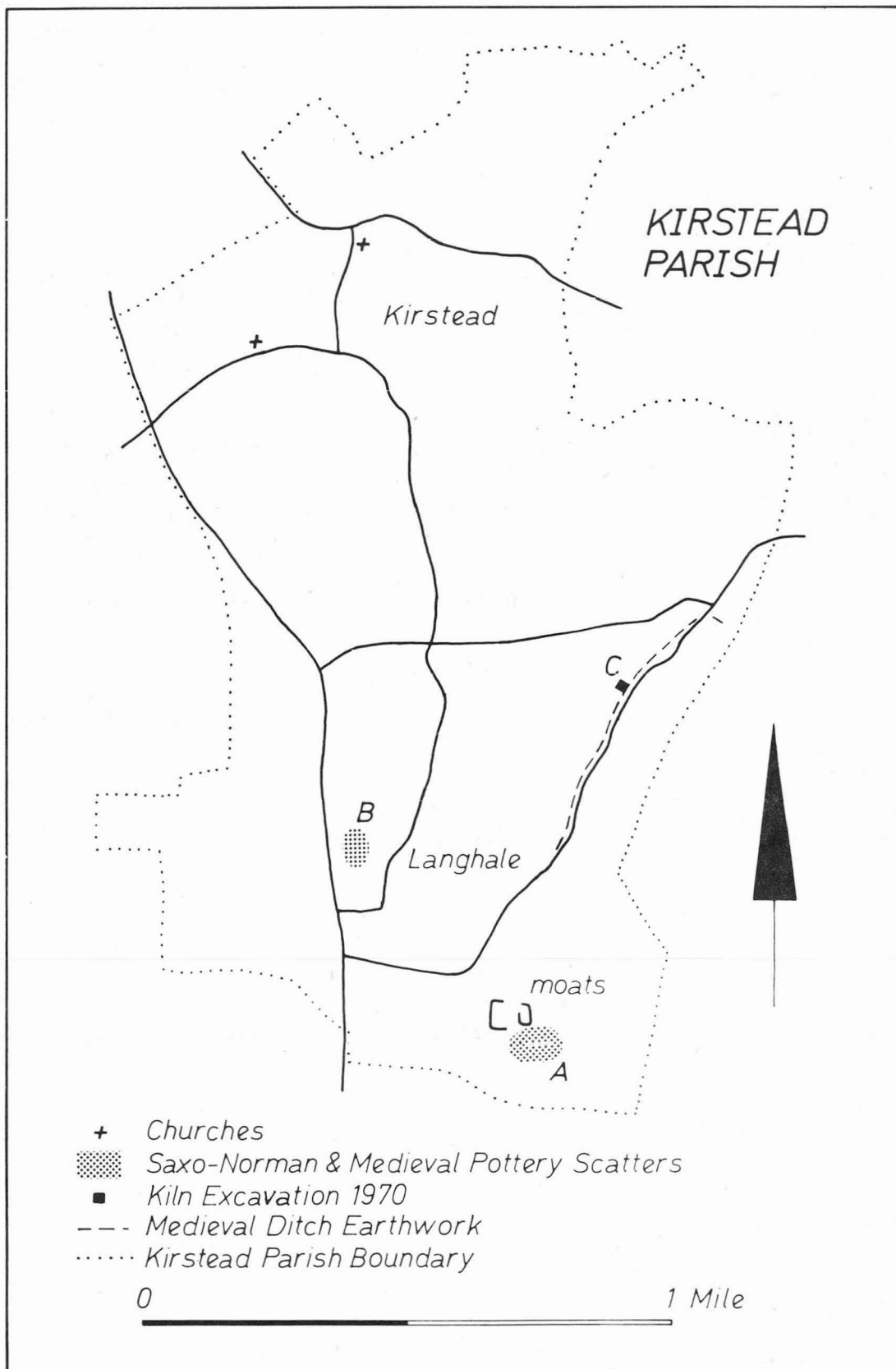


Fig. 39. Map of Kirstead showing sites mentioned in text.

The interpretation of its function is difficult, as no parallels for it have been found in Norfolk. However, the landscape and settlement pattern of the heavy clay lands to the south-east of Norwich has much more in common with those of High Suffolk, and it is to here where we must turn for parallels. Deep ditches are a common feature around Suffolk greens (e.g. Mellis), and there is a thirteenth century reference to a great bank and ditch around the green at Barking Tye, near Needham Market (D. P. Dymond pers. comm.). Settlement focused on common land appears to be the axiom of the dispersed settlement pattern in High Suffolk and as such it would seem reasonable to interpret the Langhale ditch as surrounding an area of common land. Mr. D. P. Dymond has suggested that all the elements of this dispersed settlement pattern were certainly, on documentary evidence, in existence by the fourteenth century ²⁰, and that all the evidence 'implies that the pattern of dispersed settlement was established by the Norman Conquest' ²¹. Certainly, all three settlement nuclei at Langhale produced archaeological material dating back to the Saxo-Norman period and tailing off in the thirteenth century. Unfortunately, the dating of Saxo-Norman pottery does not permit a distinction between pre- and post-Norman Conquest wares, but Langhale is mentioned in the Domesday Book, and one could tentatively suggest therefore that the dispersed settlement pattern was similarly in existence at that time.

It must be remembered that Norfolk was the most densely populated part of England in the eleventh century and the area to the south-east of Norwich was the most densely populated part of Norfolk ²². If, as has been suggested, population pressure on land was one of the main factors in the development of dispersed settlement patterns in East Anglia, then both the cause and effect certainly seem to have existed in the Langhale area in the eleventh century.

XII. THE FINDS

THE POTTERY ²³

1. Thetford-type Ware (Fig. 36, Nos. 1-11, Fig. 40, No. 12)
 - a) buff
 - b) grey-wares:
 - i) light grey
 - ii) grey
 - iii) dark grey
 - c) sandwich wares:
 - i) dark grey inner core, red-brown outer core, dark grey or brown surfaces.
 - ii) dark grey inner core, light grey-buff outer core, dark grey surfaces.

2. Early Medieval Ware (Fig. 40, Nos. 4, 6, 14 and 15)
 - i) dark grey core with reddish-brown surfaces.
 - ii) dark grey core with light buff surfaces (gritty).

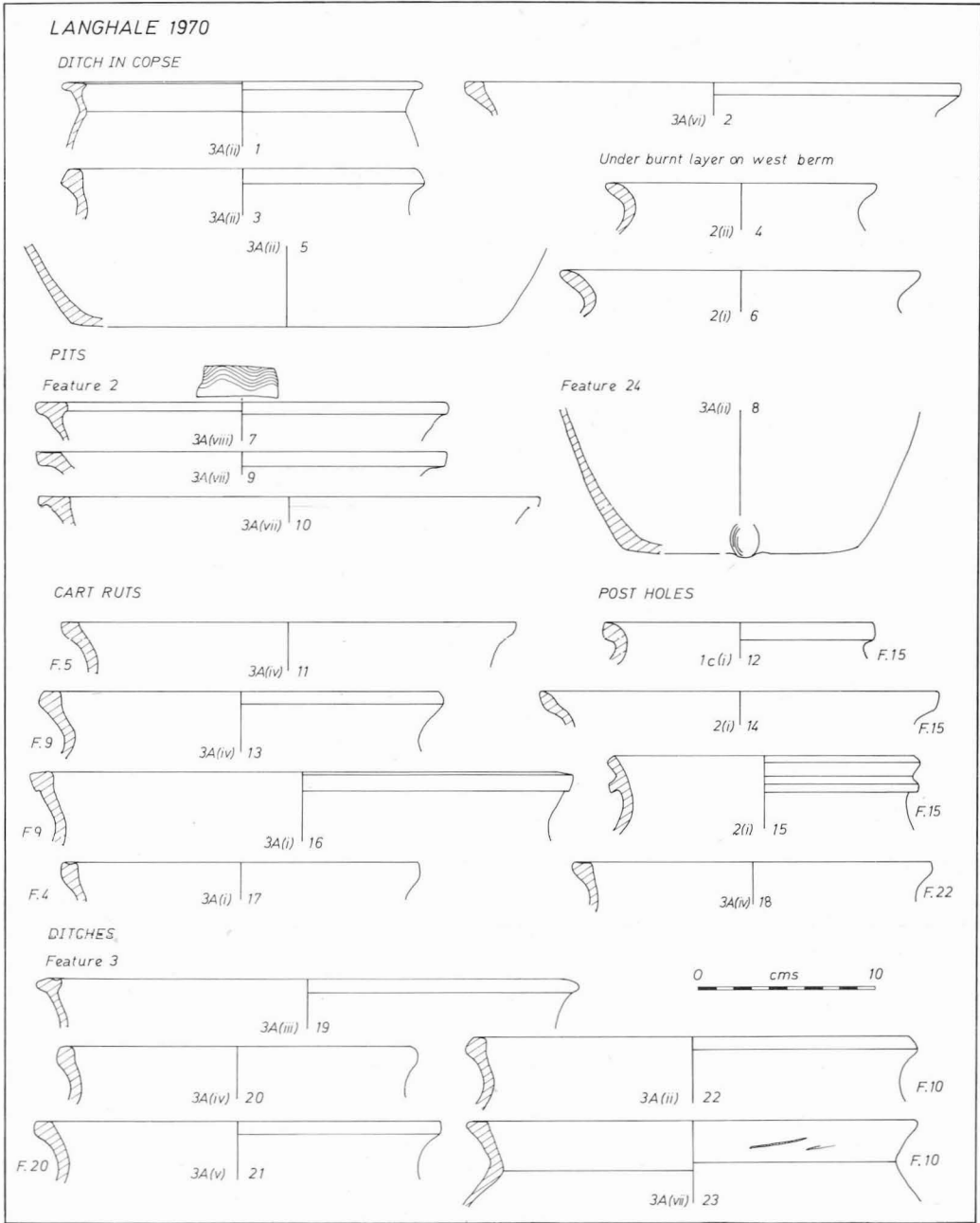


Fig. 40. Twelfth/early thirteenth century pottery. Scale $\frac{1}{4}$.

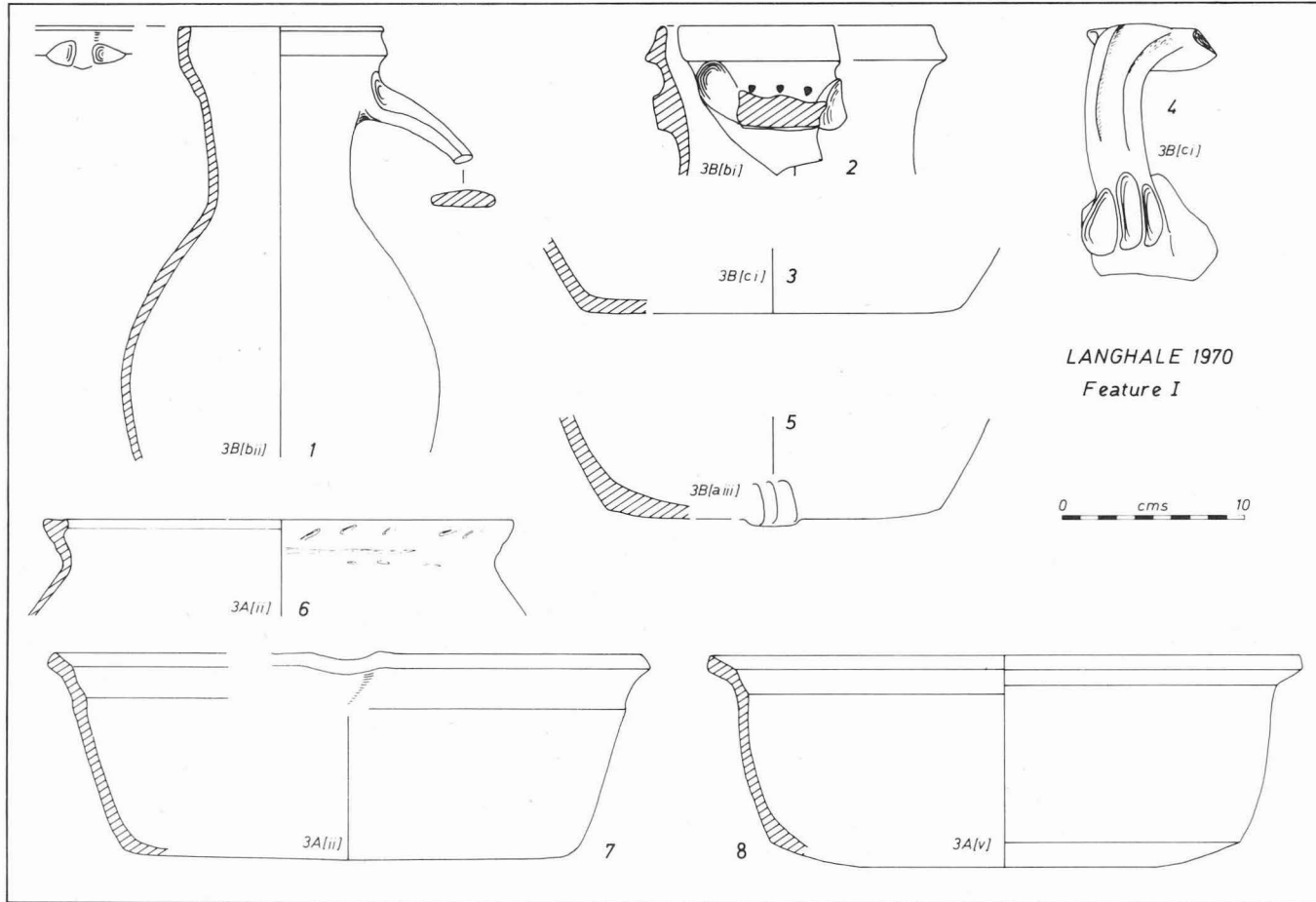


Fig. 41. Thirteenth century pottery.

The Finds

3. Medieval Wares (Fig.40, Nos.1-3, 5, 7-11, 13 and 16-23 and Fig.41, Nos.6-8)

A) Coarse Ware

- a) buff
- b) grey-buff
- c) grey inner core, red-brown outer core, buff surfaces
- d) light buff
- e) dark grey core, light grey-buff surfaces
- f) grey-buff core, brown-buff surfaces
- g) light grey core, dark grey surfaces
- h) grey-brown core, dark grey surfaces
- i) dark grey

B) Glazed Wares (Fig.41, Nos.1-5)

- a) scattered light olive green glaze on outer surface
 - i) greyish-white fabric
 - ii) light grey core, pink inner surface
 - iii) buff fabric
- b) brownish-orange glaze on outer surface
 - i) hard orange fabric
 - ii) hard grey fabric
 - iii) grey-pink fabric
 - iv) hard red fabric
- c) green-brown glaze (with pores) on outer surface
 - i) very hard red-brown-purple fabric
 - ii) very hard orange fabric

XIII. THE SNAIL SAMPLES

by Graham Johnson

<u>Location</u>	<u>Identity</u>	<u>Number</u>
Copse Ditch, 0-30 cm.	<u>Helix aspersa</u>	1
	<u>Capaea nemoralis</u> bands 12345	1
	" " " 00300	3
	" <u>hortensis</u> " 12345	1
Copse Ditch, 30 cm. - 1 m.	<u>Helix aspersa</u>	1
Copse Ditch, 1 m. - 1.30 m.	<u>Helix aspersa</u>	4
	<u>Capaea nemoralis</u> bands 12345	1
	" " " 00300	1
	" <u>hortensis</u> " 12345	1
Top of features 1, 3, and 4	<u>Helix aspersa</u>	5
	<u>Capaea nemoralis</u> bands 00300	1
Feature 1	<u>Helix aspersa</u>	7
Feature 2	<u>Helix aspersa</u>	1
Feature 4	<u>Helix aspersa</u>	2
Feature 5	<u>Helix aspersa</u>	1
Feature 10	<u>Helix aspersa</u>	1
Feature 11	<u>Helix aspersa</u>	1
Feature 20	<u>Helix aspersa</u>	4

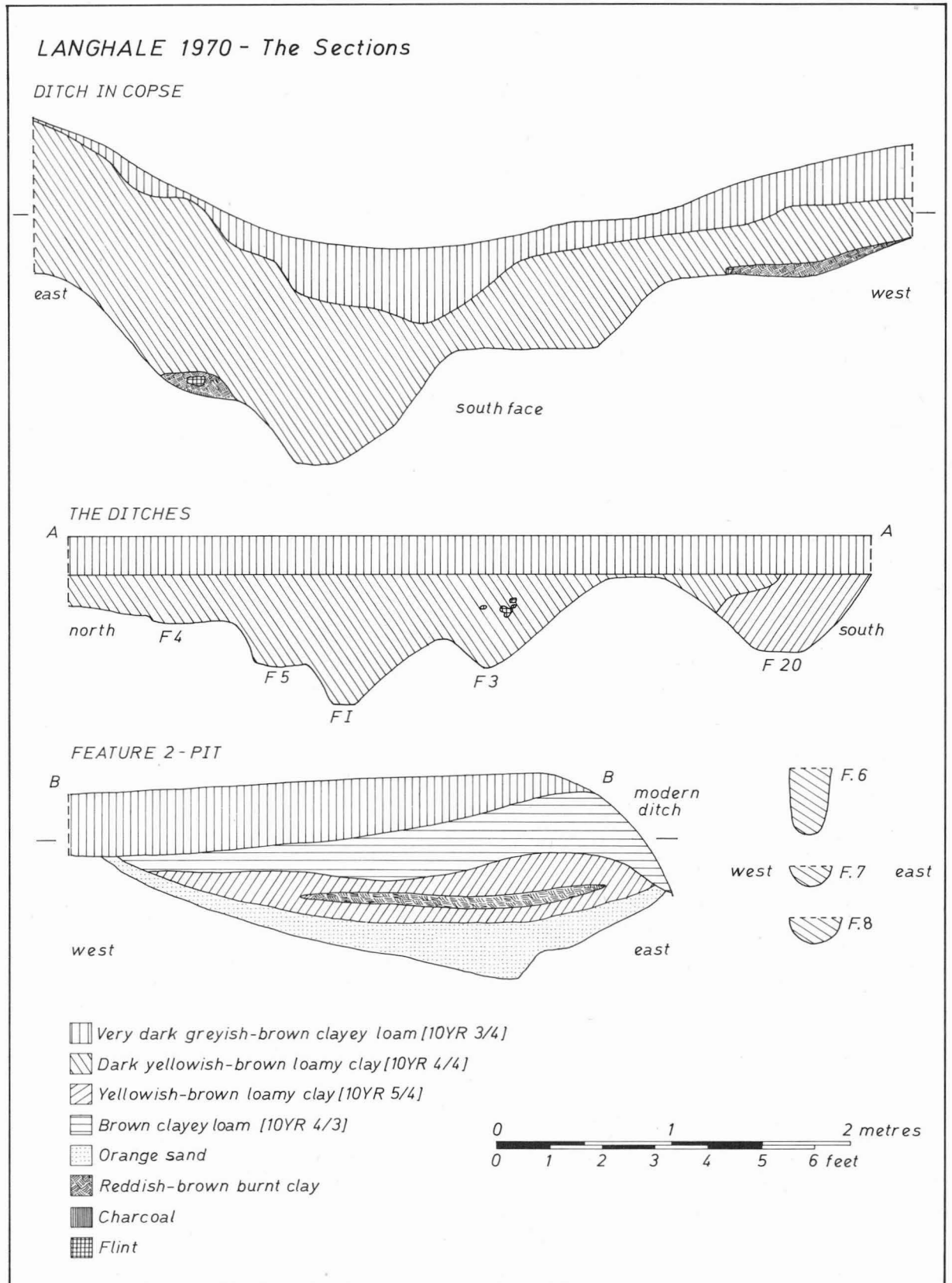


Fig.42. Excavation sections.

The Snail Samples

The paucity of samples, which being hand-collected, are almost certainly unrepresentative, makes strict interpretation unreliable. The H. aspersa and Capaea specimens were common, and the latter indicates a moist environment such as one would expect in the cart-ruts and ditches from which they were retrieved.

December 1973

XIV. THE CHARCOAL by Andrew Jones

The Kiln:

		Weight (gm)
West end:	<u>Betula sp.</u> (Silver Birch)	168
	<u>Fagus sp.</u> (Beech)	48
	<u>Castanea sp.</u> (Sweet Chestnut)	77
Between arches:	<u>Betula sp.</u>	195
Beneath arches:	<u>Betula sp.</u>	101
Ash layers:	<u>Alnus sp.</u> (Alder)	52
	<u>Corylus sp.</u> (Hazel)	45
Stoke pit:	<u>Betula sp.</u>	368
Interior arches:	<u>Corylus sp.</u>	27

Other Features:

Feature 2:	<u>Fraxinus sp.</u> (Ash)	5
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December 1973

August 1975 K. W.

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1. Accession Nos. 443. 972 and 311. 970.
2. Local parallels for this group of pottery (figs. 40 and 41) are difficult owing to the lack of excavated and published sites of the late twelfth/early thirteenth century, but there is nothing in the literature to contradict the proposed dating.
3. Clarke (1970), fig. 7, nos. 5-7.
4. Hurst (1959), 42-51 and Wade (1973), 4-9.
5. Davison (1967), fig. 53.
6. Unpublished material from the excavations at Pott Row, Grimston, Norfolk, 1970-71 (K. R. Wade).
7. Clarke (1970), fig. 7, nos. 5-7.
8. Dunning (1959), 44.
9. Clarke (1970), 81.
10. Davison (1967), 194.
11. Davison (1967), 193 and figs. 53 and 54.
12. Darby (1963), figs. 25 and 27.
13. Really south west, but so-called for convenience of description; and other points correspondingly.
14. Richmond (1961), 19.
15. Addyman (1972), 284, 289, 295-298.
16. Hope-Taylor (1962), 18.
17. This difficulty may be linked with the form of construction known as reversed assembly, whereby the plates supporting the rafters are laid upon the tie-beams rather than beneath them. J. T. Smith (1974).
18. Addyman (1973), 45-9, fig. 13.
19. A point made in Deneux (1927) and of recent years accepted by English scholars.
20. Dymond (1968), 26-37.
21. Dymond (1968), 36.
22. Darby (1963), figs. 25 and 27.
23. The fabric of any illustrated sherd (figs. 36, 40 and 41) is to be found by comparing the notation immediately left of drawing centre-line with the fabric lists.

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Photo: Derek Edwards

TG5207/A/ACB13

Plate XVII. Yarmouth: part of the town from the north. The excavated site and the line of the town walls are overmarked in black.

Excavations on Fuller's Hill, Great Yarmouth

by Andrew Rogerson

I. SUMMARY

The excavation took place on Fuller's Hill, site 1032, the highest point in the medieval town above sea-level. Occupation of the eleventh and twelfth centuries was stratified between layers of wind-blown sand, and has been divided into twelve phases. Fishing was the basis of the economy. Phase VI gave a C14 date of 1010 ± 70 b.p. (a.d. 940) and Phase IX of 890 ± 70 b.p. (a.d. 1060). The only other firm dating evidence was a coin of Edward the Confessor from Phase VI. A series of clay floors were aligned at $c. 90^\circ$ to the modern George Street. Activity after $c. 1200$ was attested by a drain, pits and wells. Pottery evidence suggests that Rows 15 and 16 are later than the early thirteenth century.

II. ACKNOWLEDGEMENTS

The Norfolk Archaeological Unit is grateful to Whitbread (Trafalgar) Ltd. for permission to excavate, to their agents, Piper, Whalley and Partners for their on-site advice, and to the Chairman and staff of Whitbread (Lacons) for their assistance, especially in providing such adequate office accommodation. The writer is grateful to Maureen Mellor, Rose Rogerson and Julia Peckham who dealt with the finds; to Andrew Jones for his environmental work during and after the excavation; to Jude Plouviez for her work as supervisor; to Bruce Induni for on-site recording; to Nick Adams for preparing plans, sections and finds for publication; to George Rye who helped and advised throughout the excavation; to other members of the Great Yarmouth Archaeological Society and to Alan Carter for his advice before the start of the excavation.

All finds have been kindly loaned by Whitbread (Trafalgar) Ltd. to the Norfolk Museums Service, accession number Y250.975.

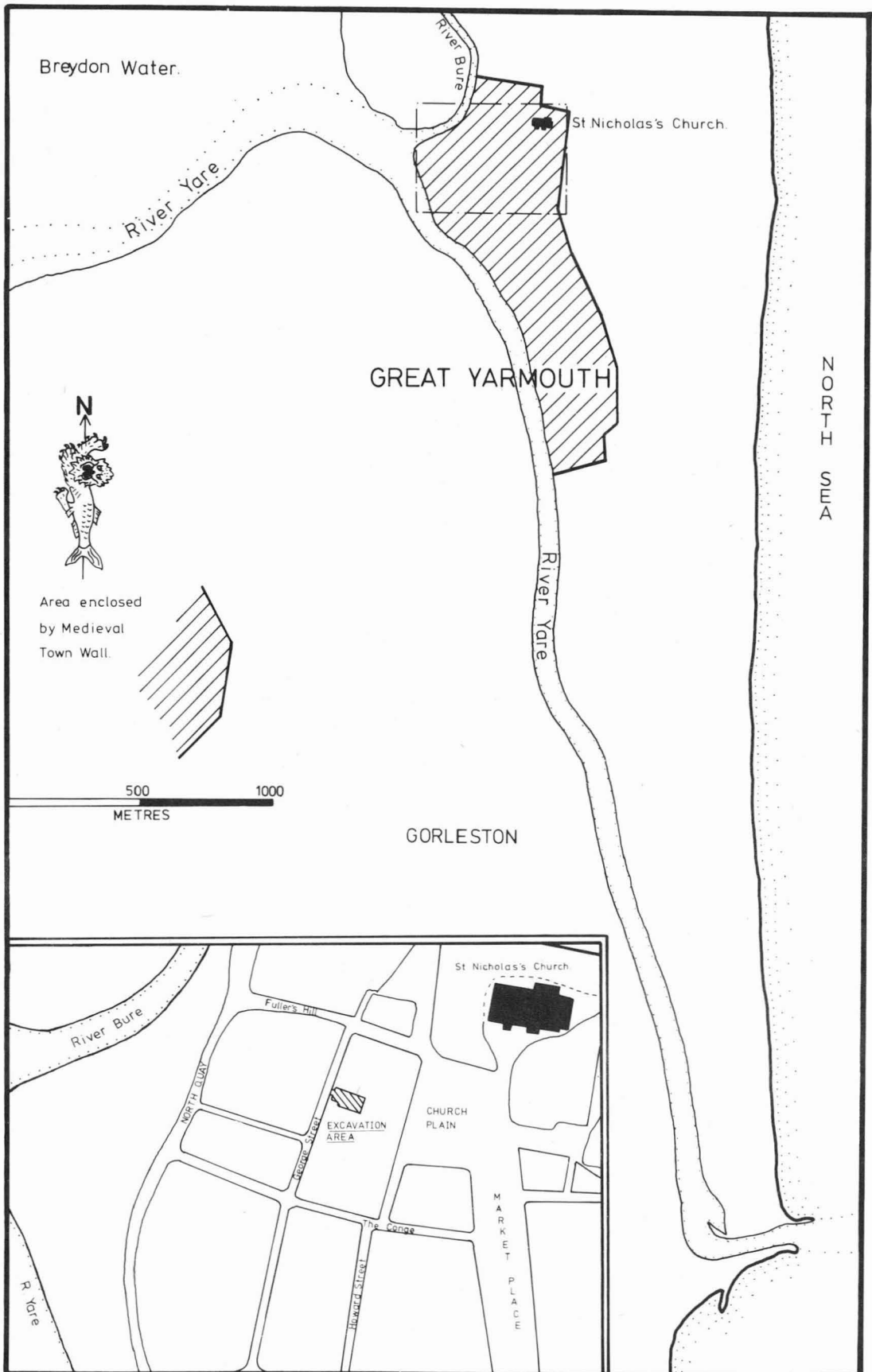


Fig. 43. Location maps.

III. INTRODUCTION

The excavation was at TG 52250796. The site, occupied by Whitbread (Lacons) Brewery until 1973, is to be developed by Whitbread (Trafalgar) Ltd. Work was carried out over eight weeks in June and July 1974. Aims of the excavation were to discover the origin and date of the Rows ¹ that traversed the site, to reveal the primary occupation of the site, and if possible to date it, and, by taking advantage of numerous sealing layers of wind-blown sand, to recover a sequence of data relating to the material culture and economy of the inhabitants.

Underlying geological deposits were not reached during excavation. They probably consist of mixed sand and shingle (of the Yarmouth spit) over the 'Red Beds', lacustrine deposits of the Pleistocene ².

HISTORICAL INTRODUCTION

'... that Sande in the sea whereuppon nowe the Towne of Yermouthe is buylded, did growe into firme lande ...' ³.

The Yarmouth sand spit was certainly occupied in the time of Edward the Confessor ⁴. Domesday Book lists seventy burgesses and twenty-four fishermen. These fishermen are entered under the manor of Gorleston, which perhaps indicates that Yarmouth was at first a temporary fishing settlement used by visitors from Gorleston. The burgesses who may represent trade and industrial activity could have followed on as the needs of an expanding Norwich demanded in the tenth and eleventh centuries ⁵. Fishing must have played as large a part in the prosperity of Saxo-Norman Yarmouth as it did in later and better documented times. No other fishermen appear in Domesday for Norfolk or Suffolk. However, there is a group of eighteen Suffolk places, all probably in the north east of the county, entered as returning herrings ⁶.

Fuller's Hill ⁷ is traditionally the earliest part of the town ⁸ and its relative height above sea-level suggests that it might have been the first part of the spit to emerge from the sea. 'The first houses were erected upon the most elevated part of the ridge of sand, already mentioned, "the gift of the north-east wind", at a place called Fuller's Hill, ...' ⁹.

The former outlet of the River Bure at Cockle Water or Grubb's Haven that existed in the eleventh century ¹⁰ may account in part for an early nucleus at the northern end of the spit. Domesday Book records a church dedicated to St. Benet, and the Yarmouth historian, Henry Manship Junior, claimed that it was situated 'about half a mile north of the present church', the ruins being visible at the time (1619) ¹¹. It has been suggested that Manship's ruins were in fact those of a chapel built by the Cinque Ports in the mid-twelfth century ¹². Traditions associated with the 'Foundacion' of Yarmouth all refer to a sand bank that in time became dry and habitable, but the main disagreement concerns dating between, at the earliest the sixth century ¹³ and the latest, mid-eleventh century ¹⁴. Some early tradition held that the first Saxon settlement was west of the Yare, south of Breydon Water ¹⁵. This is quite possible as regards height above sea-level ¹⁶.

The evidence for an Anglo-Saxon cremation cemetery at Runham Vauxhall is inconclusive, as no finds survive ¹⁷. Barbara Green (pers. comm.) considers that the description of what was found at Runham Vauxhall in 1879 could be associated with salt working.

In the eleventh century the land at Yarmouth stood 4.1 m. higher in relation to the sea ¹⁸. This would allow for an initial settlement in the tenth century, although this was not confirmed by the 1974 excavations.

FULLER'S HILL AND THE YARMOUTH STREET PATTERN ¹⁹

The highest point on Fuller's Hill now stands at + 8.0 m. O. D. immediately to the north of the excavation (Fig.44). Spot heights on a town plan of 1855 ²⁰ show that the ground did rise still higher to a point about 40 m. north of the excavation. The topography to the north has been much altered by the reconstruction of the former street, Fuller's Hill. The town wall is c. + 5.0 m. O. D. at the site of the Northgate, while the pavement outside the west door of St. Nicholas' church is c. + 1.6 m. O. D. (Fig.44). To the east and south the hill gently dips across the line of Howard Street and the Conge and joins with the general north-south line of the Yarmouth Spit. West of George Street the ground has a pronounced slope down to North Quay which is c. + 2.0 m. O. D.

George Street, formerly Middlegate or Northgate, runs north-south along the western edge of the excavation (Fig.44). To the east is Church Plain, and to the south-east Howard Street, formerly Blyndemiddlegate ²¹.

A. P. Baggs ²², in seeking an explanation for the Yarmouth Row pattern, wrote that a former beach line (of the river) existed along Howard Street. He suggests that 'the river was at this time not stable in its course' and that it moved westwards 'first to George Street and later to North Quay and South Quay'. The high ground between Howard Street/ Church Plain and George Street makes such a movement unlikely.

Observations and recording of a section of the course of redevelopment immediately west of George Street in April 1974 showed that all stratigraphy sloped down to the west at an angle that mirrored the present ground surface (p.160). In fact the lowest layers, possibly eleventh century, dipped at a steeper angle (Fig.44). All the clay floors found in the 1974 excavation were aligned approximately at 90° to George Street. It is therefore suggested that the line of George Street, at least in the vicinity of the excavated site, may be of eleventh century origin, and that it lay along the crest of a hill that dipped down steeply to the west and the river. The lowest occupation layers encountered in the 1974 main excavation were at + 2.8 m. O. D. These would have stood high in relation to the river if another 4.1 m. is added to their height. The permanence of the line of George Street is perhaps explained by the prevailing north-easterly wind which deposited sand in such a way that the lee side of the hill remained constantly steeper than to windward ²³.

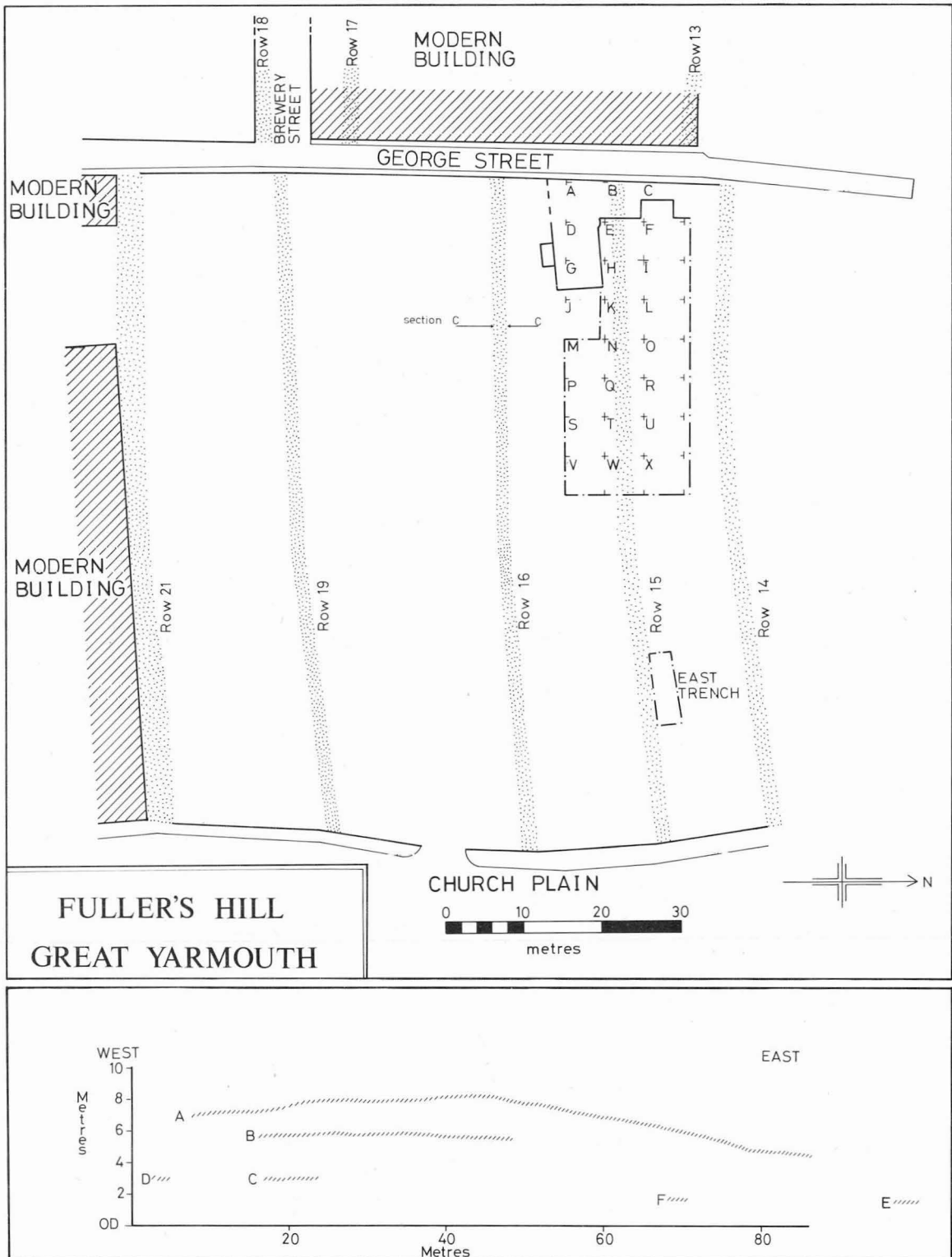


Fig. 44. Location of Grid Squares and lines of Rows.
 Diagram of relative heights above Ordnance Datum.
 (see p. 136 for Key)

Row 14 lay outside the excavated area, while Row 15 was within it (Fig. 44). The only archaeological trace of the latter was a drain (p.151). This feature probably dates to c. 1200. The uncertain evidence concerning Row 16 (p. 154) may point to its post dating c. 1200.

Little information about Howard Street/Church Plain was recovered by excavation, although a very considerable rise in ground level since the thirteenth century may have drastically altered the topography to the east of the site (p.157).

IV. THE AREA CHOSEN FOR EXCAVATION

The concrete and brick foundations of Lacon's Brewery ²⁴ were in places over 2 m. deep. It became obvious that most of the underlying archaeological deposits were being seriously disturbed during the course of the contractors' efforts to remove the foundations. A strip between 15 and 20 m. wide lying east-west along the northern edge of the site was selected for excavation because it seemed not to contain any substantial foundations. This strip, basically the area between Rows 14 and 15, was not taken over by the Brewery until 1870 ²⁵. Most of it was occupied by a meeting house of the Particular or Calvinistical Baptists, founded in the eighteenth century. The human bones found in pits 365 and 366 (p.196) are probably to be associated with this congregation, as is the 'Chapel Tun Room' on a brewery plan of 1890, in the region of Grid Squares R and O (Fig. 44) ²⁶.

A tracked excavator was used to clear away demolition rubble, and it became apparent that much of the strip, especially the eastern half, had been recently disturbed by the removal of foundations. Therefore a spit 1 m. in depth was mechanically removed from Grid Squares M, N, P, Q, S and T (Fig. 44). The south-western corner was found to contain a nineteenth century cellar (400) (p.156). Underground services and a rectangular brick structure (107) (p. 155) prevented the excavation from extending to within 5 m. of George Street. The northern boundary was marked by a brick wall, to the north of which the ground surface was over 1 m. higher. It was decided to leave a baulk 2 m. wide along the southern edge of this wall, in the interests of safety.

Key to Fig. 44 Diagram of relative heights above
Ordnance Datum.

- A. Present surface along line of Row 14.
- B. Surface of excavated site.
- C. Lowest excavated occupation layers in Squares E and H.
- D. Lowest recorded occupation layers west of George Street.
- E. Pavement outside west door of St. Nicholas's Church.
- F. Surface of sand-blown layer (434) in east trench.

The Area Chosen for Excavation

The ground surface north of the wall mentioned above was more representative of the contours of the hill than the flat surface on which the excavation was begun (Fig. 44). This flatness was the result of both the construction and the demolition of the Brewery, and explains why the final plan shows a variety of truncated features of widely differing dates. The highest point on the hill lay to the north of Grid Square X; while the western part of the site contained more surviving archaeological deposits of the thirteenth century onwards because the slope of the hill downwards towards George Street had resulted in relatively less soil having been removed.

V. METHOD OF EXCAVATION

It was decided to secure as deep and long a section as possible across the site, from east to west. Consequently a line was laid out bisecting the excavation. The western half seemed to have more indications of occupation and so efforts were concentrated there. A contractor's pit, 'modern disturbance' in Square K, showed that there was at least 3 m. depth of alternating blown sand and occupation layers. The resulting problems of soil disposal necessitated the partial excavation of Grid Square E and F before that of H and I.

Financial limitations prevented the use of interlocking steel shoring which would have been suitable for the excavation. Conventional plank shoring would have involved diagonal struts, a hindrance to excavation. Also, wooden shoring could not have been installed until some depth had been reached. So the sides of the excavation were battered, an unsatisfactory compromise unavoidable in the circumstances.

The recording of an east-west section meant that Square E was partly excavated and the section drawn before the stratigraphy was followed northwards into Square F. The instability of the soil prevented the section from standing securely above c. 50 cm. at a time. The western and southern edges of Square E were revetted for the most part by standing brickwork, so that battering was not employed until a depth of c. 2 m. was reached. At the same depth, however, Square F was abandoned because the battering's angle of rest had used up all available space. A similar method was used for Squares H and I, although after 1 m. had been excavated in both, Square I was abandoned so that battering could take place north from the section line into unexcavated deposits. Attention was paid to the nature of the stratigraphy in Square I as battering took place. In fact most of the layers in Square K faded out into sand to the north of Section A-A. The sides of well-demolition pit 352 showed that it was cut through layers of yellow and brown sand (almost sterile of occupation, no floors) to c. + 4 m. O. D. Much of Square K had been destroyed by a contractors' pit, still open. The remainder was excavated until the continuing collapse of the pit's sides rendered further work impracticable. Square N was abandoned at c. + 3.50 m. O. D. No features or layers containing occupation material were encountered. Instead the superimposed

strata of sand were interdistinguished by slight changes of colour, from pale yellow to yellowish brown. These layers could be related to the more definite stratigraphy in Square K, and presumably reflect a period of wind-blow, colonisation by marram grass²⁷, and stabilisation. The lack of floors and occupation layers in these Squares left the section extremely unstable. Consequently Section A-A was not recorded to the east of Square K.

All surfaces and layers showing signs of human activity were excavated with trowels, while layers of wind-blown sand were normally shovelled off. However the latter were carefully excavated in part before being shovelled, though in all cases they were archaeologically sterile except near their upper and lower surfaces.

Features that cut through underlying layers were sectioned, then emptied where possible. Larger and deeper features were partially emptied as they appeared at each level (otherwise their sides collapsed). Features with a yellow sand fill (i. e. pits that were open at the time of a sand-blow, e. g. pit 447, Phase IV) were very clearly defined when they cut occupation layers. However in some cases yellow sand fill in yellow sand may well have gone unnoticed and unrecorded.

Soil samples were taken for processing in a flotation tank, with the aim of recovering fish bones, small artifacts, and organic material, which would not have been found under normal circumstances of manual excavation. An objective method of sampling was not employed, but an attempt was made to take soil from each major occupation layer in each phase, as well as from a number of sand layers.

A system of continuous numbers was used for both features and layers. Features or layers allotted more than one number during the excavation have been given one only in this report.

VI. DESCRIPTION OF EXCAVATION

An attempt has been made to break down the sequence of deposits into Phases for convenience of description and to enable finds to be considered as groups. The laying down of floors has been taken as the main indication of succeeding Phases, although this is not always entirely satisfactory, as in the case of Phases IV and V in Square E (p.142). In general, layers of wind-blown sand have been included with the phase that they covered, because it was felt that the numbering of extra phases to describe periods of inactivity would serve only to confuse. Phases are numbered I, II, etc. (from the bottom upwards).

It is admitted that some cases of claimed stratigraphical relationships are not demonstrated by published sections. A partial north-south section (B-B) was taken down only as far as Phase VIII, and not into Square F. The mechanics of soil removal and constant collapses prevented it being continued.

FULLER'S HILL, GREAT YARMOUTH

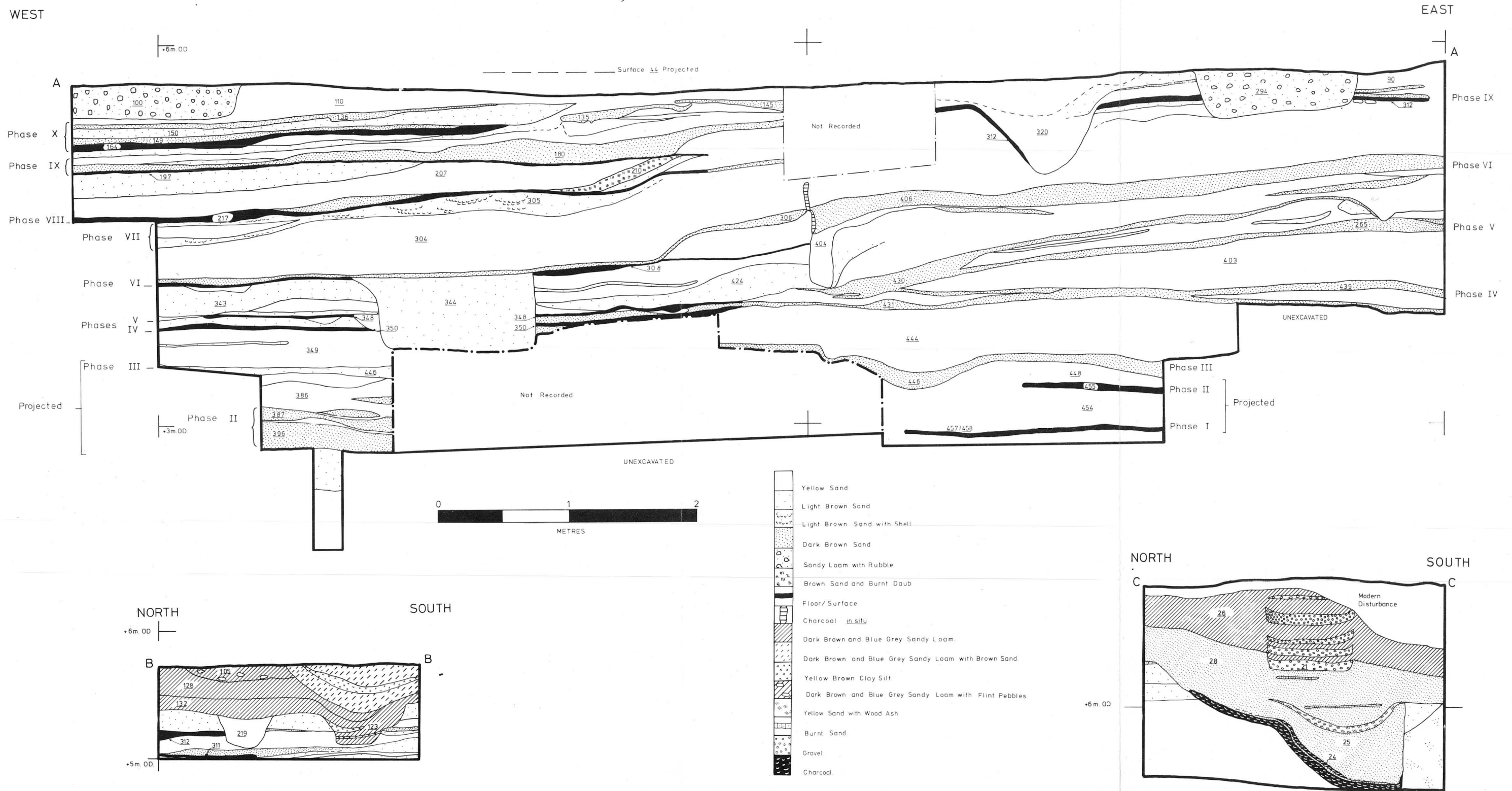


Fig. 45. Sections A-A, B-B, and C-C.

FULLER'S HILL, GREAT YARMOUTH

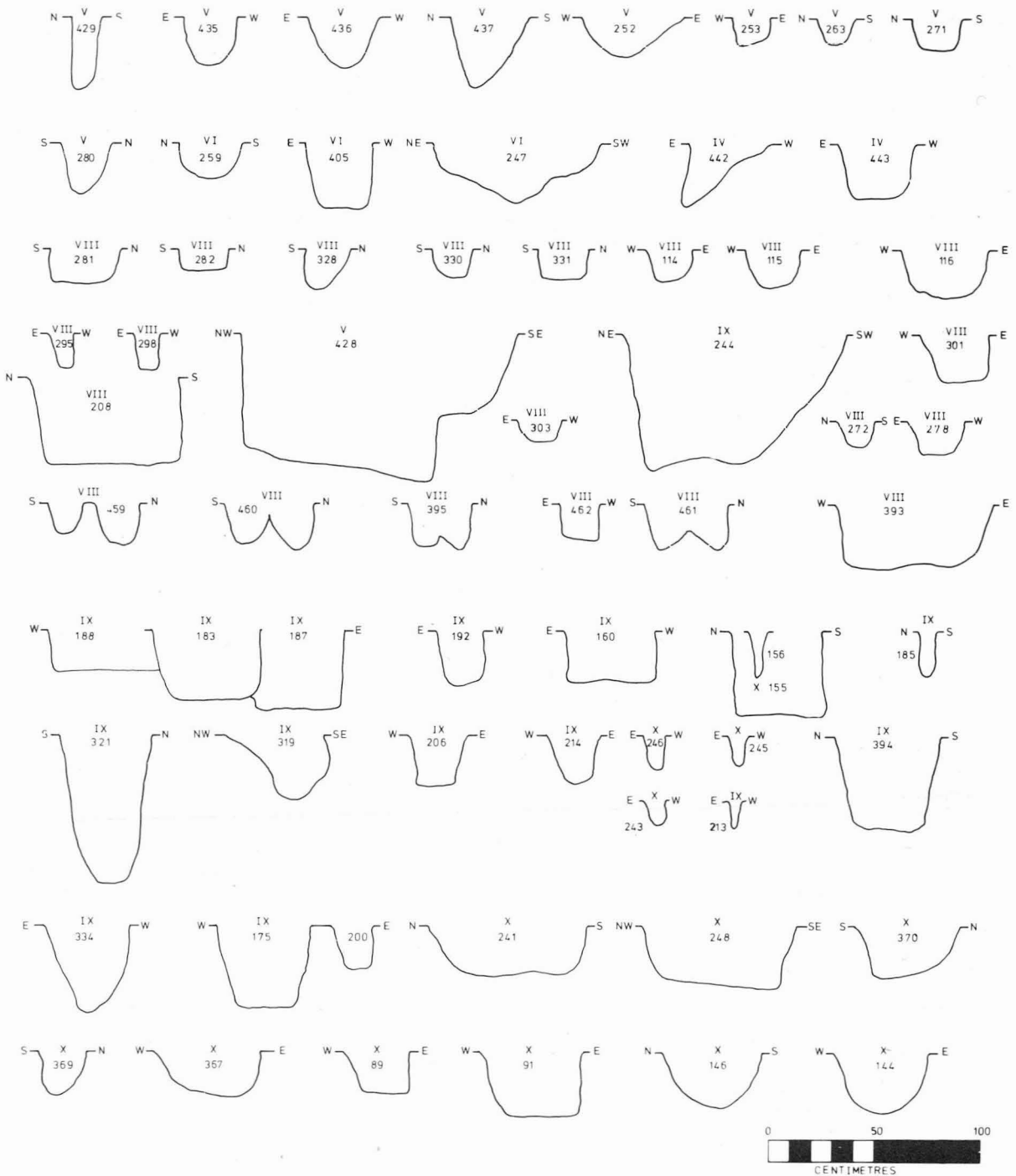


Fig. 46. Profiles of stake-holes, post-holes, and pits.

Pits and other features cut into the top surface of the excavations have been left unphased, and are listed below (p.154-6 and Fig. 50).

Phase I (Fig. 47 and Section A-A, Fig. 45)

The earliest deposits were examined over a very restricted area. In Square E a surface of yellow clay (398), 3 cm. thick, had an edge to the north and east. It was overlain by a thin spread of very dark brown sand²⁸ with fragments of charcoal (beech, poplar and oak)²⁹. This was partly covered by another surface, (397), which was burnt red and covered by a spread of sand and charcoal similar to that over 398. Set in 397 were a rectangular slab of chalk (12 cm x 17 cm x 2 cm) and a squared lump of unburnt yellow brown clay (15 cm x 15 cm x 5 cm). The remainder of both surfaces lay outside the excavation. The underlying yellow sand was excavated to the width of a shovel to a depth of 50 cm. and no evidence of occupation was found. This minute trial hole has very little significance because a lower surface may have lain to one side of it; it may have been cut into a sand filled feature, or it may have been too shallow.

Around 398 the sand was discoloured and yellowish brown in colour. This layer, which was presumably trampled, extended eastwards into Square H (not recorded on Section A-A), where it was overlain by a further surface (457). This was 2.5 cm. thick, and had a defined edge on its west side. Its extent is otherwise unknown. The northern part was burnt red (458). The whole surface was covered with a layer of dark brown sand, c. 1 cm. thick, which contained lumps of charcoal (beech and unidentifiable) and wood ash, especially over 458.

Phase II (Fig. 47 and Section A-A, Fig. 45)

In Square E, sand layer 454 was cut by a flat-bottomed feature, 30 cm. deep. Only the southern limits of this were excavated, and its extent is unknown. It had two fills (387 and 396), separated by a lens of yellow sand. Both were of dark brown sand with charcoal (mainly beech), fishbones and fragments of burnt red clay. The upper fill (387) contained less charcoal. Both were cut by a post void, which also cut the underlying sand. It was probably contemporary because it was sealed by the overlying sand. To the east, a north-south line of five stake-holes (453) showed as circles of dark brown sand, c. 5 cm. in diameter. Two of these were sealed beneath a roughly circular patch of brown sand, hard white wood ash and fragments of burnt red clay and charcoal (449). In Square H, a surface of yellow brown clay (455), c. 4 cm. thick, lay on 454 and had edges on the west and north. It was covered by a lens of dirty brown sand. The northern edge was marked by a thickening of the clay into a raised band, 1 cm. high and 4 cm. across. This band was of unknown purpose, unless it was the result of some method of flattening the surface which left a strip along the edges unimpressed. No signs of walling were apparent. This phase was sealed beneath a layer of yellow and yellowish brown sand (386 and 448). Battering and collapse prevented the full recording of these deposits in Section A-A (Fig. 45).

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Phase III (Fig. 47 and Section A-A, Fig. 45)

This phase is scarcely represented in plan or section. The sand which covered Phase II had an undulating top surface into which was spread a layer of dark brown sand with lenses of charcoal (elm, oak, hazel and beech) burnt and unburnt clay, and fire-cracked flint pebbles. To the west this layer (446) thinned out and merged into yellow brown sand within the excavation. It had no edge to north or south. Its charcoal content increased at the eastern end of the trench and it abutted against a feature of burnt clay (456). This stood at least 10 cm. high and seemed to have a vertical outer face. It was not excavated because most of it lay outside the trench, but it is likely to have been an oven, perhaps similar to those of Phases IV and V (438 and 249). This suggestion is supported by layer 446 which was similar in composition to the rake-out layers (265 and 439) of the above-mentioned ovens.

The absence of any floor or surface in this phase is exceptional. Where this might have been expected, in Square E, there was no sign of activity except the fading-out of layer 446. As with the two preceding phases, III is only partly recorded in Section A-A (Fig. 45). The whole was covered by a layer of yellow and yellowish brown sand (444 and 349).

Phase IV (Fig. 47 and Section A-A, Fig. 45)

Above sand 349 a surface of yellow-brown clay and olive brown sand extended over most of the area excavated in Square E, no edge being found to north, south or west. To the east the edge was difficult to trace with certainty, being clearer in section than in plan. The surface (350) gave way to a spread of grey brown sand and charcoal (431) which in turn merged into a variegated deposit of dark brown sand with lenses of charcoal (twigs of hazel, fragments of poplar or willow), wood ash and burnt and unburnt clay (439). The latter was mostly fragmentary, though some pieces had finished surfaces and were c. 2 cm. thick.

Five possible stake-holes filled with yellow sand (unknown depth) cut surface 350. An irregularly shaped patch of burnt clay may have been a hearth. The numerous patches and lenses of clay intermingled with occupation soil that lay on 350 contrast with the relative cleanliness of the other floors.

A small pit or post-hole (443, Fig. 46) was sealed by 350 and cut the underlying sand (349).

The variegated layer 439 had no clear edges to north or south, but thinned out in both directions and became interlaced with lenses of yellow sand (Section A-A, Fig. 45). To the east it abutted against and entered the stoke-hole of oven (438).

An almost circular wall of yellow brown clay with an opening on its west side (Fig. 47 and Section D-D, Fig. 48) had a floor of hard burnt red clay and was filled with lumps of burnt clay, wood ash and sand. The wall

was burnt externally, but became increasingly burnt towards the interior. Parts of the inner face and the floor had been repaired. The opening, presumably a stoke-hole, was flanked by two charcoal filled stoke-holes. Another stoke-hole cut the termination of the wall immediately to the north of the opening. Layer 439 spilled through into the interior of the oven and lay directly on the floor. Over the oven lay a spread of yellow sand and lumps of burnt clay, which may represent some sort of clay superstructure.

The upper face of the oven wall was smooth and level and seemed deliberately finished off. To the east yellow sand lay both under and against the wall so that it remains uncertain as to whether or not the oven was sunk into the ground surface. To the south a wedge of clay sprung from the outside of the wall towards a vertical band of burnt clay running east-west. This band, c. 2 cm. thick and 12 cm. high, may have acted as some sort of revetment against the yellow sand to the south. The area (441) bounded by the clay band and the oven consisted of yellow sand and lumps of burnt clay, and merged into layer 439.

Pit 447 cut layers 439 and 441 and its upper fill was of yellow sand. It was not excavated below a depth of 15 cm. The fill suggests it was open at the time when the oven and associated layers were covered with blown sand (403).

Two small pits or post-holes (442 and 445, Fig. 46) may be contemporary with this phase. Both cut the underlying yellow sand and were filled with brown sand. The fills were indistinguishable from the surrounding soil (431).

Phase V (Fig. 47 and Section A-A, Fig. 45)

This phase was difficult to distinguish from IV in Square E. Surface 350 was covered by a layer of sand in the north-west part of the trench; this was then replaced with clay. Over the remainder of Square E it was possible to distinguish a band of brown clay occupation soil, 348, which sealed the five stake-holes cut through 350 and joined with the above-mentioned clay in the north-west. The western edge of 348 seemed to be in the same place as that of 350 and from there eastwards a similar sequence of deposits as in Phase IV was recorded. Layer 430 of brown sticky silty sand with flecks of burnt and unburnt clay stretched towards the east, thinning out to the north and south and merging into 265. These layers lay over a band of yellow sand 403 that had covered Phase IV in Square H, but not floor 350.

265 was very variegated and stratified into thin lenses of burnt and unburnt clay, very dark brown loam, charcoal (oak and hazel) and brown sand. To the south it stopped abruptly, but northwards it became less

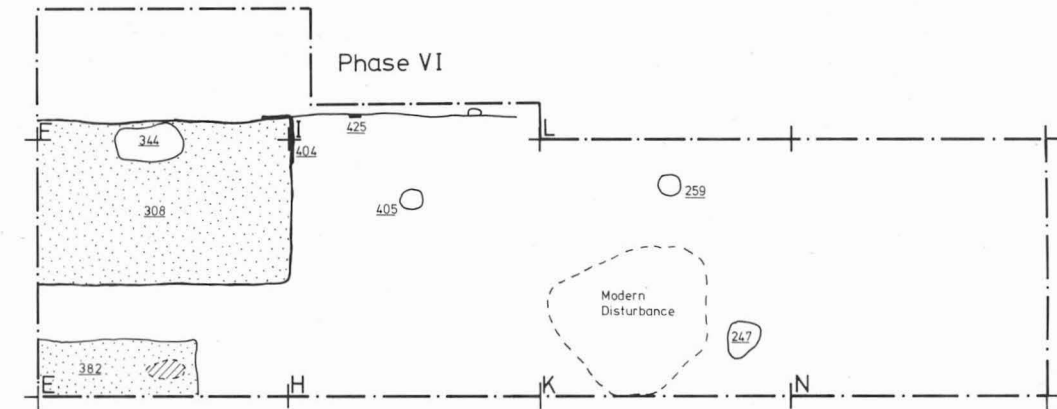
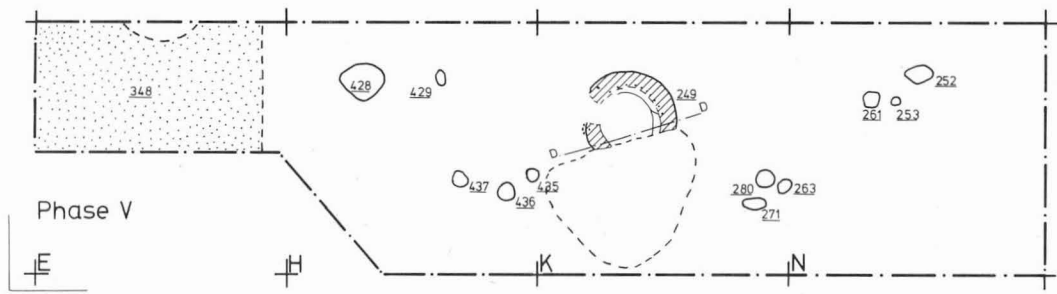
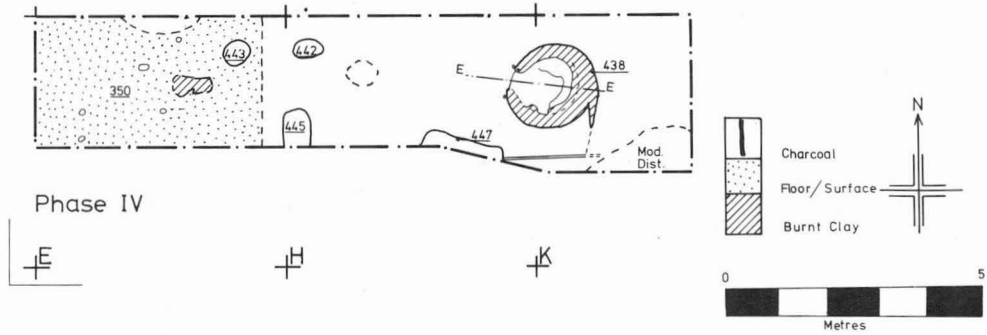
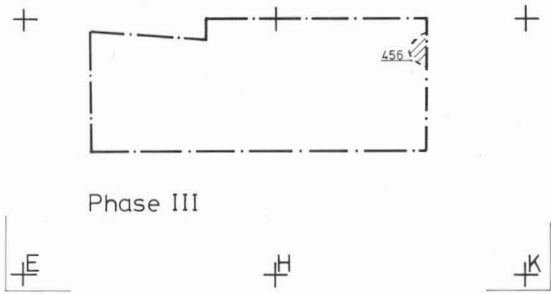
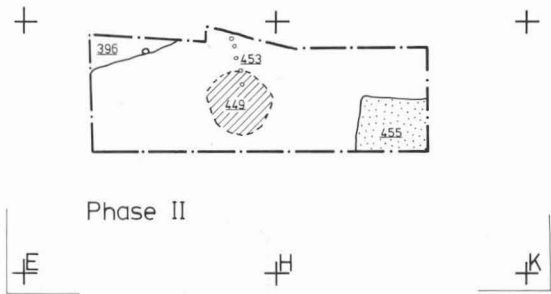
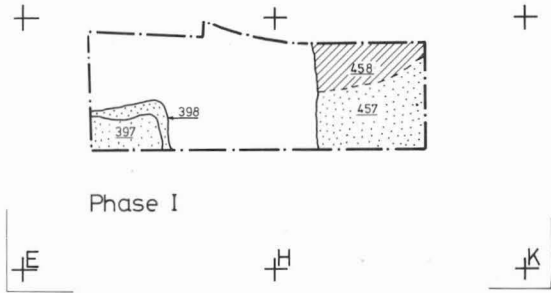
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discrete, becoming interleaved with sand lenses and with layer 430 (cf. layer 439 in Phase IV). 265 became thicker towards the east and continued into the stoke-hole of oven 249.

This structure, (Fig.47 and Section E-E, Fig.48), which was first noticed in the side of the 'modern disturbance' in Square K, was similar to the oven of Phase IV (438). The wall, of unburnt and burnt yellow brown clay, stood to a maximum height of 55 cm. Around the inside stake-holes were placed at intervals of c. 15 cm. As they were 15 cm. deep, they were not visible until the top portion of the wall had been removed. Within this ring burnt red clay was found adhering to the inner face of the wall. It had clearly been applied by hand because its interior surface was scoured by finger marks. The oven floor was a continuation of this facing but incorporated fire cracked flint pebbles and white ash (377). As in the case of oven 438, the clay of the wall became progressively less burnt towards the outside. Layer 249 was largely confined to the stoke-hole and faded out onto the floor. Above this was a fill of loose lumps of burnt clay (and some unburnt). The top of the wall was fairly level and had a deliberately finished appearance. However, a circular patch of loose clay lumps mixed with yellow sand appeared c. 20 cm. above the top of the wall. This suggests that the structure was originally higher or had a less substantial super-structure partly of clay. Immediately beneath the oven, the sand was burnt red to a depth of c. 4 cm.

The difference in the character of the deposits to the east and to the west of 249 was very marked. East of 249 numerous lenses of yellow and brown sand with loamy patches extended back to the edge of the excavation (250, 256, 257 and 270). Two groups of post-holes (252, 253, 261 and 263, 271 and 280 Fig.46) cut the lower of these lenses, but cannot be interpreted with certainty. It is suggested below (p.159) that such clusterings of post-holes could be associated with wind-breaks. Three possible post-holes (435, 436 and 437 Fig.46) cut the southern edge of rake-out layer 265. Pit 428 cut 265 and 430 and was filled with clean yellow sand. Post-hole 429 had a fill of brown sand and traces of wood (Fig.46).

In Square E, 348 was overlain by a deposit of dirty brown and yellow sand (343 and 424). This was unlike the pure yellow sand that covered most of Square H. It is likely that occupation of some sort continued over 348 after the oven and its associated rake-out had been inundated with sand. This sand was clean and produced no finds, while layers 343 and 424 contained pottery, bone and charcoal.



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Fig. 47. Plans of Phases I-VI.

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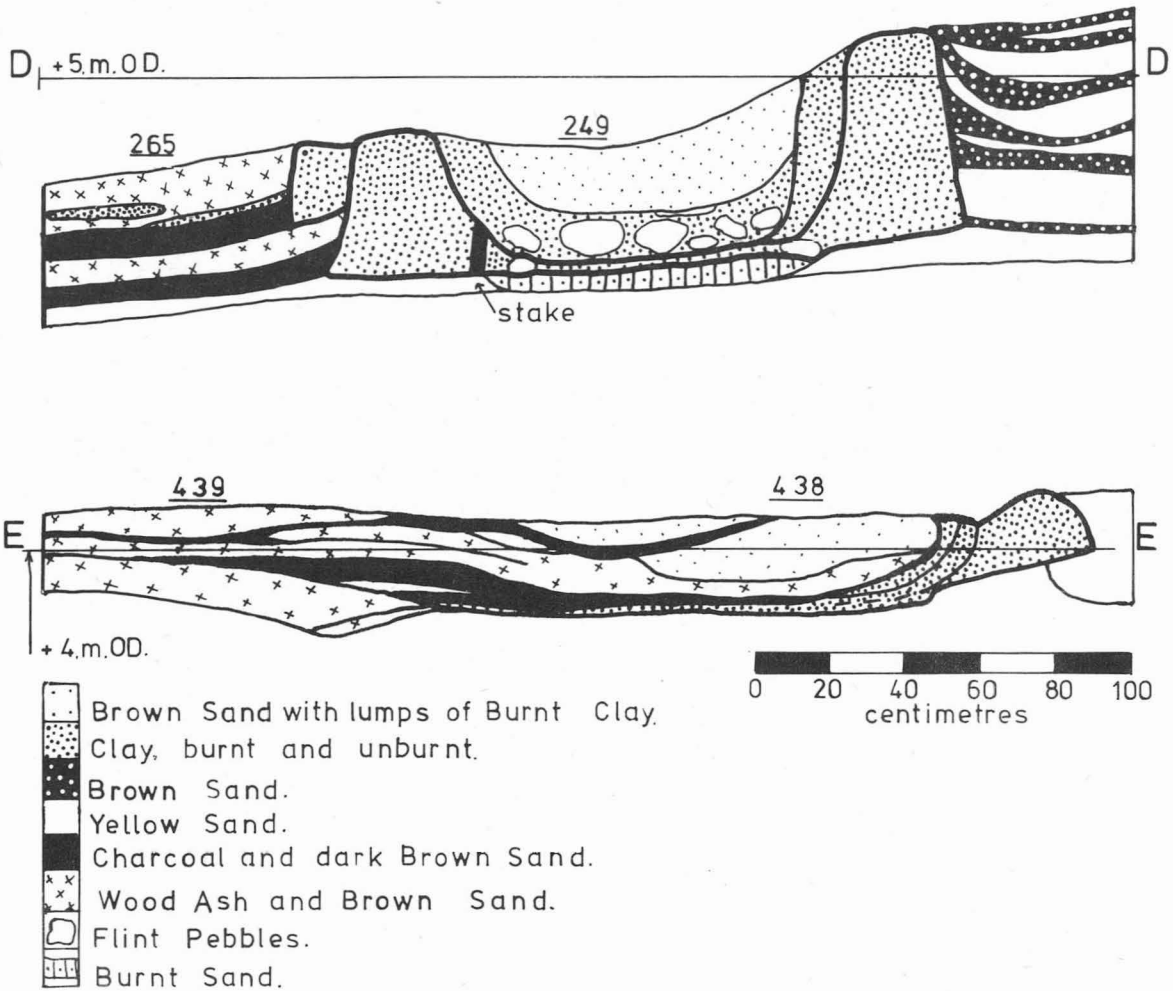


Fig. 48 Sections D-D, Oven 249 Phase V
and E-E, Oven 438 Phase IV.

Phase VI (Fig. 47 and Section A-A, Fig. 45)

In Square E a rectangular area of hard brown sand and olive brown loamy sand with patches of burnt clay (308) overlay layers of discoloured sand (343 and 424). 308 seemed to be a trampled surface, and was covered by a spread of charcoal (306) which retained the same shape as the surface beneath. 306 consisted almost entirely of charcoal (lumps of oak and twigs of hazel). When it was removed three sides of a rectangle were revealed, consisting of lines of charcoal (oak) 404 apparently in situ, and coinciding with edges of 308. At the junction of Squares E and H, 404 was later seen to be continued downwards as a vertical brown sticky stain, set within a vertical disturbance. The two other alignments of 404 were similarly continued as stains, but without any signs of accompanying disturbances.

It is probable that the alignments of charcoal and the vertical stains

were originally the same pieces of wood, and that these consisted of oak planks driven into the underlying sand to a depth of c. 30 cm. It was not possible to record the width of these planks. Layer 306 may represent the burnt collapse of these plank walls (and possibly of the roofing).

In the north-east corner of this structure the surface had been covered by a wedge of blown sand before burning took place, and 306 lay on top of this wedge. At this point charcoal 404 was best preserved.

A pit (344) was cut through 308 but was sealed by 306. It had remarkably vertical sides and its fill of yellow brown sand gave no hint as to its purpose.

The northern part of Square H contained a layer of mottled dark brown loamy sand with lumps of brown silty clay (406). This abutted against 404 and faded out to the south into lenses of yellow and grey sand. Similarly to the east, it rose upwards becoming progressively lighter and less loamy. Its northern edge was scarped into yellow sand to a depth of c. 12 cm. This edge of 406 was cut by two post-holes, one of which (425) contained an uncarbonised wood post (oak) which leaned to the south at 50° to the horizontal. This post, or plank, was in poor condition, and no details of tooling were observable. It measured 45 cm. x c. 12 cm. x c. 4 cm. It is not known why it had survived. Two other post-holes were set in the middle of 406 and had fills of brown sand (405 and 259, Fig. 46). To the south lay a small pit or post-hole (247, Fig. 46) which was filled with dark brown sand, burnt chalk flecked clay and lumps of rush-tempered clay.

South of 308, lay another floor or surface, 382. This was of brown clay, with very clearly defined north and east edges. An oval area of burning may have been a hearth. Over this lay an uneven layer, c. 10 cm. thick, of burnt clay and daub, charcoal (oak) and brown sand. The daub was of chalky clay, 2 cm. - 2.5 cm. thick, with smoothed faces and rush tempering. There were no signs of wattling, although one fragment was pierced by a tapering hole, c. 1 cm. in diameter. A silver penny of Edward the Confessor was found in a layer of brown sand immediately to the south of 308 (p. 161).

Phase VII (Section A-A, Fig. 45)

The collapse over surface 382 was covered by brown sand with occasional lumps of burnt red clay (384). This extended northwards over the yellow sand (304) that covered charcoal layer 306 and merged into yellow brown sand with many shell fragments (305). This layer was traced into Square F, where it became very rich in potsherds and fishbones (341).

Although no surface and no features can be associated with this phase (and therefore it does not appear in Fig. 47), it is treated here as discrete because it was clearly stratified between the surface and charcoal layers of Phase VI and the clay surface of Phase VIII. It also showed more signs

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of human activity than other intermediate deposits. Layer 305 did not extend into Square H, but died out into yellow sand.

Phase VIII (Fig. 49 and Section A-A, Fig. 45)

Over layer 305 a rectangular floor of clay (217) had clear edges to north, south and east. In places it was covered by a spread of dark brown loamy sand with charcoal (mainly hazel twigs) and very thin lenses of clay, possibly repatching. An oval patch of burnt clay and flint pebbles (296) was set in the floor. Two small post-holes, filled with brown sand (295 and 298, Fig. 46), cut 217, as did six unevenly spaced stake-holes, showing as voids. They were aligned east-west, and lay about 75 cm. south of the northern edge of the floor. In the north-west corner a line of charcoal (oak), seemingly a plank, marked the floor edge (283). A similar alignment lay along the eastern edge. Neither had any depth, and there was no sign of the wood staining encountered in Phase VI. They may have fallen onto the floor.

The southern edge of 217 was bounded by a gully (302, Fig. 46) c. 10 cm. deep, with a fill of brown sand and charcoal flecking. It was cut by a small post-hole (303) but seemed to be contemporary with 301, a possible post-hole with a fill of brown sand, charcoal flecking and lumps of burnt clay.

South of gully 302 lay 220, a layer of very dark brown sand and charcoal (oak) with a hard compacted upper surface. It was edged to the north and east and was c. 3 cm. thick. There were no structural details. To the east a sub-square feature (300) was filled with similar dark brown sand.

In Square F a surface of dark brown sand (290) was similar in texture to 220 and was edged to the east and south. It was covered by a thin spread of flint pebbles c. 1 cm. in diameter, fishbones, and mussel shells and was overlain directly by 268. This was a surface of yellow brown clay c. 5 cm. thick, with an edge to the south, but otherwise it covered all the excavated area. In the north-west corner lay an area of burning, presumably a hearth (275). The surface was covered with dark brown loamy sand (267) with fragments of burnt and unburnt clay. Three post-holes, with fills of brown sand, cut the southern edge of 268 (289, 328, 281, Fig. 46), and three others lay to the south (282, 330, 331, Fig. 46). One possible post-hole cut 267 and 268 (272, Fig. 46). The burnt area (275) was also cut by a small post-hole (278, Fig. 46).

A sloping dump of burnt daub, charcoal and burnt red sand (210) lay over 217 near its eastern edge. This was presumably the remains of the eastern wall of 217. Most of the daub had distinct wattle-impressions, but no signs of squared timbers. 210 was the only stratified deposit to contain such impressed daub.

A severe collapse prevented the recording of the relationship between

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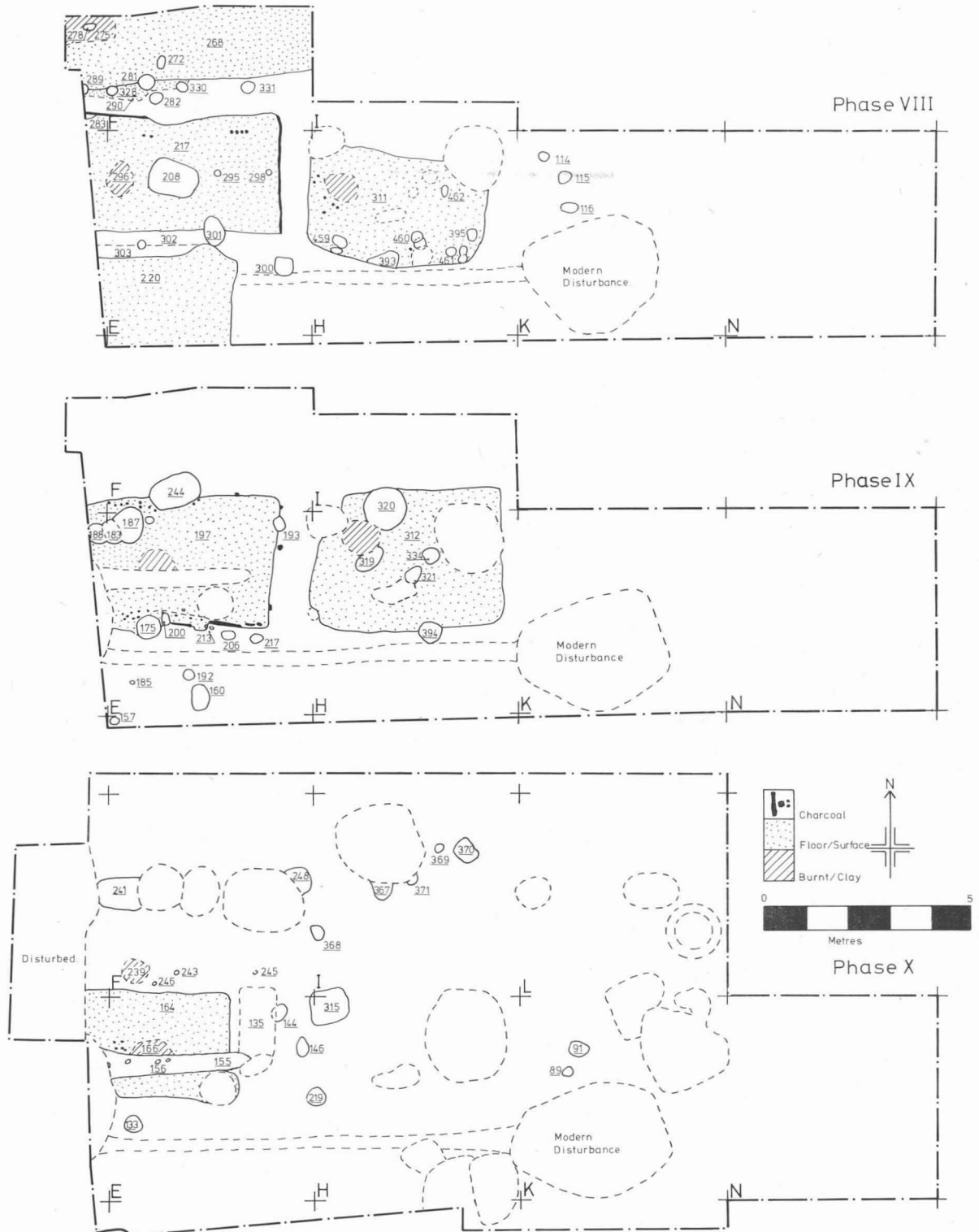


Fig. 49. Plans of Phases VIII-X.

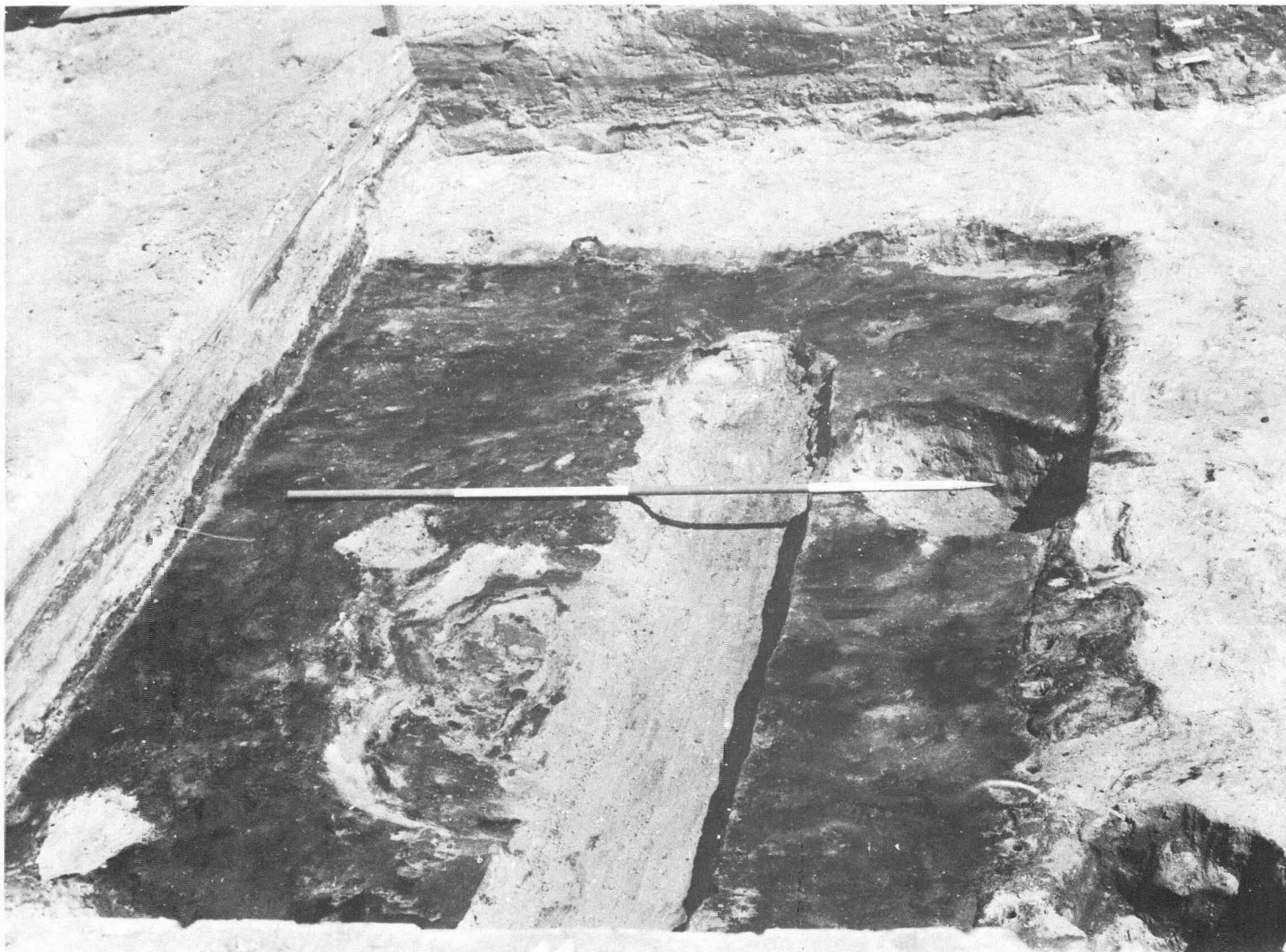


Photo: Andrew Rogerson

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Plate XVIII. Yarmouth: surface 197, Phase IX, with section A-A to the left, from the west.

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217 and deposits in Square H on Section A-A (Fig. 45). This was, however, clear enough to the south. From the eastern edge of 217 a spread of brown sand and charcoal abutted up against the western edge of clay surface 311.

This approximately rectangular floor was burnt over the whole of its surface and was covered with black sand, charcoal (hazel twigs), carbonised hazel-nut shells and severely laminated burnt pottery. Beneath this black sand a patch of burnt clay and firecracked flint pebbles was clearly distinguishable from the rest of the burning by its thickness and hardness. Near this hearth six stake-holes filled with charcoal formed no discernible pattern. Groups of post-holes clustered along the southern edge of 311 and were sealed beneath the layer of black sand (393, 395, 459, 460, 461, Fig. 46). Another single post-hole lay near the north-east corner (462).

In Squares K and M the only features recorded were three post-holes (114, 115, 116, Fig. 46) cut into an uneven layer of loamy brown sand 113. South of 311 there was some disturbance caused by the bottom of 123, a drain of Phase XII. To the south of this disturbance, sand was stratified into thin grey and brown lenses (416). All deposits of this phase were sealed by a layer of yellow sand (207 and 313). However, a pit (208, Fig. 46) filled with dark brown loamy sand and grey silty sand cut through 207 and 217, but was sealed by a surface of Phase IX (197).

Phase IX (Fig. 49, Section A-A, Fig. 45 and Plate XVIII)

Clay surface 197 was burnt red over most of its extent and was covered by very dark brown sand with charcoal (oak and hazel) vegetable ash slag, and flecks of purple burnt clay (180). Between 197 and 180 was a very thin layer containing occupation debris, including laminated reburnt pottery. 180 over-lapped 197 on all sides except the west where both were cut by a recent foundation trench (107). Lines of stake-holes, c. 3 cm. in diameter, ran along the north and south edges of the floor, but as in Phase VIII they were discontinuous. Between these holes and lying on the floor were quantities of curving pieces of hazel charcoal, presumably burnt wattling. There was also some evidence of planking in the form of lines of oak charcoal, c. 2 cm. thick. They were possibly not *in situ*, because they lay on the floor, and were loose and easily removed. Two lumps of charcoal, roughly squared (c. 8 cm. x 8 cm.), were found *in situ* on the eastern edge of 197. Their depth was not recorded, but was at least 10 cm. Another lay on the northern edge.

In the centre of the floor there was a depression caused by slumping into the underlying pit 208 (not on Fig. 49) and west of this was a patch of intensely burnt red and grey clay and firecracked flint pebbles. Two post-holes, with fills of grey brown sand and traces of wood (175 and 200, Fig. 46) cut 180. Two small pits or post-holes cut 180 and 197 and were filled with dark brown sand (187 and 188). Both were cut by a sub-rectangular hole with a fill of clean yellow sand (183, Fig. 46). Another post-hole (193) cut 180 above the eastern edge of 197.

South of 197 lenses of blue-grey and yellow sand were cut by four post-holes filled with brown sand, (157, 192, 206, 214) and by two isolated possible stake-holes (185 and 213). An oval pit (160) was filled with dark olive brown sandy loam and fragments of burnt clay (and the larger part of a cooking pot Fig. 56 no. 62). The area to the north of 197 was devoid of features and consisted of brown and yellow-brown sand.

Pit 244 (Fig. 46) was cut from the top of the sand that sealed 180. It was filled with brown sand, lumps of burnt clay, and contained quantities of reburnt pottery.

Collapse (as in Phase VIII) prevented the recording of the relationship between 197 and 312 in Square H. A continuation of 180 spread eastwards and tailed over the edge of 312. This surface was burnt red over most of its area, but less so at its eastern end. It was very uneven and sloped down markedly to the west and south. It was covered by a layer of black sand with charcoal, fragments of burnt clay, vegetable ash slag, and burnt pottery. Although all edges were clearly defined, no trace of walling was recorded. Three post-holes (319, 321, 334, Fig. 46) cut the clay floor, but were sealed by the spread of burning and charcoal. A small pit or post-hole (394) with a fill of brown sand may belong to Phase X. A round pit (320) was definitely contemporary with 312, because a band of burnt clay continuous with the floor extended down the west and south sides as far as the bottom. At the base of the pit lay a pile of sherds (from an Andenne ware spouted pitcher Fig. 60 no. 130), covered by a gooey organic substance (possibly leather) on top of which was a chalk boulder. To the south-west of 320 was a circular area of intense burning, coinciding with a thickening of the floor and a group of burnt flints.

South of 312 there was some disturbance from Phase XII drain 123. To the east a similar situation prevailed as in previous phases, with layers of discoloured sand rising gently upwards and an absence of features.

Phase X (Fig. 49 and Section A-A, Fig. 45)

In Square E a surface of yellow brown clay (164) lay on top of the sand that had covered Phase IX. It was burnt red over most of its extent and was edged to north, south and east. An area of intense burning may have been a hearth (166) but was incomplete because it was cut by a later feature (155). Five square stake-holes (c. 4 cm. x c. 4 cm.) cut the floor west of 166. No other structural features were noted. The floor was overlain by a spread of dark brown loamy sand with charcoal (149).

Probably because the underlying yellow sand had been levelled off prior to the laying down of floor 164, layers to the east were stratigraphically earlier. 135 was a rectangular area of dark brown sand with charcoal (oak and hazel) and had a hard upper surface. This was in part overlain by a layer of very dark brown sand (145). A scatter of post-holes (133, 144, 146 and 219, Fig. 46) formed no coherent pattern. To the north of 164 a circular patch of burnt red clay (239) lay directly on the

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underlying yellow sand. Two stake-holes (243, 246, Fig. 46) cut pit 244 and were filled with yellow sand and another (245) cut the discoloured sand which lay to the north of 149. This sand was cut by other features in Squares F and I: 367-71 were post-holes and 241 and 248 small pits.

In Square H this phase was hardly represented. Machining and later features had disturbed most of the area, although a layer of yellow brown sand that sealed Floor 312 can be assigned to Phase X. The southern half of Squares E and H were much disturbed by a drain (123) and its associated layers (Phase XII). Pit 315, which contained a complete storage jar, (Fig. 60 no. 133) may have been of Phase IX and associated with floor 312 (although if it was, its position was extremely close to the corner of the floor). Collapse prevented the true relationship being established, but it has been ascribed tentatively to this Phase.

In Square K, two post-holes (89 and 91, Fig. 46) probably belonging to this Phase, cut a layer of yellow sand (90) and a spread of very dark brown loam and brown sand (92).

164 and 149 were sealed by brown sand (150) which was overlain by a spread of dark brown sand with a hard upper surface and lenses of brown clay (136). This did not have clear edges, but roughly coincided in plan with the underlying floor, 164.

A linear feature (155, Fig. 46) cut 136 and underlying layers. It was filled with brown sand and was 40 cm. deep, with near vertical sides and a rounded eastern end. Apart from four stake-holes (156) which may not have been contemporary, it had no observable structural features. It was sealed by yellow sand (110).

Phase XI (Fig. 50 and Section A-A, Fig. 45)

This phase was represented by a yellow brown clay floor, c. 6 cm. thick (44) lying on yellow sand (110). It had been severely damaged by machining so that no original edges survived. The only features that can certainly be associated with it were an area of burning (68) and five stake-holes. This possible hearth had a slightly concave upper surface so that a thin layer of ashy sand (67) survived above it. The height above O. D. of 44 is projected on to Section A-A. This phase is not certainly earlier than Phase XII. Very little cultural material can be associated with 44, and what there is is in part disturbed.

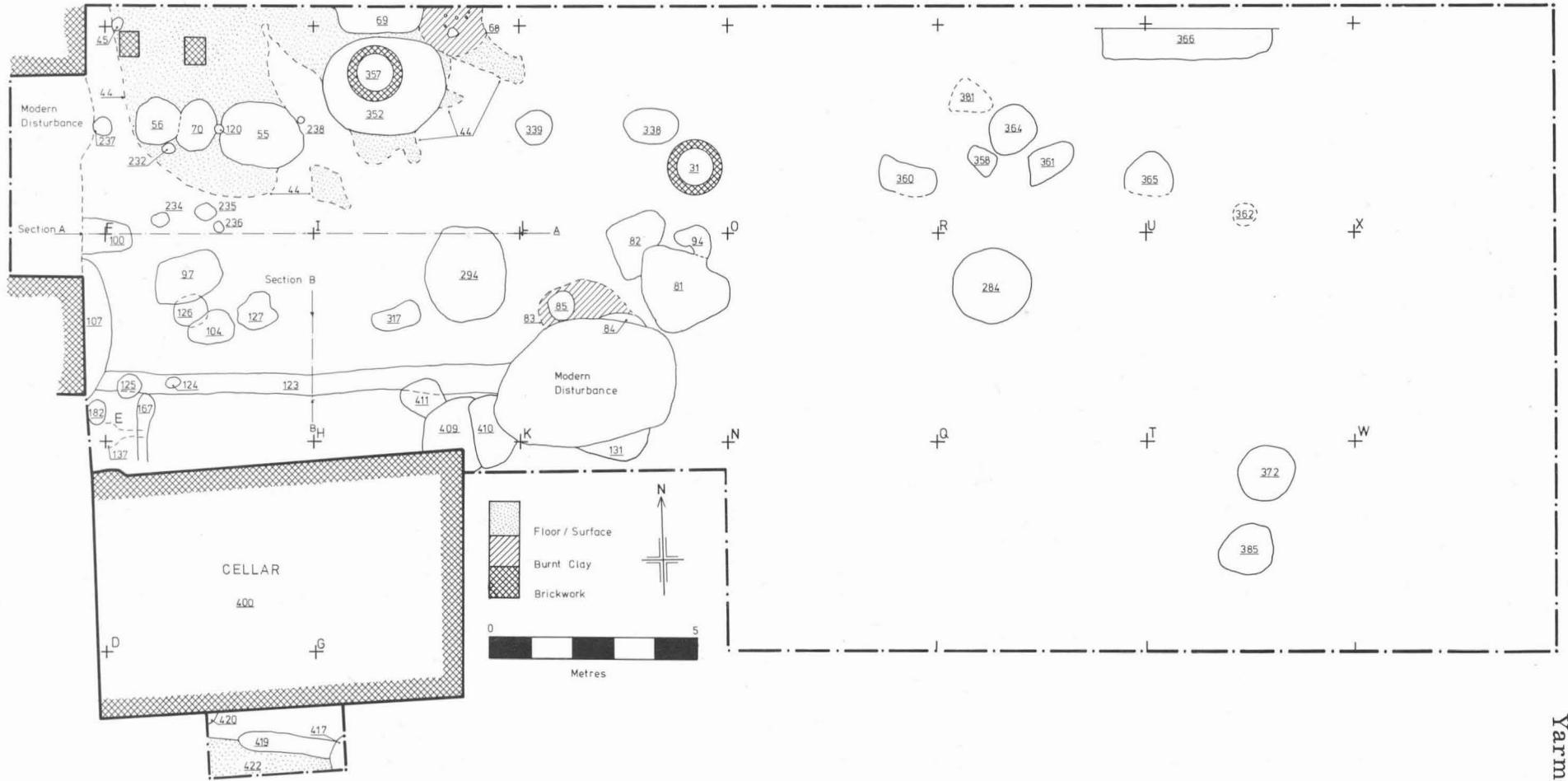
Phase XII (Fig. 50 and Section B-B, Fig. 45)

After the initial site clearance, a line of yellow silty clay was recorded running east-west from the 'modern disturbance' to foundation trench 107. This was the top surviving fill of a drain 123. 123 was a flat bottomed slot with gently sloping sides and a fill of yellow silty clay and very dark brown sandy silt. It sloped downwards towards the west and to the east it shallowed out into the 'modern disturbance'. In some places it appeared

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Fig. 50. Plan of Phases XI and XII and unphased features.

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to have been recut but it was difficult to differentiate between recutting and slumping of the sides. To the north and south were deposits of dark brown and blue-grey sandy loam with occasional flint pebbles (105, 128, 132). These layers lay in a broad area which seemed to be cut into layers of Phases IX and X (not shown on Fig.50). A small pit, 317, was cut from layer 128. All these deposits contained quantities of domestic rubbish but no floors were apparent.

This Phase may have been equivalent to Phase XI, but because there was a gap between them, they have been treated separately. A number of other features may have been contemporary, but are included in the list of un-phased features because of a lack of definite association. Deposits of Phase XII survived only in the southern three-quarters of Squares E and H.

Phase XII differed from all preceding Phases in that it contained no floor surface and its soil was of a more loamy character. Drain 123 had few lenses of yellow brown sand, and the layers on either side of it none. This suggests that during this Phase, sand no longer reached the site, either because wind and tide conditions had changed, or because buildings erected to the windward obstructed the flight of the sand. Little of Phase XII survived to be excavated (although surface 44, Phase XI may have been contemporary), and so little can be said about lay-out. The broad shallow east-west channel with its central drain lying below the line of Row 15 seems to have been an open area that silted up, possibly over a considerable period of time.

Trench/South of Cellar 400 (Fig. 50)

A trial trench was opened immediately south of cellar 400. Under a spread of recently disturbed sand and rubble there lay part of a surface of burnt red clay, with an edge to the north. It was covered by a layer of very dark brown sand with charcoal, wood ash, vegetable ash slag, and charred grains (423). The northern edge of the floor was cut by a flat-bottomed gully, 45 cm. deep, and filled with grey brown sand (419). The edge of a pit (417) with a fill of brown sand and brick rubble cut both gully and floor in the south-east corner of the trench. In the north-west corner another feature, 420, with a similar fill, cut the yellow sand lying to the north of 419. Below 423 was a layer of yellow brown sand at least 40 cm. deep. No further excavation took place.

Surface 423 was of the same character as the floors in Squares E and H. It was on approximately the same level as Phases IX and X (no level was taken). For the purposes of the report on the plant remains 423 is taken as belonging to Phase X. This trench suggests that the succession of floors in Square E may be repeated along the eastern side of George Street.

Row 16 (Section C-C, Fig. 45)

Demolition work gave an opportunity for some rapid recording on the line of Row 16 at a point where the ground level stood c. 1 m. higher than

the rest of the site (Fig. 44). A large hole had been mechanically dug north-south across the line. The eastern section was cleaned up and hurriedly drawn ³⁰.

Five gravel layers (21, of rounded flint pebbles, between 1 cm. and 2.5 cm. in diameter) were separated by four bands of olive brown clay loam. It is not known whether the gravel layers constituted a series of superimposed Row surfaces, or a bedding trench. Their width, 70 cm. ³¹, seems rather too narrow for a Row. They were observed 10 m. to the east, where they were similar in composition, but the lowest gravel layer was 30 cm. higher. To the north and south a layer of mixed yellow brown clay loam and clay (26) may have been cut by 21. The lack of clear stratification within 26 made it difficult to be certain. The soil between the gravel surfaces may have merged into 26 on either side.

Beneath 21 and 26 a layer of grey brown sand with charcoal flecking and patches of burnt clay and sand (28) lay over a pit (25). This had a top fill of yellow sand and wood ash over a main fill of grey brown sand with charcoal. This sealed two tip lines of charcoal (ash and larch), burnt red sand, and reburnt pottery (24). The northern edge of the pit was sloped, the eastern and southern near vertical. The pit was at least 50 cm. east-west, but an unknown amount had been mechanically removed on the west. 25 was cut through layers of discoloured and clean yellow sand.

No sign of anything resembling a row surface was visible for c. 2 m. to the north or south of the section. Whether 21 was a Row or bedding trench, it clearly post-dated pit 25. If 21 was not a Row, then the Row itself must have post-dated all the deposits visible in section, unless it had shifted more than c. 2 m. north or south of the line shown on the Brewery plan of 1890.

Unphased Features (Fig. 50)

- 31 Well, brick-lined, loosely filled with brick rubble. Bricks measured 22 x 10 x 5.5 cm., bonded with hard lime mortar. Not excavated. Square L.
- 45 Post-hole, dark brown loam fill, depth not established. Cutting floor of Phase XI (44). Square F.
- 55 Pit, brown sand and brick rubble fill, cutting floor of Phase XI (44) 50 cm. deep. Bricks mottled purple in colour and 6 cm. thick. Square F.
- 56 Pit, dark brown sand fill, cutting floor of Phase XI (44). 60 cm. deep. Square F.
- 69 Pit, fill of sand, clay lumps, and rubble, cutting floor of Phase XI (44). Probably a modern disturbance. North of Square I.
- 70 Pit, fill of brown sand with charcoal flecks, 75 cm. deep, cutting floor of Phase XI (44). Square F.
- 81 Pit, brown loamy sand fill with brick and roof-tile rubble. 1.50 m. deep. Square K.
- 82 Pit, brown sand fill with brick and roof-tile rubble and twelfth-nineteenth century pottery. 30 cm. deep. Square K.

Description of Excavation

- 83 Area of burnt red clay, disturbed by demolition and cut by 'modern disturbance', lying on sand of Phase VIII or IX, cut by 84 and 85.
- 84 Pit, fill of brown sand and flint pebbles. Depth 22 cm. Cutting 83 and cut by 'modern disturbance'. Square K.
- 85 Pit, brown sand fill, with thirteenth century pottery. Depth 20 cm. Cutting 83.
- 94 Pit, rubble fill similar to 81. Depth 45 cm. Squares K and L.
- 97 Pit, fill of brown sandy loam, burnt clay, brick fragments and nineteenth century pottery. Cutting Phase XII and 126. Depth 40 cm. Square E.
- 100 Pit, fill of brown loam with crushed brick, burnt and unburnt clay, charcoal and nineteenth century pottery. Cutting Phase X. 25 cm. deep. Squares E and F.
- 104 Pit, fill of brown sandy loam with brick and tile fragments and thirteenth/fourteenth century pottery. Cutting 126 and Phase XII. Depth 30 cm. Square E.
- 107 Late nineteenth century brick structure and foundation trench. Cutting Phase IX, X and XII. Squares B and E. This structure was the termination of a tunnel under George Street to the Brewery warehouse on the west side of the road. It could not be removed for reasons of security.
- 120 ? Post-hole, pale yellow sand fill, cutting 55 and 70. Square F.
- 124 Post-hole, brown loam fill, cutting Drain 123. Square E.
- 125 Post-hole, similar to 124. Square E.
- 126 Pit, brown sandy loam fill, cut by 97 and 104, and cutting Phases IX, X and XII. Depth 65 cm. Square E.
- 127 Pit, or post-pit, grey brown sand fill with vertical stain of brown loam at southern end, cuts Phase XII. 35 cm. deep. Square E.
- 131 Pit, brown sand fill, cut by 'modern disturbance' and containing twelfth and thirteenth century pottery. 1 m. deep. Squares J and K.
- 137 Spread of red silty clay, cutting Phase X, probably of Phase XII. Square E.
- 167 Gully ending in oval hole, filled with brown loamy sand. Depth c. 35 cm., cutting Phase XII. Square E.
- 182 Post-hole, fill of dark brown loamy sand, cuts Phase X, probably cut from XII. Minimum depth 25 cm. West of Square E.
- 232 Post-hole, brown sand fill, cutting floor of Phase XI (44). Depth 15 cm. Square F.
- 234-238 Five post-holes cutting yellow sand 110. 234 and 235 were filled with brown sand and brick rubble, the rest with brown sand. Square F.
- 284 Pit, circular and filled with brown sand and rubble. Fragments of brick, partially green and brown glazed roof-tiles, and thirteenth century pottery. Excavated down to + 4 m. O.D. Possibly a dis-mantled well. Cutting unphased yellow and yellow brown sand in Square Q.
- 294 Pit, fill of dark brown sandy loam and rubble. Finds include rubber piping, plaster and nineteenth century pottery. Cutting Phases VIII - X. Depth 50 cm. Squares H and I.
- 317 Pit, brown silty sand fill with flint pebbles, possibly cut from Phase XII. Depth 61 cm. Square H.

- 338 Pit, dark brown sand fill with lumps of clay and thirteenth century pottery. Depth 30 cm., cutting Phase X. Square L.
- 339 Pit, dark brown sand fill, with pottery of the twelfth and thirteenth centuries. Depth 45 cm. Cutting Phase X. Square L.
- 352 Pit, rubble and sand fill with pottery of the fourteenth to nineteenth centuries. Destruction pit of Well 357. Square I.
- 357 Well, brick built, intact below 352 at c. + 4 m. O. D. Not examined. Square I.
- 358 Pit, fill of very dark grey sandy loam above red brown clay, containing thirteenth century pottery. Depth 20 cm. Cutting unphased yellow sand in Square R.
- 360 Pit, rubble and brown sand fill. Rubble included concrete. Depth c. 50 cm. Cutting unphased yellow sand in Square O.
- 361 Pit, fill as 360. Depth c. 30 cm. Containing thirteenth century pottery. Cutting unphased yellow sand in Square R.
- 362 Pit, base of, brown sand fill, with sixteenth century pottery. Depth 8 cm. Cutting unphased yellow sand in Square U.
- 364 Pit, fill of dark brown sandy loam with twelfth century pottery. Depth 30 cm. Cutting unphased yellow sand in Square R.
- 365 Pit, with fill of rubble, brown sand, and disarticulated human bone. Depth 30 cm. Cutting unphased yellow sand in Squares R and U.
- 366 Pit, fill as 365, with human bones and slabs of grey green sandstone. Squares R and U.
- 372 Pit, brown sand loam fill containing thirteenth to sixteenth century pottery. Depth 55 cm., top c. 1 m. machined off prior to excavation. Cutting unphased yellow sand in Square S.
- 381 Pit/disturbance, rubble and brown sand fill. Probably recent. Square R.
- 385 Pit, grey brown sandy loam fill with yellow sand lenses and lumps of olive brown clay and thirteenth century pottery. Depth 50 cm., top c. 1 m. machined off prior to excavation. Cutting unphased sand in Square S.
- 400 Nineteenth century cellar. Built from the inside, i. e. a pit had first been dug and the walls then built up against the side of this pit. Therefore there was no external foundation trench. The outside brickwork was unfinished, with mortar adhering to the soil through which the pit was cut. Squares D and H.
- 409 Pit, dark olive brown sand and flint gravel fill. Depth 50 cm. Cut by 410. Cuts Phase X, probably cut from Phase XII. Square H.
- 410 Pit, fill of yellow sand and charcoal flecking. 50 cm. deep. Cuts 409 and Phase X. Possibly of Phase XII. Cut by 'modern disturbance'. Squares G and H.
- 411 Pit, fill as 410, cutting Drain 123 and cut by 409. Depth 45 cm. Squares G and H.

East Trench (Fig. 44)

A trial trench was opened beneath the floor of a Brewery cellar in the north-east part of the site. The surface of this floor was at + 4.50 m. O. D. The trench 8.75 m. x 3 m. was partially excavated down to

+ 1.40 m. O. D. A post-medieval well and foundation trenches of the Brewery considerably reduced the area available for excavation, but a series of clay surfaces, hearths and pits were recorded. The small size of the trench and the complexity of the deposits made a full understanding of the sequence impossible. Therefore no detailed description is attempted here. But it should be noted that all surfaces were found in the western area of the trench, and that there was a general tendency for all layers to slope gently downwards towards the east, reflecting the general contours of Fuller's Hill. There was no trace of Row 15 which must have ran very close to the southern edge of the excavation. There were few layers of wind-blown sand and these were thin and discoloured. In a limited sondage at the western end of the trench a layer of pale yellow sand (434) was encountered at + 1.80 m. O. D. This was at least 40 cm. thick (Fig.44).

The evidence of the pottery suggests that the lowest layers are of the same date as Phase XII in the main excavation, and that the trench's uppermost deposits are no later than the mid fourteenth century (p.195). The absence of pottery of the types found in Phases I - X shows that either there was no eleventh and twelfth century occupation to the west of Church Plain, or that it lies below + 1.40 m. O. D. If the latter is the case, then the changes in the topography of this part of Yarmouth since Saxo-Norman times must have been very great indeed.

VII. DISCUSSION

THE STRUCTURES

There is no doubt that the clay surfaces found in Phases I - X are the remains of the dwelling and/or work places ³² of people engaged in fishing. The quantities of fish-bones and fish hooks support this. It is difficult to believe that any of the burgesses mentioned in Domesday or their descendants lived on the excavated site. Although their economic status and their life style are relatively unknown, it seems probable that they would have lived in more substantial buildings, and that they would have left behind them more evidence of trade. In this context it is interesting to note a reference to a stone house in Yarmouth in 1199 ³³. It is unlikely that this was at all typical of merchants' houses at this period.

The clay floors and their associated structural remains are unimpressive and despite the well-defined stratigraphy and the small amount of disturbance from one layer to another, the evidence that could be used for reconstruction is slight and unsatisfactory. Surfaces such as 455 in Phase II had no associated structural details, and are perhaps all that has survived from tents with clay floors and peg-holes that left no trace. Other surfaces, such as 217 in Phase VIII, may have had walls of clay and turf stabilised with stakes ³⁴. In these cases the stake-holes are discontinuous. Roofs were presumably thatched and the quantities of burnt rush (*Juncus maritimus*) over some floors, e.g. 217 Phase VIII and 197 Phase IX, would suggest that they were. Burnt rush was recovered from charcoal layer 180 which lay over floor 197. Further rush was found compressed into the surface of 197, and this may have been the remains of matting. The centrally placed post-holes (295 and 298) cutting

surface 217 may have been roof supports, but in view of the apparent feebleness of the walls, it is unlikely that the roof was double pitched. The oak planks surrounding surface 308 in Phase VI remains an exceptional method of construction. It is possible that this surface, which was not a discrete layer of clay like most of the others, may have been the floor of a roofless plank revetted structure.

The use of sill-beams and timber-framing cannot be ruled out. Such a method of construction would have left little or no trace if the sills had been placed directly on the clay surfaces. The raised bank along the northern edge of surface 455, Phase II, may have marked the position of a sill-beam. The lines of oak charcoal on surfaces 217 and 197 may have been sill-beams, although they seemed to be the remains of planks and not to be in their original positions.

It is unfortunate that none of the floors in Square E could be completely revealed in plan because no certain details of the length east-west of these structures are available. The two (almost complete) floors in Square H, 311 and 312, may not have had the same status or use as those to the west and therefore may not reflect the latter's size. If the present eastern edge of George Street is presumed to lie (approximately) over its early medieval predecessors, then about 5 m. could be added to the length of the structures excavated in Square E. This would give a maximum of c. 10 m. in Phase I and a minimum of c. 8 m. in Phase X. The greatest recorded width of any floor in Phase I - X was 3.25 m. in Phase VI (308) and IX (197), although 44, the highly disturbed floor of Phase XI, was at least 10 m. x 4.85 m.

There was no definite evidence for doorways in any of the excavated structures. This can be explained by a predominant northerly or easterly wind which would have resulted in openings being situated in the west or south walls, i. e. not within the area excavated.

Clay was the largest surviving body of material that had been imported onto the site. Its use as a flooring material was necessitated by the unstable and soft nature of the sand. The absence of building stone rendered the use of clay in the construction of ovens essential. Considerable effort was clearly expended on its importation onto the spit. It seemed worthwhile, therefore, to determine possible sources of these clays, and thereby give some indication of the use the inhabitants made of the resources available in the surrounding area (p. 233).

Neither excavation nor soil flotation of ovens 438 and 249 yielded any definite evidence about their purpose. Their high firing temperature and their small size suggests they were not used for drying fish or grain ³⁵. However, large quantities of charred oat grains were recovered from the rake-out (265) of 249. Perhaps both structures are best interpreted as domestic ovens, perhaps for the baking of bread.

Most of the post and stake holes in all Phases defy interpretation. Many of them may not have been intended to carry structural members, but may have been holes casually dug into the surface of the sand either for some purpose now inexplicable, or for no purpose at all. Some features contained traces of wood, e. g. 89, Phase X, and 422, Phase IV. Others were filled

with clean yellow sand e.g. 243, 245 and 246, Phase X. Clusterings of post-holes in Squares K and N may have carried wind-breaks, e.g. 114 - 116, Phase VIII, but the evidence for this is very unsatisfactory.

SAND-BLOW and LAY-OUT

The question of whether the site was occupied seasonally or permanently and the problem of the frequency of sand-blow and the time taken for sand-layers to accumulate are inter-related. The fish-bones do not suggest only seasonal occupation (p.222) while the other domestic rubbish could be the result of either seasonality or permanence. All major floors and their structures had been heavily burnt. High winds may have caused walls to collapse and hearth fires to spread, thus destroying the buildings, and they would also have brought sand. So the destruction of a structure and its inundation with sand could have occurred within a very short time. When the inhabitants returned after a storm they may have removed quantities of debris and re-established themselves close to their original floor level (as in the case of Phases IV and V). In other cases they seem to have levelled off the surface of the newly arrived sand and then built a new structure.

The above suggestions do not solve the question of the time lapse between phases, and of the date range of occupation as a whole. There was continuity of alignment in each phase, and consistency in the absence of activity in the eastern area of the site. This suggests that the time lapse was never very long. However, this continuity may be misleading. If the shape of Fuller's Hill remained constant as the ground level rose, i.e. if there was a consistently steep slope down to the river west of the line of George Street and if the north-south crest of this slope remained relatively fixed, then the location and the alignment of huts could have been the same over a considerable period of time.

It should be stressed that despite the fact that a very large proportion of the soil removed during the excavation was wind-blown sand³⁶, a number of uncertainties exist concerning the archaeological implications of this sand. For example the rate of build-up and the relative thickness of sand layers cannot be correlated with a firm time-span. The total quantity of sand could have arrived within a matter of a few years, or over a century or more. It is not known whether at times the wind exposed occupation layers previously covered with sand, thus reducing the ground level, rather than building it up. In some cases the stratigraphy showed that attempts had been made to level off the ground surface. This may well have occurred on more occasions than were observed. Indeed the very mobile and soft nature of the sand lends itself to easy removal, but not to the production of clear and recognisable archaeological features. Blown sand is a natural phenomenon that has received considerable study, but not in relation to archaeological sites. It is hoped that any further excavation of early medieval Yarmouth will involve the cooperation of coastal sedimentologists, because a strictly archaeological approach cannot recover the maximum information. Additionally, so that a clear picture of the town's ecology can be gained, further work should include pollen analysis³⁷.

Nothing certain can be said about property divisions in Phase I - X because the area excavated was too restricted. It is true that the southern edge of all surfaces in Square E roughly coincided with the line of Row 15. Whether or not this was mere coincidence cannot be ascertained without further excavation to the south, under the nineteenth century cellar (400). A pattern of structures fronting on to the line of George Street is suggested by the meagre evidence found in the trench opened south of the cellar (p.153). Little is known about the early medieval activity to the west of George Street. The layers observed and in part excavated contained no certain floors, but there was considerable evidence of occupation with spreads of burnt clay, discoloured brown sand and domestic refuse. The angle at which these layers dipped down to the west suggests that permanent structures would have been impossible without terracing, of which there was no sign.

Excavations in Squares M - X were not sufficiently extensive to show whether the absence of human activity in the later Phases was also the case in the earlier. However a pit or dismantled well (284) in Square Q was cut through thin layers of archaeologically sterile yellow and yellow brown sand down to a depth of + 4 m. O. D. (it was not excavated below that depth). A test hole, 3 m. sq. in the north-west corner of Square T (not shown on Fig. 50) was taken down to the same depth. Similar sand layers contained no finds. This apparent lack of occupation can be explained by the importance of the area to the west (the river shore-line and the line of George Street) to the inhabitants of the excavated structures. The wind-swept dunes to the east may have held little attraction.

WATER SUPPLY

The maintenance of a fresh water supply must have been a considerable problem for the inhabitants of Fuller's Hill. There was no evidence as to how this was overcome in Phases I - XII, although any wells could have been situated outside the small areas excavated in each Phase. It seems most likely that wells were dug in the lower ground around Fuller's Hill so that the difficulties of digging through such a depth of wind-blown sand were avoided. The large storage jar set in pit 315, Phase X, could have been used as a water container ³⁸.

DATING

The dating of the sequence of occupation on site 1032 is made uncertain by three factors.

1. The lack of documentation, except for the Domesday reference.
2. The fact that the primary occupation of the Yarmouth spit was not certainly reached.
3. The lack of any known correlation between the frequency/quantity of sand-blow and the passage of time.

The pottery evidence suggests that Phase V should lie in the latter part of the eleventh century because of the presence of imported wares (p.195) and that Phase XII, which was probably a slow accumulation, should be dated to the late twelfth or early thirteenth century.

However Phase VI is dated post 1042 by a coin, and to 1010 ± 70 b. p. (a. d. 940) by C14 (p. 234); Phase IX is dated 890 ± 70 b. p. (a. d. 1060) by C14. The above C14 dates quote one standard deviation, and suggest that Phases I - V should lie in the tenth or very early eleventh century, and that there could be as much as 200 years between Phases IX and XII. If two standard deviations are quoted for each result, then the dates would be Phase VI a. d. 800 - 1080, and Phase IX a. d. 920 - 1200. These would agree with a tentative chronology: Phase I c. 1000, Phase VI mid eleventh century, and the end of Phase XII c. 1200 or later.

VIII. THE ARTEFACTS

THE COIN by Marion Archibald

Penny of Edward the Confessor; Hammer Cross type. Mint: Nottingham; Moneyer: Fornia; Obv: illegible; Rev: + FORNA ON SNOTN. Reverse is from the same die as a coin in the British Museum, ex Morgan (Evans) 1915/5/7/2474. This coin would be virtually impossible as a primary loss in a twelfth century level, and is unlikely to have been around for long, if at all, after 1066. It is most likely to have been lost before 1066 (Phase VI, p.146).

OBJECTS OF COPPER ALLOY

Few objects of copper alloy were recovered, and the majority were minute and unidentifiable fragments. Pieces of two pins came from thirteenth/fourteenth century deposits in the East Trench (not illustrated). A fragment of sheet was found in Phase VIII, and a folded and rivetted sheet in Phase IX (not illustrated).

- Fig. 51, No. 1 Rounded section rod with both ends broken; possibly part of a handle. Phase VIII.
- No. 2 Strap or tag-end with two perforations; similar examples come from North Elmham ³⁹ and Thetford ⁴⁰. Phase IV.
- No. 3 Folding balance with two pans, found in semi-folded state as illustrated, but with pans adhering to either side of arms. The beam folds into two arms of sub-rectangular section and of uneven length. They are held in place by rivets passing through two conjoined bars which form the centre of the beam. The pointed upright seems to be soldered between these bars, and is pierced by a hole supporting a bar rivetted through the two arms of the suspension loop. The loop is of flattened rectangular section. Rings of twisted wire pass through holes in the end of each folding arm. A fragment of thread (not identified) was found on one ring during cleaning in Norwich Castle Museum. The pans are of thin sheet and are slightly concave. Both are very corroded and no suspension holes are visible. Such balances may have been used to weigh coins or bullion. If this example was so used, it must have served to check the relative weights of different coins or bullion. Similar examples occur at Thetford ⁴¹, North Elmham ⁴², and Dublin ⁴³. From the area of burning 275, Phase VIII.

- No. 4 Stud with concave head; the stem is rivetted through a rectangular plate; Phase V.
 No. 7 Suspension ring of hone; heavily corroded.

OBJECTS OF LEAD

Five objects of lead were found in stratified deposits, including three shapeless fused objects from Phases VIII and X. A piece of tubing, made from rolled sheet, 5.5 cm. long, and 1 cm. in diameter was found in Phase VIII (not illustrated). A weight from Phase V was probably used for line fishing. It weighs 530 gm. (Fig. 51, No. 5).

OBJECTS OF IRON

Miscellaneous

Iron artefacts occurred in all phases. None have been treated or cleaned, and less than half X-radiographed at the Ancient Monuments Laboratory. Many objects are as yet unidentifiable. Nails occurred in all phases, but no attempt is made here to list or describe them. Fish hooks are listed and described separately (except Fig. 52, No. 13). Twenty iron knives were found, and all were X-radiographed. The most fragmentary examples are not illustrated. Fig. 52, Nos. 1-7 have angled backs characteristic of the Saxon period⁴⁴. With the exception of two very small examples (Nos. 9 and 12) the remainder come from Phase VIII or later. Fig. 52, Nos. 13 - 20 are either of well-known types and uses, or of interest but unknown use.

- Fig. 52, No. 1 Knife, tang probably broken, worn cutting edge; Phase VIII.
 No. 2 Knife; Phase IV.
 No. 3 Knife, blade only; Phase VIII.
 No. 4 Knife, tang missing; Phase VIII.
 No. 5 Knife; Phase VII.
 No. 6 Knife, blade only; Phase I.
 No. 7 Knife, tang largely missing but with traces of wood; Phase V.
 No. 8 Knife, tang missing; Unphased: Pit 56.
 No. 9 Knife, traces of wood on tang; Phase V.
 No. 10 Knife, tang missing; Phase VIII.
 No. 11 Knife, tang largely missing; thirteenth/fourteenth century deposit in East Trench.
 No. 12 Knife; Phase V.
 No. 13 Fish hook; much longer than other examples; Phase VII.
 No. 14 Object; all details visible in X-ray photograph. The three ends seem to be finished, but there is no sign of it having been fixed to anything; Phase V.
 No. 15 & Arrow heads; socketed; internal diameter of socket
 No. 16 not measureable; London Museum Medieval Catalogue

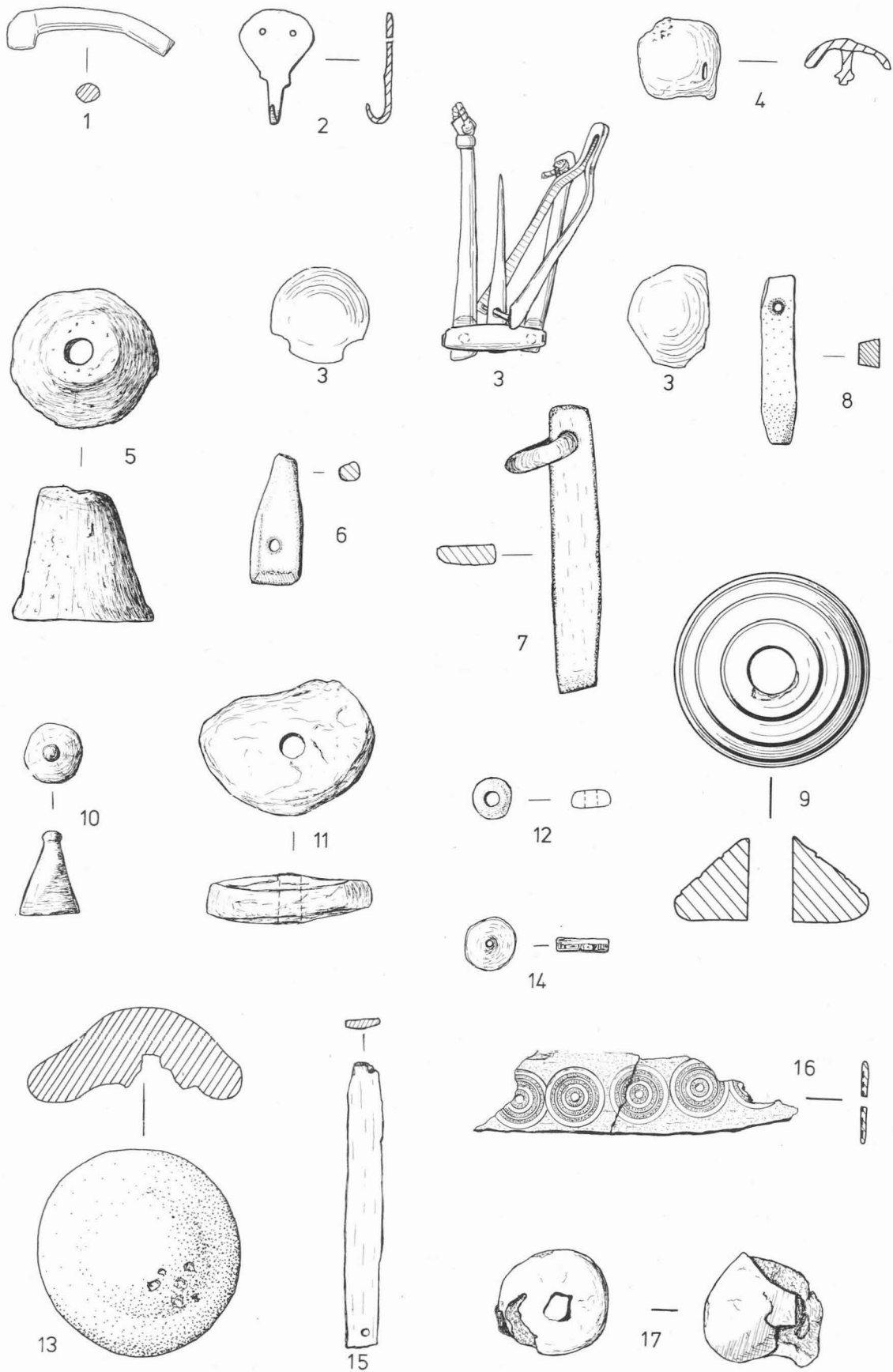


Fig. 51. 1-4; objects of copper alloy. Scale $\frac{1}{1}$. 5; lead. Scale $\frac{1}{2}$.
 6-9; stone. Scale $\frac{1}{2}$. 10; jet. Scale $\frac{1}{2}$. 11; shale. Scale $\frac{1}{2}$.
 12; amber. Scale $\frac{1}{1}$. 13; glass. Scale $\frac{1}{2}$. 14-17; bone. Scale $\frac{1}{2}$.

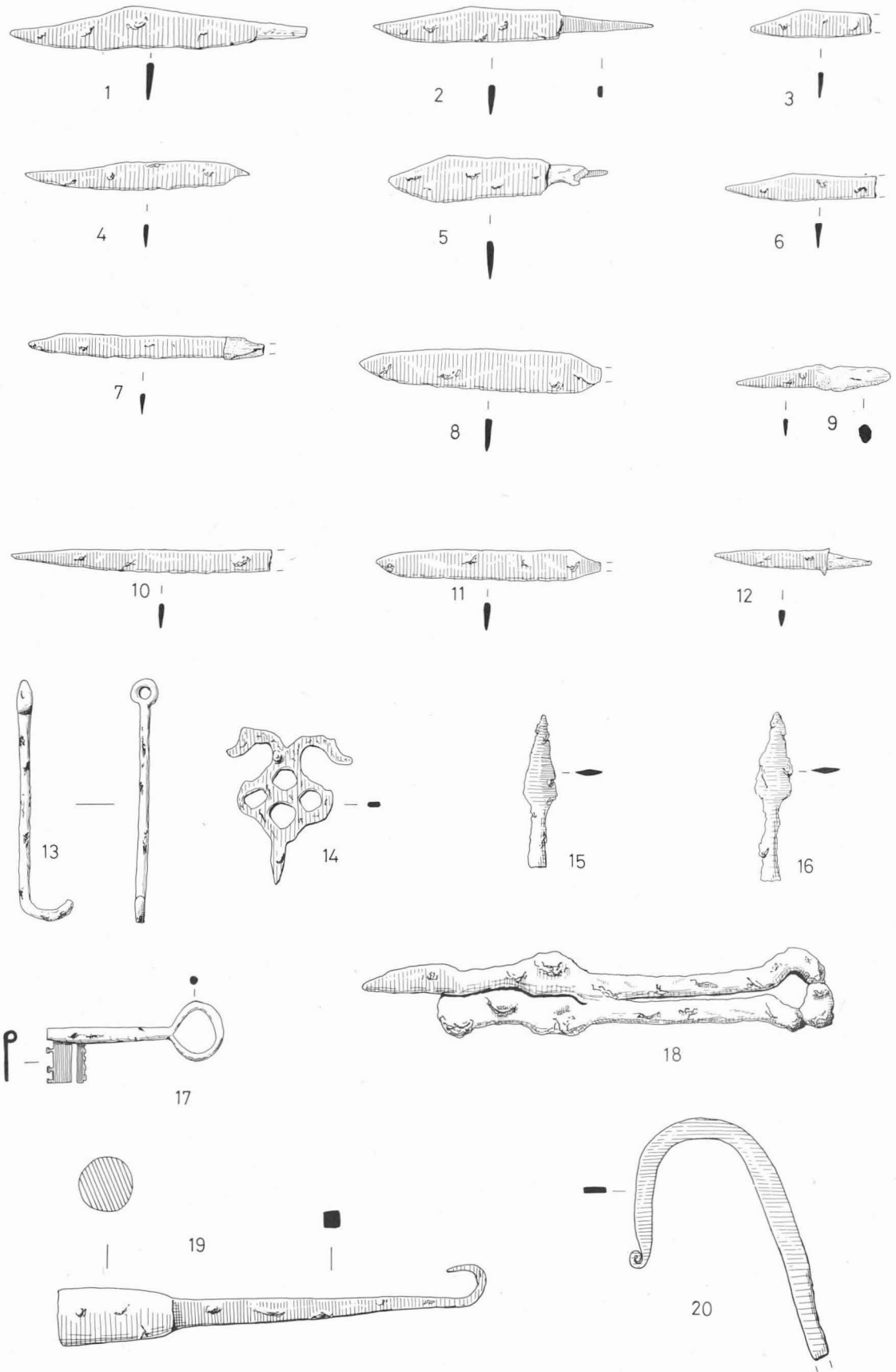


Fig. 52. Objects of Iron. Scale $\frac{1}{3}$.

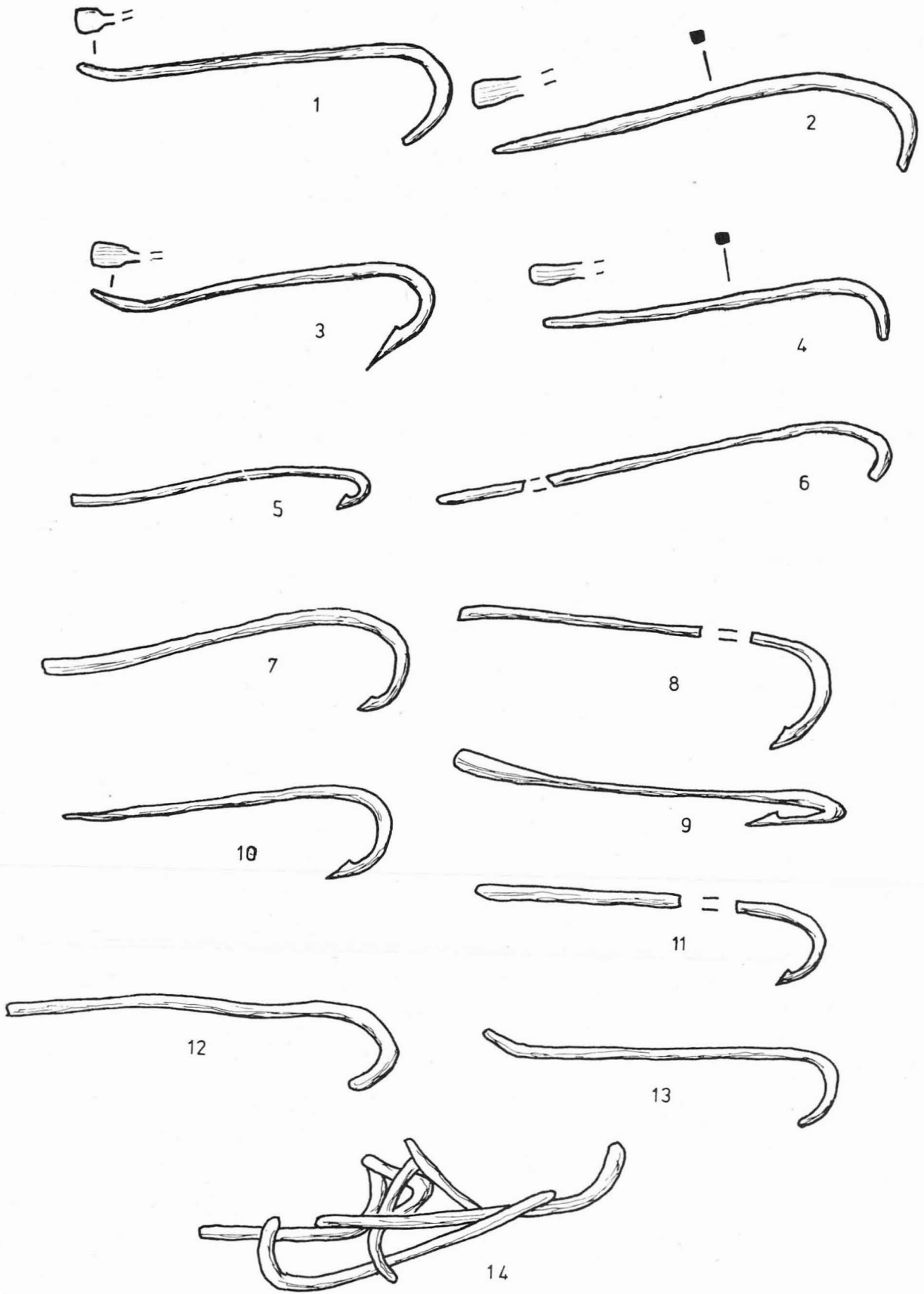


Fig. 53. Iron fish hooks. Scale 1/1.

- Type I; Phase VIII.
- No. 17 Key; probably London Museum Medieval Catalogue Type II; Phase VI.
- No. 18 Shears; not X-ray photographed; probably London Museum Medieval Catalogue Type IB; Phase X.
- No. 19 Object; the ? handle is solid. This may be a gaff, or a hook for lifting nets; Phase VIII.
- No. 20 Object; the pointed end of the hook seems deliberately rolled. The other slightly thickened end is broken; Phase V.

Fish-hooks

Forty five fish-hooks were recovered. The number from Phases VI - VIII contrasts with that from Phases IX - XII. All were probably of square section, although only two (Fig. 53, Nos. 2 and 4) have been cleaned sufficiently to make this certain. Lengths varied with the exception of one (Fig. 10, No. 13), which was 12.2 cm. long⁴⁵, from 5.4 cm. to 7.5 cm. Ends were either splayed (beaten flat) or thickened. No change in form or size occurred between phases; for example barbed points came from Phases II - IX.

Quantities of hooks from Grid Squares are: Square E: 14, F: 19; H: 10; K: 2.

The fish-hooks are further discussed below by A. Wheeler (p.221).

- Fig. 53, No. 1 Plain point, splayed end, bent; Phase VIII.
- No. 2 Point broken, splayed end; Phase VIII.
- No. 3 Barbed point, splayed end, bent; Phase VIII.
- No. 4 Point broken, splayed end; Phase VI.
- No. 5 Barbed point, thickened end; Phase I.
- No. 6 Point broken, splayed end; two fragments; Phase VIII.
- No. 7 Barbed point, end probably broken; Phase VII.
- No. 8 Barbed point, end broken, two fragments; Phase VI.
- No. 9 Barbed point, hook bent, thickened end; Phase II.
- No. 10 Barbed point, end broken; Phase IX.
- No. 11 Barbed point, end broken, two fragments; Phase VI.
- No. 12 Plain point, end broken; Phase VI.
- No. 13 Point broken, end bent and probably broken; Phase VI.
- No. 14 Parts of four hooks concreted with rust; Phase VI.

OBJECT OF JET

- Fig. 51, No. 10 Possibly a chess-pawn or gaming piece. From surface of yellow sand (110). May belong to Phase X or XI or be intrusive.

OBJECT OF SHALE

- Fig. 51, No. 11 Spindle-whorl. The material is very dark grey, and the

object roughly finished. A portion of the outer edge has been broken off; Phase XII.

OBJECT OF AMBER

Fig. 51, No. 12 Bead found in flotation residue; Phase VIII.

OBJECT OF GLASS

Fig. 51, No. 13 Linen smoother of dense very dark grey brown glass. The underside, not so concave as examples from York⁴⁶, is pierced by an irregular central hole. It has been suggested that linen smoothers may have been imported⁴⁷ and have been used for dressing skins⁴⁸; Phase IV.

BRICKS AND TILES

Quantities of brick and tile fragments were found in unphased features, and the earliest fragments may date to the thirteenth century. Four pieces of tile came from stratified deposits, of which three (from Phases V, VI and IX) are probably Romano-British, and the fourth (Phase X) is certainly a fragment of *tegula* (roofing tile). All four were of hard orange/red sandy fabric with a small amount of flint and/or chalk inclusions. The purpose of their early medieval re-use is unknown. Such Romano-British building debris would have been available at both Caister-on-Sea and Burgh Castle.

OBJECT OF CLAY

Pierced disc of yellow brown clay, ? loom weight (unillustrated). Diameter 8.5 cm; thickness at centre 1.5 cm; at edge 2 cm; central hole set slightly diagonally, with diameter of 50 mm; Phase VIII.

OBJECTS OF BONE

- Fig. 51, No. 14 Disc with central perforation; the outer surfaces have been smoothed; made from an anterior vertebra of a shark or ray; probably used as a bead; Phase VII.
- No. 15 Perforated splinter cut from the outer surface of a mammal long bone; long edges trimmed straight; end nearest the hole knife-cut, and the other end broken; unknown use; Phase IV.
- No. 16 Strip decorated with groups of three concentric compass drawn circles with central holes. The decorated surface is polished, and the underside is rough; cut from the outer surface of a mammal long bone. This could be from a wooden casket covered with bone strips, similar to an example from York⁴⁹; Phase VIII.
- No. 17 Spindle-whorl with central sub-square hole; heavily burnt; cut from proximal end of a mammal long bone;

Phase VIII. Two other unburnt examples were unstratified in Squares L and O 50.

SLAG

Very small quantities of predominantly smithing slag occurred in Phase IV - XII. All pieces were found individually and there were no concentrations. Larger amounts were found in unphased features of various dates, and the East Trench produced a slightly greater quantity than elsewhere.

OBJECTS OF STONE

by David Moore

Fourteen hones or fragments of hones were recovered, of which three are illustrated. All except two are Scandinavian type. Ellis (1969) has been cited where possible.

- Fig. 51, No. 6 A well fashioned and bored, but worn and broken schist hone. Microscopically the rock contains quartz, muscovite, biotite, and ore, and can be placed in Ellis Group IA(1), and is of Norwegian provenance. From thirteenth/fourteenth century deposits in the East Trench.
- No. 7 A well fashioned small honestone. Smooth, and fine-grained, grey purple in colour with a much corroded copper alloy ring. Microscopically the rock is composed of quartz, euhedral ore, and muscovite. Corresponds with Ellis Group IB(1). Probably of Norwegian origin. Phase II.
- No. 8 A well fashioned and bored but well used and worn honestone of purple phyllite. Microscopically the rock is fine-grained and composed of quartz, small euhedral ore grains and muscovite. The ore is a distinctive feature of this purple phyllite. The specimen corresponds with Ellis Group IB(1) and is probably of Norwegian origin. Phase VIII.

The following eleven unillustrated examples are preceded by their excavation small find numbers.

(2) A long mullion of quartz-muscovite schist. Unfashioned, but rounded with use, 31.2 cm. x 2.9 x 1.8. A good example of the Eidsborg schist mullion. Ellis type IA(1). Norwegian Provenance. From thirteenth/fourteenth century deposit in the East Trench.

(7) Part of a mullion of quartz-mica schist. Worn thin at one end and broken there, measuring 12.5 cm. x 1.8 x 1.1. Another example of the Eidsborg honestone. Ellis type IA(1). From post-medieval pit 81.

(11) An unfashioned mullion of quartz-mica schist. 11.8 cm. x 3.2 x 2.0. A good example of the Eidsborg schist mullion. Ellis type IA(1). From thirteenth/fourteenth century deposit in the East Trench.

The Artefacts

- (14) A fragment of a schist mullion, 5.2 cm. x 5.0 x 2.7. Another example of the Eidsborg quartz-muscovite schist hone. Type IA(1) of Norwegian provenance. From beneath line of Row 16.
- (24) A flat, well used and worn schist mullion honestone. Probably a cleaved mullion, of quartz-mica schist measuring approximately 12.3 cm. x 2.3 x 0.6, but irregular in shape due to wear, or the initial clearance. Another example of the Eidsborg honestone Ellis type IA(1). Phase VII.
- (25) A small, fashioned, honestone of purple phyllite measuring 3.7 cm. x 1.2 x 0.5 with a notch at one end. Microscopically the rock consists of quartz, ore and muscovite and corresponds with Ellis Group IB(1). Probably of Norwegian origin. Phase X.
- (42) Part of a mullion of quartz-mica schist, flattened and well worn. Measuring approximately 9.5 cm. x 1.6 x 0.8. Another example of the Eidsborg honestone Ellis type IA(1). Phase X.
- (54) A flat fragment of a cleaved mullion of quartz-mica schist, measuring approximately 6.4 cm. x 2.6 x 0.5. Well worn with use as a honestone. Another example of the Eidsborg schisthone. Ellis type IA(1). Phase VI.
- (59) A rough unshaped hone, well used, worn and broken. A fragment from a schist mullion 7.2 cm. x 2.3 x 1.0, an example of the Eidsborg Quartz-muscovite schist hone, corresponding to Ellis type IA(1), of Norwegian provenance. Phase XII.
- (76) A brown heavily mineralised, specimen of fossilised hone. Similar in appearance to fossil bones from the pleistocene crags of East Anglia. Phase II.
- (86) Two fragments of fashioned stone. Possibly a honestone but now badly broken. Petrographically the stone is a muscovite sandstone; from the grain size and the amount of quartz the specimen would have some coarse honestone properties. From thirteenth/fourteenth century deposit in the East Trench.

Fig. 51, No. 9 Spindle whorl made of limestone. The outside of the artefact is pitted and marked as if attacked by acetic groundwater during burial. Unstratified in Square O.

Two fragments of Mayen-Niedermendig lava Quernstone were found in Phase VI, one in Phase VIII, and two in Phase IX. One piece from Phase VI was 8 cm. thick, and had an original diameter of c. 40 cm.

THE POTTERY

by Maureen Mellor

Introduction

This report has been written with the following aims: a) to describe the fabric of the sherds and the associated technological development in the making of this pottery, and b) to assist in dating the stratigraphy.

Some 6000 sherds were recovered. These represented cooking pots, bowls both shallow and deep sided, ginger jars, lamps (spiked cresset pedestal and cup), storage jars and pitchers. 62% of the sherds were well stratified. They were excavated from an area which became increasingly restricted at lower levels. The sherds were very fragmentary, particularly in earlier phases; however, eleven profiles were reconstructed. Dating is difficult but the sherds date approximately between late eleventh century and early thirteenth century. 12% of the sherds were from unphased truncated pits, cutting the upper surface of the excavation. A further 10% was associated with the area beneath the possible surfaces of Row 16. The remaining 16% was unstratified. The finer wares included imports belonging to Groups XI, XII and XIII ⁵¹, while less than 1% represented glazed and partially glazed wares of the thirteenth century. The coarse wares belong to two distinct technological traditions. These are Group II with a local transitional derivative and Group V with medieval-type wares. 70% of the coarse wares were tempered with natural alluvial detritus; while sandy, flint, and shelly wares represent 23%, 2.08% and 0.76% respectively.

The pottery report which follows covers the following aspects:

- a) The methods employed to classify the pottery.
- b) The description of the pottery
 - Fabrics 1 and 4 - Thetford-type ware (Group II)
 - Fabric 11 - St. Neot's-type ware (Group II)
 - Fabric 2 - Local Transitional ware
 - Fabric 5 - Early Medieval ware (Group V)
 - Fabrics 3, 5, 8, 3/1, 10, 12, 17 and 18 - Medieval ware
 - Fabrics, 6, 7, 9 and 25 - Imported wares
 - Fabrics 13, 14, 15, 16, 19, 21, 22, 23 and 24 - Probably Imported wares

- c) Concluding Remarks

The Classification of the Pottery

The pottery has been classified according to the following characteristics:

- (1) fabric
- (2) potting techniques
 - (a. hand or wheel made etc.
 - (b. forms of vessels.
 - (c. decoration.
- (3) use of vessel
- (4) firing

The fabric, being the clay matrix and the temper with which the potter chose to work, was assigned a fabric number in cases where it was apparent that one of the following characteristics was significant :-

mica content
 other common inclusions 52
 size of grains
 quantity of grains
 origin of grains

All the fabrics found at Great Yarmouth were low in visible mica (one flake in 25 mm²); they were described as 'white' or 'dark', according to the iron content of the fabric.

The common inclusions were identified visually or by microscope and were graded according to size of grain:

fine	-	visible only with the microscope
medium	-	less than 0.5 mm. across
coarse	-	0.5 - 1.5 mm.
very coarse	-	more than 1.5 mm.

Medium was considered the standard size and where this occurs no prefix to the mineral is given. The amount of temper was classified according to the number of grains in 25 mm.² of fractured surface area.

light	-	less than five grains in 25 mm. ²
medium	-	five to ten grains in 25 mm. ²
heavy	-	over ten grains in 25 mm. ²

Grains larger than 'fine' were normally visible to the naked eye. The origin of the inclusions was either alluvial (natural alluvial detritus), natural in the clay (natural 'fat' clay) or made and added by the potter. Most of the pottery found at Great Yarmouth was tempered with natural alluvial detritus and normally contained a wide variety of minerals of varying size. The more common inclusions were quartz, quartzite grains, fine calcareous grits (chalk or possibly limestone/oolite), flint, shell and iron ore granules. One fabric (Fabric 4) contained dull red-brown inclusions which had been added by the potter.

The construction, the potting techniques of the vessels, also the form, decoration and use of the vessels were now considered. Where comparisons were possible, reference was made to publications which have already considered the same aspects. The Munsell Chart was used to describe colour and firing variations. Most of the fabrics were uniformly fired; they showed little variation throughout the site and gave only one reading. Four fabrics (3, 5, 17 and 18) were not uniformly fired. They were usually reduced in fracture and oxidised externally. Often the external and internal surfaces showed a variety of shades and sometimes the external surface was obscured by carbon. Where this occurred the Munsell Reading was taken from the fracture and again from the internal surface. The Munsell Reading is qualified by the word 'approximately' as the colour range of sherds within each fabric vary slightly.

In this report Mohs' Scale⁵³ was used to indicate the hardness of the fabric. This scale is primarily intended for use with pure minerals and not coarse pottery, containing a variety of partially fused minerals.

TABLE 4. FABRIC DESCRIPTION

Fabric	Low Mica Content	Origins of Inclusions	Propn. of Inclusions	Inclusions	Decorations	Mohs' Scale No.	Approximate Munsell Code	Comparable with	Phase
1	Dark	Natural Alluvial Detritus	Medium	Quartz/Quartzite occasional coarse red iron ore, flint.	With/without applied strips	6	Dark grey (10YR 3.5/1)- Grey (10YR 4.5/1)	Thetford-type ware	I-X
2		N. A. D.	Medium	Quartz/Quartzite with larger inclusions (no visible iron ore).		5	Dark grey (10YR 3/1)- Grey (2.5YR 4.5)		I-XII
3		N. A. D.	Heavy	Coarse Quartz/ Quartzite		5	Internally: Reddish brown (5YR 5/3) In fracture: Dark grey (10YR 4/1)	11th/12th century coarse ware	I-XII
3/1		N. A. D.	Heavy	As Fabric 3 with calcareous grits		5	Reddish yellow (5YR 6/6) In fracture: Dark grey (10YR 4/1)	11th/12th century coarse ware	V, VIII, IX-XII.
4	Dark	N. A. D. and man-made	Medium	Fine/coarse dull red brown incl. with Quartz/ Quartzite and occasional larger inclusions	With/without applied strips	6	External surface: Dark grey (2.5YR 4/0) Externally: Reddish brown (5YR 5/3) In fracture: Dark grey (7.5YR 4.5/1)	Thetford-type ware	III-XII

TABLE 4 (cont.)

Fabric	Low Mica Content	Origins of Inclusions	Propn. of Inclusions	Inclusions	Decorations	Mohs' Scale No.	Approximate Munsell Code	Comparable with	Phase
5	Dark		Heavy	Fine Quartz/ Quartzite		5	Greyish brown (10YR 5/2)		I-XII
						5	Reddish brown (5YR 5.5/3)		
						6	Light grey (10YR 6/1 approx.)		X-XII
6	White	? Natural 'fat' clay	Light	Fine ?Quartz/ Quartzite, Fine red iron ore	Yellow glaze with/without iron staining	8	White (2.5Y 8/2)	Andenne- type	IV-VI, VIII-XII.
7	White		Medium	Quartz/Quartzite, Fine/Coarse red iron ore.	Red painted Purple fired	8	Very pale brown (10YR 7/4)	Pingsdorf- type	V-IX, XII. VI-IX
						9+	Light olive brown (2YR 5/2)		
8	Dark	N. A. D.	Heavy	Quartz/Quartzite		4	Ext: Very dark grey (10HR 3/1)- Reddish brown (5YR 5/3), In frac: Grey (10YR 6/1)	12th/13th century coarse ware	VII-XII
9			Heavy	Quartz/Quartzite		7	Int: Grey (7.5YR 6/0) Ext: Dark grey (7.5YR 3/0), In frac: White (7.5YR 7/0)	Paffrath (Blue/grey ware)	V, VII, IX, X, XII.

TABLE 4 (cont.)

Fabric	Low Mica Content	Origins of Inclusions	Propn. of Inclusions	Inclusions	Decorations	Mohs' Scale No.	Approximate Munsell Code	Comparable with	Phase
10	Dark		Medium	Fine Quartz/ Quartzite, occasional coarse dull red brown incl.		6	Grey (10YR 4.5/1)		IX, X, XI.
11			Heavy	Very coarse/fine limestone grits with bryozoa		4	Brown (5YR 6/3)	St. Neot's- type ware	III
12		N. A. D.	Medium	Coarse flint, coarse Quartz/ Quartzite		6	Ext: Grey (5YR 5/1) In frac: Greyish brown (10YR 5/2)		I
13	Dark		Heavy	Very coarse dull red brown inc., fine Quartz/ Quartzite		3	In frac: Dark grey (7.5YR 4/0), Int: Light reddish brown (5YR 6/4)		IV
14	White		Heavy	Fine Quartz/ Quartzite, occa- sional dull red brown incl.		5	White (5YR 7/2)		VI
15	White		Medium	Fine Quartz/ Quartzite, black organic voids	Partial orange/green. Yellow/brown glaze with iron staining	6	Grey (7.5YR 6/0)		XII

TABLE 4 (cont.)

Fabric	Low Mica Content	Origins of Inclusions	Propn. of Inclusions	Inclusions	Decorations	Mohs' Scale No.	Approximate Munsell Code	Comparable with	Phase
16				None	Pale green glaze	6	Overfired		VI
17			Medium	Very coarse/ coarse shell, coarse Quartz/ Quartzite		3	As Fabric 3	11th/12th century coarse ware	I, III-V, VIII.
18			Heavy	Very coarse flint, Quartz/ Quartzite		5	As Fabric 3	11th/12th century coarse ware	VI-VIII, XI.
19			Medium	Quartz/Quartzite, coarse/fine red brown incl.	Partial orange glaze	6	Pink (7.5YR 7/4)		XII
20			Light	Fine? Quartz/ Quartzite	Dark green, brown glaze	7	Reddish yellow (5YR 6/6). Red (2.5 5/6)	Red earthen- ware 17th/18th century	XI
21	White		Medium	Coarse Quartz/ Quartzite, elongate organic voids. Occasional fine red/brown incl.	Partial green glaze, with brown iron stain- ing.	4	Light grey (7.5YR 7/0)		XII

TABLE 4 (cont.)

Fabric	Low Mica Content	Origins of Inclusions	Propn. of Inclusions	Inclusions	Decorations	Mohs' Scale No.	Approximate Munsell Code	Comparable with	Phase
22	White			None	White slip dark green (copper) splashes	3	White (5YR 8/1)		XI, XII.
23	White		Medium	? Black iron ore, Quartz/Quartzite	Partial pale green glaze with iron staining	4	Light grey (7.5YR 7/0)		XII
24	White		Medium	Coarse Quartz/Quartzite, coarse red brown incl.	Partial yellow glaze	4	White (10YR 8/2)		XII
25						9	Grey (10YR 6.5/1)	Raeren stoneware	XI

In the case of this pottery from Yarmouth it was found that where the lowest mineral on the scale achieved a definite scratch, over at least three centimetres (the scratch need not be continuous) the mineral was shown to be just harder than the fabric being tested; thus the fabric hardness corresponded to this mineral number. Care was taken to ensure a definite scratch was achieved.

It was appreciated that this method of describing a fabric in terms of amount of temper and size of grain is not very precise; however, it is an objective method of describing fabric while allowing for:

- (a) the variety and varying proportions of minerals found in these sherds.
- (b) the accidental differences in the quantities of temper added by the potter.

The table showing the Fabric Percentages (Table 5) needs no explanation but the thirty nine sherds found in Phase III were considered too small a sample to reflect meaningful percentages. The sherds which were recovered from surface 311 in Phase VIII had suffered severe burning; their remains were no more than burnt clay. It was impossible to determine their fabric or estimate how many sherds had been deposited, therefore they were not included in the fabric percentages. All the sherds in Phase IX had also suffered severe burning but the fabrics were recognisable. The high proportion of sherds in some fabrics in this phase was probably the result of the vessels being burnt in situ. Also Phase XI was heavily disturbed. Each drawing carries a Roman numeral which appears immediately before the drawing number. This Roman number indicates the phase in which the vessel was found.

All numbers in brackets in the text below refer to drawings to be found on Figs. 54 - 60.

The sherds were recorded as miscellaneous where the fabric was obscured by natural accretions or where secondary burning had left a very laminated fabric.

The Descriptions of the Pottery

Fabrics 1 and 4 - Thetford-type Ware (Group II) (Table 4)

Fabric 1: medium tempered with natural alluvial detritus, which contained the occasional coarse inclusion of red iron ore or flint, the latter sometimes measuring as much as 5 mm. across.

Fabric 4: medium tempered with fine and coarse dull red brown grains, natural alluvial detritus and occasional larger inclusions. The larger inclusions in both fabrics occurred mainly in storage jars and not in other domestic wares.

The usual characteristics associated with Thetford-type ware were observed ⁵⁴. The vessels were fast wheel thrown, with the exception of storage jars. The pottery was well executed, with occasional slurring

TABLE 5

	PHASES												Percentage of total
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1	20.25	49.07	5.13	6.83	3.85	3.19	4.38	4.62	21.92	3.96	-	-	7.29%
2	44.30	44.44	28.21	40.37	43.04	41.13	30.92	33.75	5.28	2.77	6.56	1.39	23.02%
3	11.39	1.85	20.50	20.50	25.09	12.77	33.76	15.41	19.18	25.54	10.66	1.91	17.79%
3/1	-	-	-	1.24	10.62	3.55	2.06	9.38	1.37	5.74	-	5.73	5.31%
4	-	-	2.56	3.11	4.76	13.48	14.18	14.99	19.37	27.72	6.56	2.08	12.18%
5	20.25	4.63	10.26	8.07	10.26	2.13	6.44	13.30	21.92	19.00	40.16	79.17	23.15%
6	-	-	-	0.62	0.18	1.06	-	1.26	1.57	0.79	1.64	0.69	0.79%
7	-	-	-	-	0.36	2.13	4.90	5.46	1.56	-	-	0.17	1.86%
8	-	-	-	-	-	-	2.32	1.12	5.48	12.48	18.85	4.86	3.94%
9	-	-	-	-	0.18	-	0.52	-	0.39	1.39	-	0.17	0.32%
10	-	-	-	-	-	-	-	-	1.37	0.20	1.64	-	0.25%
11	-	-	2.56	-	-	-	-	-	-	-	-	-	0.02%
12	1.27	-	-	-	-	-	-	-	-	-	-	-	0.02%
13	-	-	-	0.62	-	-	-	-	-	-	-	-	0.02%
14	-	-	-	-	-	0.35	-	-	-	-	-	-	0.02%
15	-	-	-	-	-	-	-	-	-	-	-	1.22	0.17%
16	-	-	-	-	-	0.35	-	-	-	-	-	-	0.02%

TABLE 5 (cont.)

	PHASES												Percentage of total
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
17	2.53	-	30.77	5.59	0.73	-	-	0.42	-	-	-	-	0.74%
18	-	-	-	13.04	0.73	19.50	0.52	0.14	-	-	0.82	-	2.08%
19	-	-	-	-	-	-	-	-	-	-	-	0.17	0.02%
20	-	-	-	-	-	-	-	-	-	-	3.28	-	0.10%
21	-	-	-	-	-	-	-	-	-	-	-	0.17	0.02%
22	-	-	-	-	-	-	-	-	-	-	0.82	0.17	0.04%
23	-	-	-	-	-	-	-	-	-	-	-	0.34	0.04%
24	-	-	-	-	-	-	-	-	-	-	-	0.17	0.02%
25	-	-	-	-	-	-	-	-	-	-	0.82	-	0.02%
Total No. of sherds	79	108	39	161	546	282	388	714	511	505	122	576	4031
Misc.	-	-	-	-	0.18	0.35	-	0.14	0.59	0.40	8.20	1.56	0.67%

FABRICS

The Artefacts

below cooking pot rims. Knife trimming was evident only on thin walled storage jars.

The small group of cooking pots in Fabric 1 demonstrated a wide variety in rim diameters, while rim forms were fairly uniform, usually simple and internally hollowed (4, 5, 3). Simple everted rims (1) and upright rims (2) were not common. Rims became more developed after Phase VI (11, 14, 7, 13), but simple internally hollowed rims persisted (6, 9, 10, 8). Body sherds were usually thick (5 mm.) (12), and undecorated. Bases were flat with 'cheese wire' marks on the underside and a poorly finished basal angle (15, 18).

The sherds were usually uniformly reduced to grey/dark grey (10YR 4.5/1 - 10YR 3.5/1) but often the external surfaces of the thinner walled storage jars were oxidised (in fracture: dark grey 2.5YR 4/0, externally: dark red 2.5YR 3/6 approximately).

Fabric 1 however appeared to diminish after Phase II (Table 5). Cooking pots began to die out gradually after Phase VII, while storage jars continued. Only five cooking pot rims were in Fabric 4 and these were everted and angular (19), with one exception (20). The body sherds were thick and the bases were the same as in Fabric 1 (18). No rouletted decoration was found on the cooking pots ⁵⁵.

Fragmentary thinner 'walled' storage jars in Fabric 1 (with applied strip decoration, with or without thumb impressions) were found in Phases I - VI. This type of storage jar appeared to die out by Phase VII, while thicker 'walled' storage jars, with applied strip decoration and more pronounced thumb impressions, appeared in Phase VII (131). These continued up to Phase X after which the fabric died out (Table 5). However, one sherd of Fabric 4 belonging to a storage jar appeared in Phase III and then gradually became the dominant storage jar fabric up to Phase X. After Phase X Fabric 4 decreased. Rims were simple, often reinforced with a band of clay, thumbed into the underside of the lip of the rim (132). The body of the vessel suggested that they were constructed by the coil method. Decoration was varied, with or without multiple added handles (133). It was not possible to determine whether one type of decoration was peculiar to either fabric.

The firing of Fabric 4 gave it a distinctive 'sandwich' appearance. In fracture it was dark grey (7.5YR 4.5/1) oxidised externally to reddish brown (5YR 5/3) with dark grey surfaces (2.5YR 4/0) which flaked easily. It was not clear whether the dull red brown inclusions or iron ore occurring naturally in the alluvial detritus were responsible for the colouring. The fabric was strongly magnetic. Sherds of Fabric 4 have been found in Norwich ⁵⁶, but Fabric 1 was smoother in texture than Norwich Thetford-type ware. It was not possible to determine whether the fabric of the latter had more inclusions than Fabric 1, or whether the coarser texture was due to firing at a higher temperature.

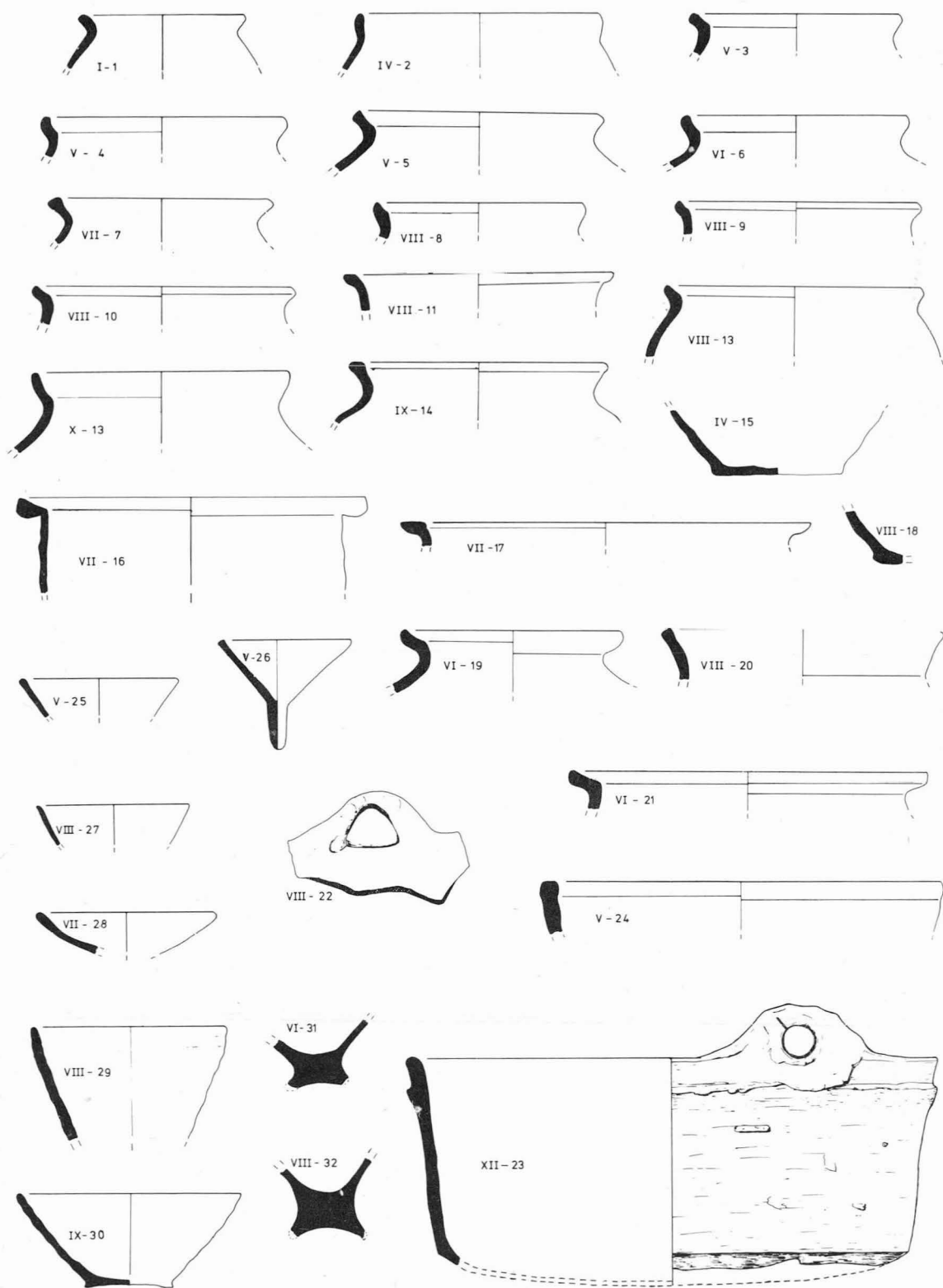


Fig. 54. Pottery Fabric 1; cooking pots 1-14. Bases 15 and 18. Bowls 16 and 17. Lug 22. Lamps 25-27. Fabric 2; lamps 28-32. Fabric 4; cooking pots 19-21. Lugged bowl 23. Bowl 24. Scale $\frac{1}{4}$.

One lug was found in Fabric 1 (22) together with an almost complete lugged bowl in Fabric 4. Both lugs were well reinforced, but poorly finished (23). Lugged vessels seem to have enjoyed a long tradition from the Middle Saxon to the medieval period ⁵⁷.

Three rims belonging to bowls probably of the deep sided type were found (16, 17, 24) ⁵⁸.

No lamps were found in Fabric 4 but a spiked cresset lamp and cresset type rims in Fabric 1 began to appear in Phase V and continued up to Phase VIII. The fabric of these lamps was more lightly tempered than that of the cooking pots (26, 25, 27).

Fabric 11 - St. Neot's-type Ware (Table 4)

Only one sherd (Table 5) from Phase III was comparable with St. Neot's-type ware ⁵⁹.

Fabric 2 - Local Transitional Ware (Table 4)

This fabric, medium tempered with natural alluvial detritus (in which the larger inclusions were often still present) was used for a variety of domestic wares, but not for storage jars. Fabric 2 appeared to be the dominant fabric in the smaller vessels associated with Group II - Thetford-type wares, from Phase I to Phase VIII; after this it was rapidly superseded by medieval wares.

The cooking pots and lamps had been made on the fast wheel. The rim diameters varied and included the following types :-

Simple upright	- 33
Simple and internally hollowed	- 34, 37, 36, 39, 38.
Simple and slightly thickened	- 40
Thin everted	- 41, 43.

The surfaces were much worked by fingers as were the rims (42). Bases were flat with characteristic 'cheese wire' marks (46, 45). No convex bases were found. But unlike the Thetford-type ware the 'walls' of these particular cooking pots were thinner and reminiscent of the 'wall' sherds associated with Early Medieval ware ⁶⁰ (44). However, the fabric was definitely not the 'standard' sandy fabric usually associated with Early Medieval ware. Two cooking pots had shoulder bosses, and one was also thumbed along the rim (52, 53). These bosses were made, prior to firing, by placing the thumb on the interior of the pot and pressing outwards. A cooking pot sherd with long vertical boss was found at Brome, Suffolk ⁶¹. This type of decoration was fairly widespread on the Continent but not in England ⁶². They were associated with imports in Phase V (Table 5). Five ginger jars (with and without decoration) were found (107, 108, 47, 51) ⁶³. No record has been found of thumb impressed decoration together with rouletting being used on ginger jars elsewhere (49). The fabric was usually uniformly reduced to dark grey (10YR 3/1 - 2.5YR 4.5/0), but

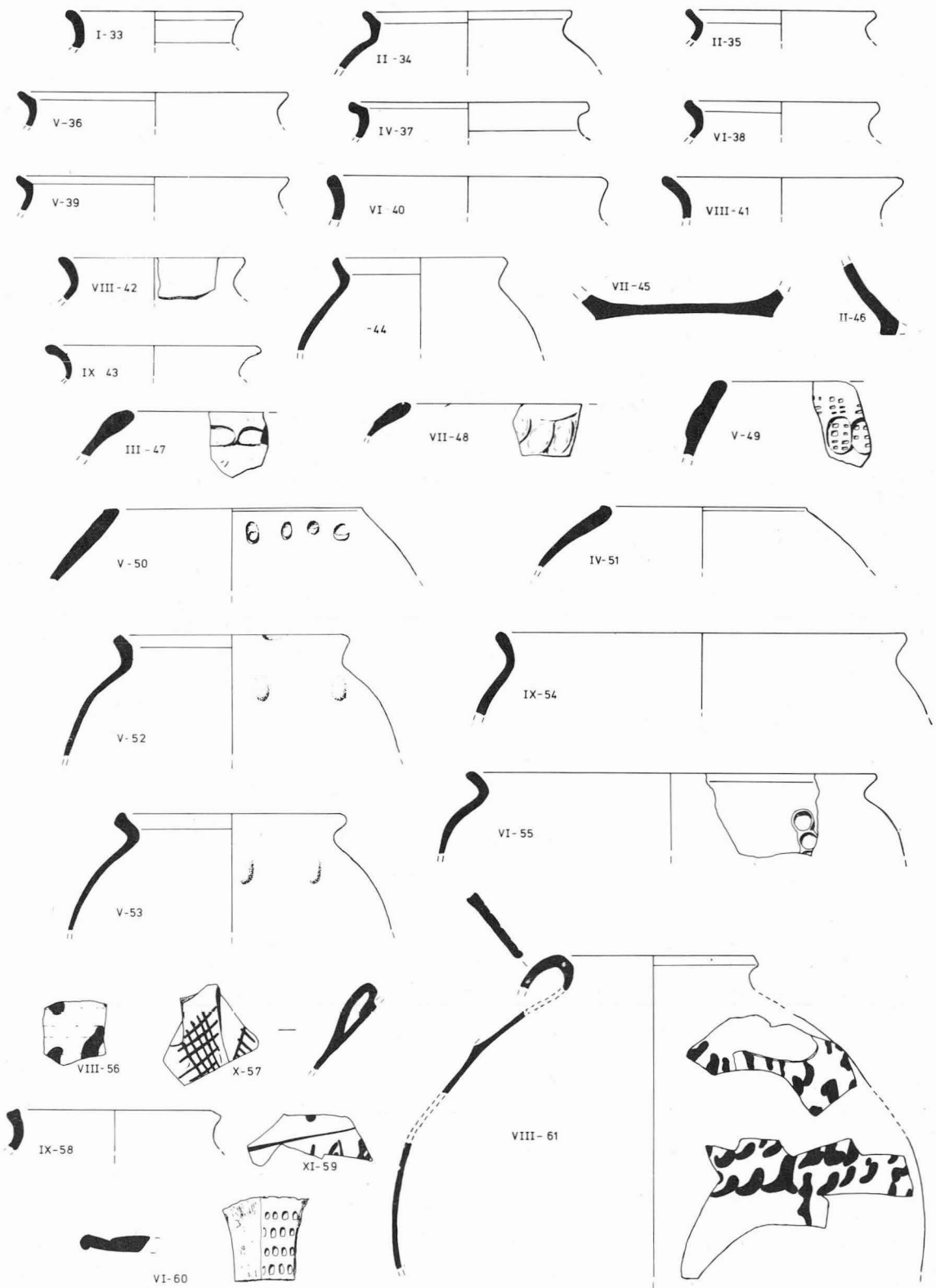


Fig. 55. Pottery Fabric 2; cooking pots and ginger jars 33-35.
 Fabric 7; 56, 57, 59 and 61. Fabric 9; 58.
 Fabric 16; 60. Scale $\frac{1}{4}$.

three of the ginger jars were partially oxidised externally to reddish brown or brown (5YR 5/4 or 7.5YR 5/2). Two cooking pots were found in the fabric (one with a neat finger pressed strip) (54, 55). These seemed to belong to the medieval tradition of form in cooking pots.

The only pedestal and cup type lamps found were in Fabric 2 (29, 30, 31, 32). Cresset type rims were also found in this fabric (28).

Fabric 5 - Early Medieval Ware (Group V) ⁶⁴ (Table 4)

Fabric 5 was heavily tempered with fine sand. It was very well made on a fast wheel. Fabric 5 was the 'standard' hard fine sandy fabric usually associated with Early Medieval ware, but the forms were less baggy (medieval) than is usually associated with Early Medieval ware ⁶⁵.

Cooking pots were the only vessels found in this fabric. Rims were:- simple flaring (63) and simple everted with external beading (65). Hand finishing, although observed on some rims, was not a characteristic feature of the Early Medieval pottery from this excavation. The ware was thin 'walled' with a slight convex base (66). One cooking pot was found with no base angle ⁶⁶(62). This type of form is reminiscent of the handmade cooking pots (Kugeltopf) common in Holland during the twelfth century ⁶⁷. Another cooking pot with a slightly internally hollowed rim had a small hole bored through the fabric, just below the neck of the rim. This was probably made while the pot was in a green hard state. No function was attributable to this hole (64). Fabric 5 was very fragmentary in earlier phases; it appeared in isolated groups in Phases I and II. However it was more evenly distributed in later layers.

The firing of this ware improved in later levels (Table 6). The thin 'walls' of the fabric were reduced and varied between greyish brown (10 YR 5/2) and reddish brown/light brown (5YR 5.5/3). External surfaces showed patchy discolourations due to being used on an open fire. In Phase VII and subsequent phases sherds became more reduced in fracture (grey 10YR 6/1 approx.), while external surfaces were similar in colour to the sherds in Phases I to VII.

Fabrics 5, 8, 3, 3/1, 10, 12, 17 and 18 - Medieval Ware (Table 4)

The 'grey reduced ware' ⁶⁸ associated with medieval types was also made in Fabric 5. This grey reduced ware (light grey 10YR 6/1 approx.) first appeared and then increased gradually in Phases X to XII (67, 72). Forms belonging to Early Medieval types (70, 68) and the rim forms of the medieval types were found in Phase XI and early layers of Phase XII (71), together with greyish brown/reddish brown Early Medieval cooking pots (69). The more moulded rims were found in the later levels of Phase XII (73, 74). The rapid change to and dominance of these grey reduced wares as well as the apparent rapid development and variety of rim forms (75) might suggest a break between Phase X and Phase XII. The rim forms (80, 79, 81) were unstratified. Similar rims to those illustrated were found in the later levels of Phase XII. These

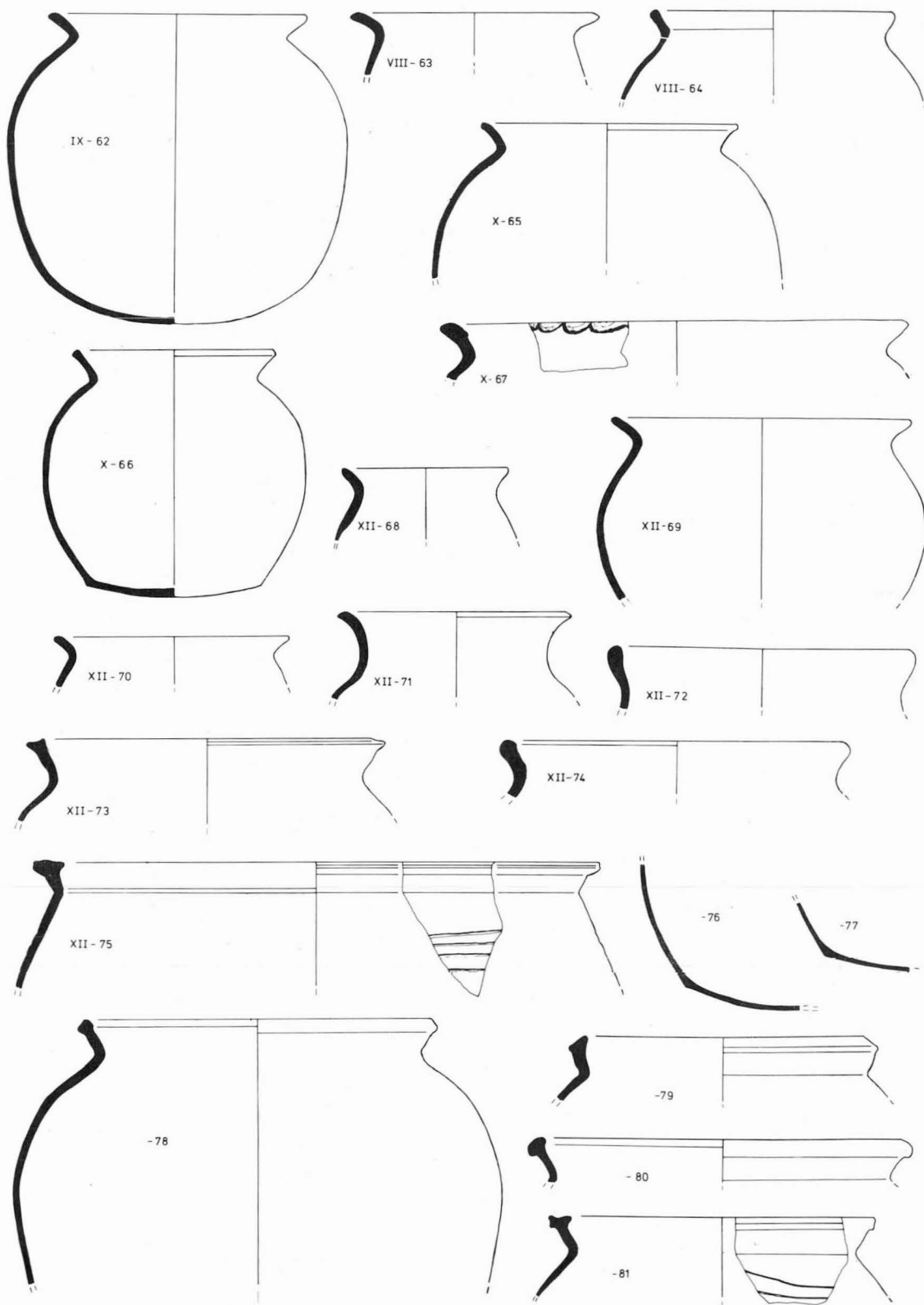


Fig. 56. Pottery Fabric 5; cooking pots. Scale $\frac{1}{4}$.

TABLE 6. FIRING DEVELOPMENTS IN FABRIC 5

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Mohs' scale
	%	%	%	%	%	%	%	%	%	%	%	%	
Greyish Brown (10YR 5/2) - Reddish Brown/ Light Brown (5YR 5.5/3 approx)	20.25	4.63	10.26	8.07	10.26	2.13	2.06	9.66	14.48	1.98		0.17	5
Externally: Greyish Brown/Reddish Brown (as above) In Fracture: Grey (10YR 6/1 approx)							4.38	3.64	7.44	8.51	20.49	1.22	5
								Light Grey (10YR 7/1 approx)		8.51	19.67	78.18	6

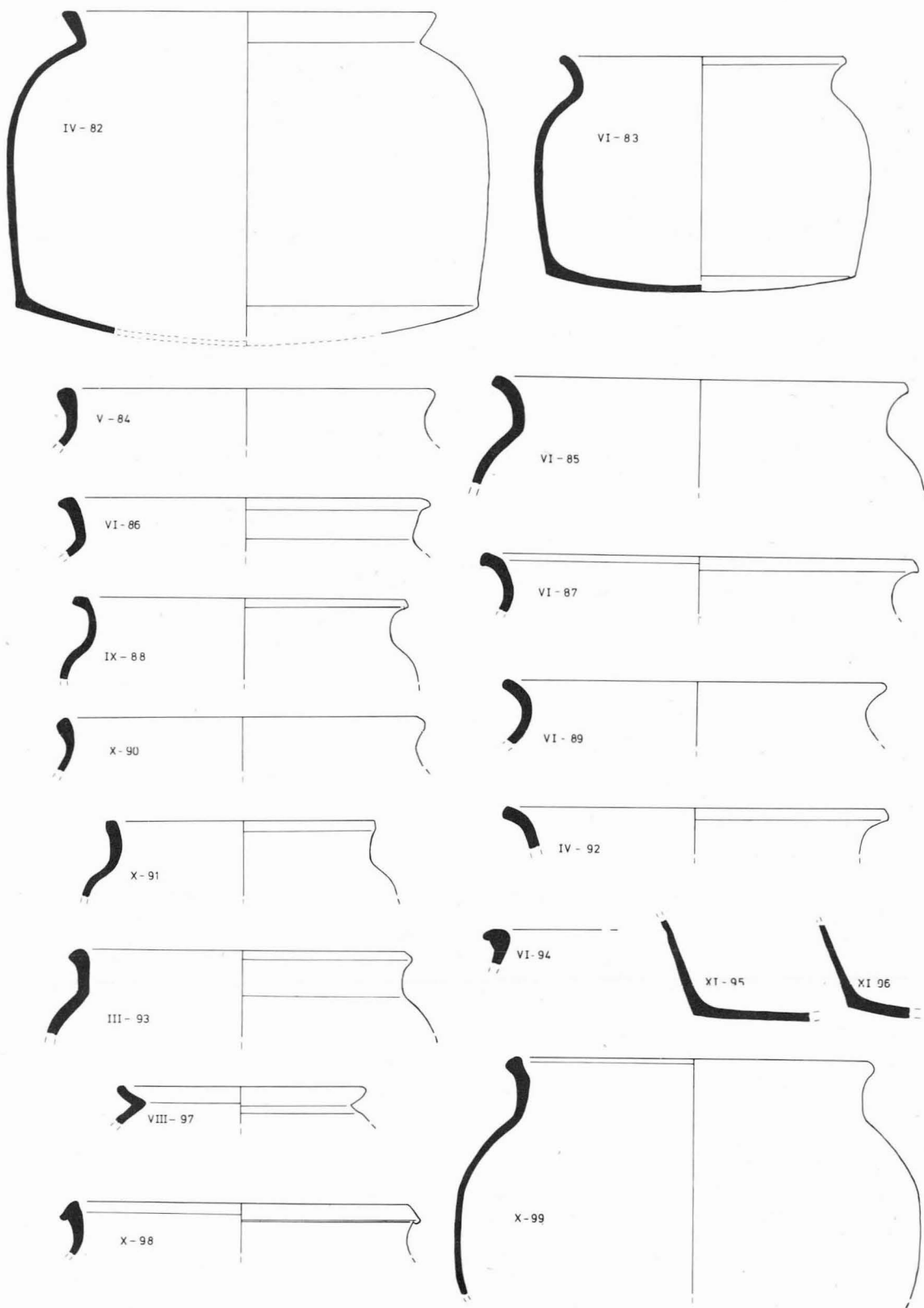


Fig. 57. Pottery Fabric 3/1; 82, 84, 86, 88, 90 and 91.
 Fabric 8; 95, 96, 98, 99. Fabric 17; 93, 97.
 Fabric 18; 83, 85, 87, 89, 92 and 94. Scale $\frac{1}{4}$.

unstratified sherds were chosen to represent the types found, as they were less fragmentary. The rims were roughly tooled. Wall sherds were both thick and thin; the latter was similar to the Early Medieval ware, but baggier in form (78), while bases were slightly sagging (76, 77). Some pots were decorated with wavy lines (81). No local, oxidised wares were found ⁶⁹.

Associated with the more reduced fabric 5 in Phase VII (Table 5) was Fabric 8. This fabric was heavily tempered with sand and is typical of the better quality coarse sandy medieval ware, common in Southern England. The convex bases (95, 96) with their sharp angled outline supported a bulbous body and upright rim. The rims were often simple, sometimes with slight internal beading (99). Only one rim with slight internal beading and undercut rim (98) was found ⁷⁰. The cooking pots were usually reduced in fracture to grey (10YR 6/1) while external surfaces ranged from very dark grey (10HY 3/1) to reddish brown (5YR 5/3). Fabric 8 appeared as the Local Transitional ware (Fabric 2) began to diminish. It ran on concurrently with the storage jars in Fabric 4, the Early Medieval wares and Fabrics 3 and 3/1, which were used to make coarser medieval type baggy cooking pots.

Fabric 10 was medium tempered with fine sand and occasional coarse dull red brown inclusions. This fabric first appeared in Phase IX and was possibly a development of Fabric 1. One pitcher with two handles (129) and another with a single surviving handle (128) were found in this fabric. They were well made and finished on a wheel. Knife trimming was evident on the interior surfaces. The handles were not added but 'pulled out' from the rim. Two strange articles, made in this fabric, were also found (126, 127). One was blackened by use or possible secondary burning (Phase IX) on the internal surface. The other showed no evidence of carbon deposit. It has been suggested that they were hearth-cover handles ⁷¹, but they may have been 'feet' which supported a large vessel.

Coarse Medieval cooking pots and bowls ⁷² were represented by:

- Coarse sandy fabric (3)
- Coarse sandy with fine calcareous grits (3/1)
- Shelly fabric (17)
- Coarse flint fabric (18)

One type of form ⁷³ was common to all the fabrics:-

- | | | |
|------------|---|------------|
| Fabric 3 | - | (100, 110) |
| Fabric 3/1 | - | (86) |
| Fabric 17 | - | (93) |
| Fabric 18 | - | (85) |

Also see Fabric 8 (98).

The vessels were wheel-made but the coarse nature of the fabrics suggested they were made on a slow wheel or turntable. The rim

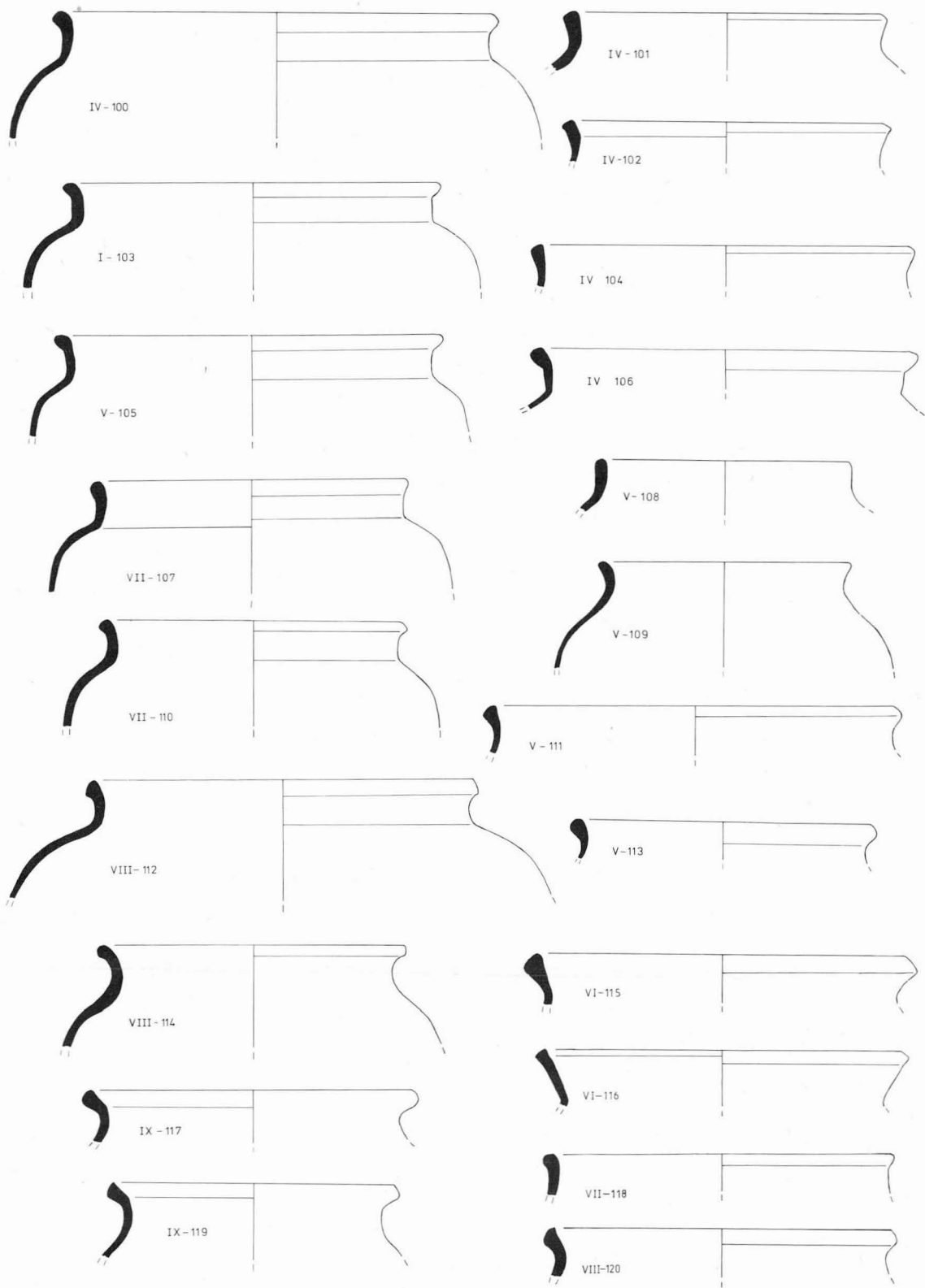


Fig. 58. Pottery Fabric 3; cooking pots. Scale $\frac{1}{4}$.

diameters ranged from 15 - 26 cms. (Fabric 17 (97); Fabric 18 (87)). Many of the rims had broken above the shoulder and it was impossible to establish the relationship between the rim and the body of the cooking pot (Fabric 3 (104, 118); Fabric 18 (92)). The rims showed minor variation in form which may well have been accidental rather than intentional.

The rim forms were:-

Simple upright	-	Fabric 3 (108, 109)
Simple rounded (usually with external beading)	-	Fabric 3 (103, 105, 107)
Simple - slightly thickened with external beading	-	Fabric 3 (113, 101, 106)
Simple - slightly thickened	-	Fabric 3/1 (84, 90)
Slightly thickened or squared	-	Fabric 3 (112, 111, 120)
Flattened on top and squared	-	Fabric 3/1 (91)
Everted	-	Fabric 18 (89)
Everted with external beading	-	Fabric 18 (83)
Everted and squared	-	Fabric 3/1 (88)
Everted with slight internal hollow	-	Fabric 3 (117)
Everted, with slight internal hollow and squared	-	Fabric 3 (119)
Everted with slight internal beading	-	Fabric 3 (116, 102)
More everted rounded	-	Fabric 3 (114)
Everted and thickened	-	Fabric 3 (115)
Folded outwards with slight flange	-	Fabric 18 (94)

One profile was reconstructed with a slight shoulder (Fabric 3/1 (82)). Another rim form with slight internal hollow and external beading (Fabric 17 (97)) also had very little shoulder. Sherds in Fabric 17 were very friable.

The bowls (Fabric 3) had simple rounded or simple rounded and slightly flattened rims (124). The rim of one bowl had thumb decoration which ran along the top of the rim (125). It also had two small holes bored into its side. It was not clear whether these holes were made while the vessel was green hard or after firing. This type of hole appears not infrequently on cooking pots and bowls of this period. It has been suggested that they were used for drying purposes ⁷⁴.

Bases of cooking pots and bowls in Fabrics 3, 3/1, 17 and 18 were slightly more convex than bases in Fabric 8. Firing was not uniform. In fracture the sherds were reduced to dark grey (10YR 4/1) and oxidised externally to reddish brown/reddish yellow (5YR 5/3) and (5YR 6/6 approx.). Some of the sherds belonging to Fabrics 3 and 3/1 became visibly more fused after Phase VII. These types of cooking pots (3, 3/1, 17 and 18), despite their inferior fabrics, ran concurrently with the better executed wares of Fabrics 1, 2 and 5. The fact that

these coarse and inferior made vessels were in demand from Phase I - XII suggests that their capacity was the important factor.

Fabric 12: (one sherd) medium tempered with coarse flint and sand was found in Phase I. It was wheel made and reduced in fracture to greyish brown (10YR 5/2). The external surfaces were grey (5YR 5/1).

Fabrics 6, 7, 9 and 25 - Imported Wares (Table 4)

Imported wares associated with Late Saxon/Early Medieval ware show the trading connections between Great Yarmouth and the Continent in the late eleventh/early twelfth century. These included sherds of Andenne-type wares (Fabric 6; Group XIII)⁷⁵ and a large spherical shaped spouted pitcher, with an undercut collar (130). The base had been dipped in yellow lead glaze and the pitcher had then been dried upside down. The glaze had been allowed to run down the sides; the collar protected the rim from the glaze. This was the case with all the partially glazed ware with undercut rims found in the 1974 excavation (124, 138).

TABLE 7. PINGSDORF-TYPE WARE (FABRIC 7)

PHASES	V	VI	VII	VIII	IX	X	XI	XII	Mohs' scale
	%	%	%	%	%	%	%	%	
Fabric 7 Total	0.36	2.13	4.90	5.46	1.56				
Red Painted Decoration	0.18	0.71	4.12	1.54	1.17				8
Purple Fired Decoration		1.42	0.52	3.92	0.39				9+
Foot Ring Bases	0.18		0.26						8

The following were also found. Two foot-ring bases (too fragmentary to be drawn), probably belonging to pitchers of Pingsdorf type⁷⁶; sherds decorated with red ferric oxide; also sherds which were almost vitrified and had dark purple decoration (Table 7). These three groups all appeared to be of the same fabric, Fabric 7 (Table 7). The red painted sherds were compared with other red painted fabrics from kiln sites at Brunssum⁷⁷ and Dorestad at the British Museum. Fabric 7 red painted sherds were found to be of a much finer fabric and comparable with Pingsdorf Red Painted ware. Three types of design were found: comma-like stroked (56), cross hatched lines (57) and a simple linear design (59). Two small deliberately flattened added handles were found (it was not certain whether these had belonged to the same pitcher). They appeared to be decorative rather than functional. The greyish brown sherds (2.5Y 5/2) were of the same fabric but fired to an almost vitreous state (1200°C) and the red paint had been fired to dark purple (61). A few

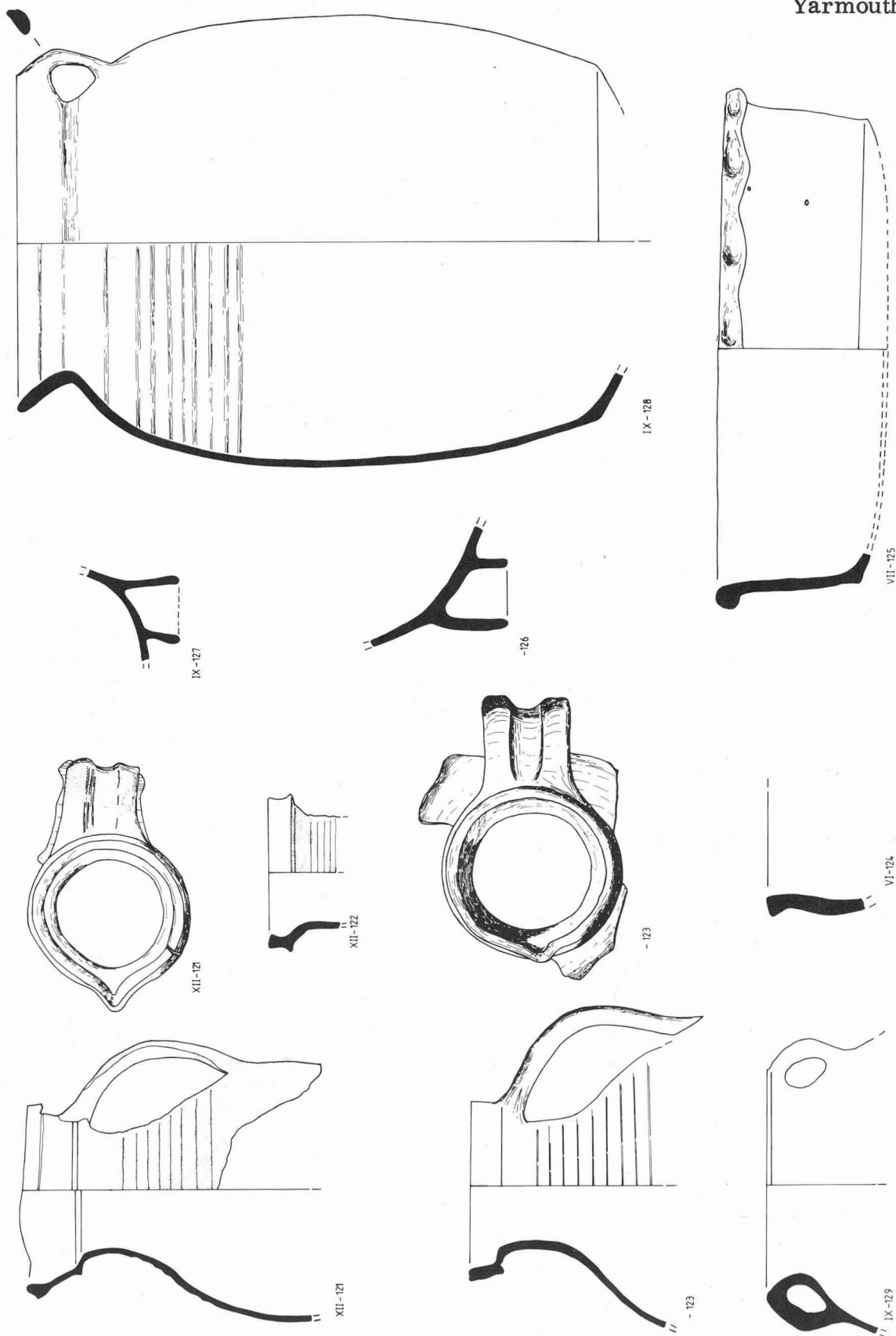


Fig. 59. Pottery Fabric 3; bowls 124 and 125. Fabric 10; handles or feet 126 and 127. Pitchers 128 and 129. Fabric 15; jug 122. Fabric 19; jug 121. Unphased jug 123. Scale $\frac{1}{4}$.

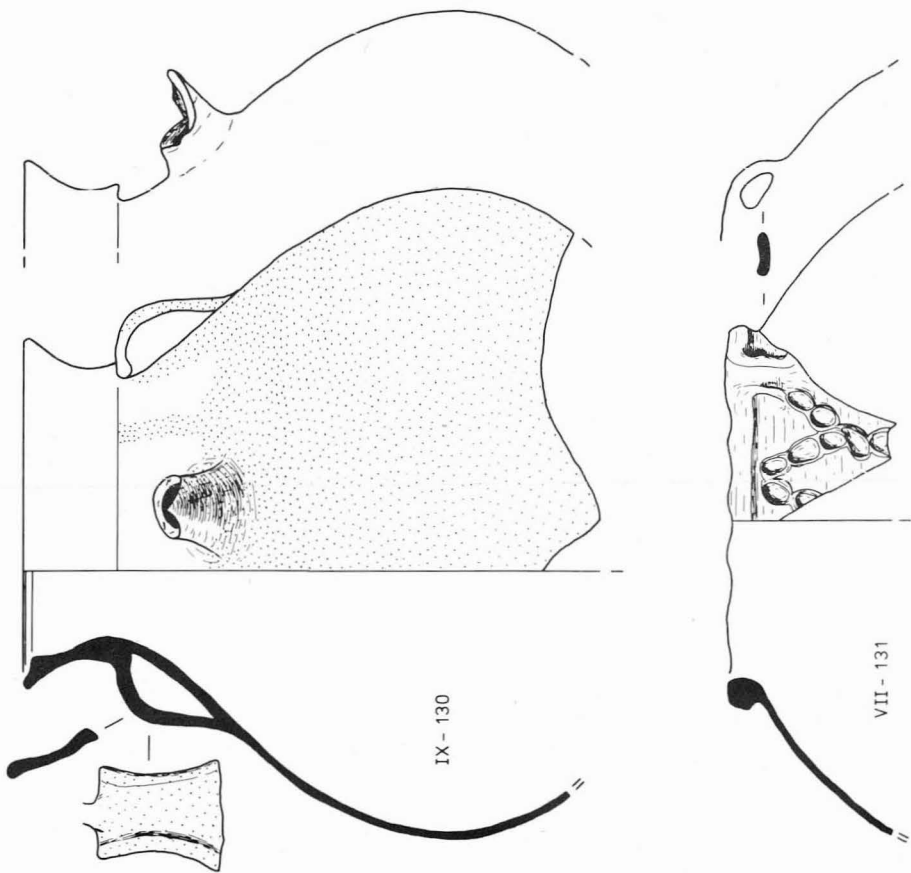
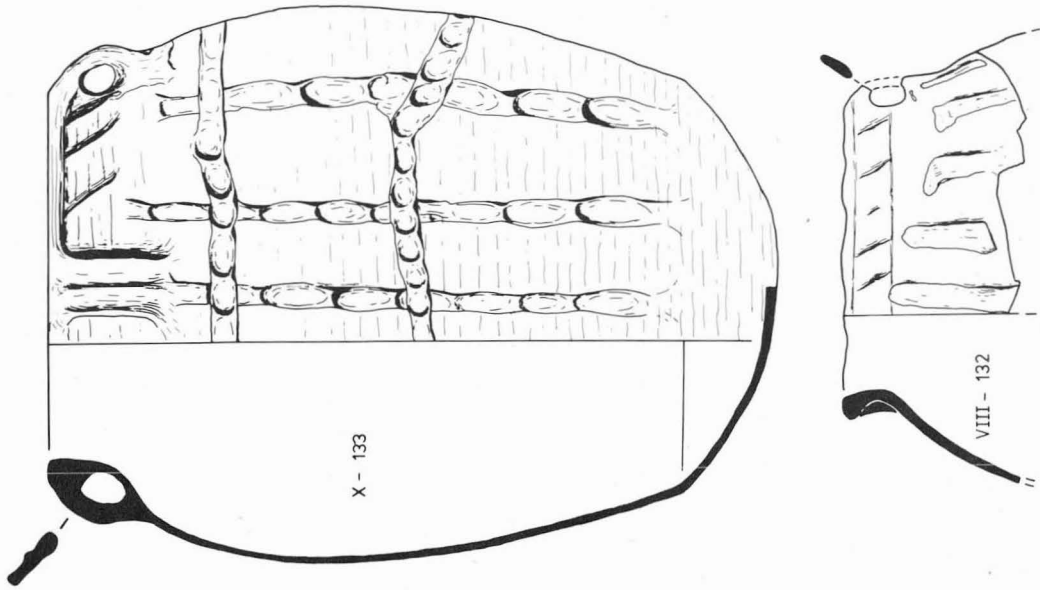


Fig. 60. Pottery Fabric 1; storage jar 131. Scale $\frac{1}{6}$.
 Fabric 4; storage jars 132 and 133. Scale $\frac{1}{6}$.
 Fabric 6; pitcher 130. Scale $\frac{1}{3}$.

blue/grey ware sherds (Paffrath) were found ⁷⁸ (Fabric 9), together with an upright rim with a slight hollow on top (58). This would have belonged to a spherical cooking pot.

Fabric 25: one sherd comparable to Raeren Stoneware was found on the disturbed surface (44) in Phase XI, this was certainly intrusive.

Fabrics 13, 14, 15, 16, 19, 21, 22, 23 and 24 -
Probable Imported Wares (Table 4)

Some fabrics appeared to be imports but their fabrics and decoration were unlike any of the sherds from well known sources; it has not been possible to make any suggestion about their possible source. These included the following nine fabrics :-

- | | | |
|-----------|---|--|
| Fabric 13 | - | one sherd; well made on fast wheel; externally burnished. |
| Fabric 14 | - | one sherd; made on fast wheel, distinct slow rilling externally; external surface blackened with use. |
| Fabric 15 | - | one rim (122) and five sherds ⁷⁹ . |
| Fabric 16 | - | (60), partial strap handle with stab decoration; either overfired or suffered secondary burning. |
| Fabric 19 | - | (121), one partially glazed jug with strap handle and punched out spout; made on fast wheel; external slow rilling marks as part of decoration. |
| Fabric 21 | - | One sherd. |
| Fabric 22 | - | Two sherds; this fabric appeared to be very similar to Stamford glazed wares, but on comparison with Stamford ware sherds in the British Museum, it was found to be different. |
| Fabric 23 | - | Two sherds. |
| Fabric 24 | - | One sherd. |

Phase XI was heavily machined and sherds of earthenware (Fabric 20) (Table 4), together with one sherd comparable to Raeren-type Stoneware were found. It would be unwise to draw conclusions from this phase. However, there is little doubt from the evidence found in Phase XII (Fabrics 15, 19, 21 to 24) that the end of this phase is of thirteenth century date. The sherds stratified below the possible surfaces of Row 16 had suffered heavy secondary burning. Glazed and partially glazed wares of thirteenth century date were particularly difficult to recognise. However, they did include Stamford-type ware ⁸⁰ and a jug (probably an import) with undercut rim and slow rilling on the body (123). There was also 'reduced grey ware' similar in rim form to that found in Phase XII.

The unstratified sherds included wares of Grimston ⁸¹ and Scarborough ⁸² type wares. There was also stoneware and later seventeenth to nineteenth century wares which were associated with subsequent disturbance referred to elsewhere.

The sherds from the East Trench suggested that the earliest date was comparable with the later levels of Phase XII, also that the uppermost levels were not later than mid-fourteenth century. The 'grey reduced wares' showed no development and very few oxidised sherds were found ⁸³. The sherds included Paffrath-type ware (Fabric 9), Stamford-type glazed ware and York-type ware ⁸⁴.

Concluding Remarks

No surprising technological developments in the pottery were brought to light. The pottery found on the site at Great Yarmouth reflected developments which were then common to this region. But the Local Transitional ware (Fabric 2) reflected either very localised traditions or continental traditions in decoration, while the forms of Early Medieval ware (Fabric 5) found in 1974 were not truly medieval in character. It was unfortunate that no certain primary occupation layer was reached in the excavation, but the sequence would appear to start with the beginning of Early Medieval ware (Fabric 5). Thetford-type ware (Fabric 1) fell off sharply after Phase II. Local Transitional ware (Fabric 2) was the dominant coarse ware fabric until Phase IX. Early Medieval ware captured the market during Phase IX and X, it was then superseded by medieval coarse ware (Phase XII) and glazed wares of thirteenth century date. The imported wares from two unidentifiable sources (Andenne-type wares, and Pingsdorf-type ware) both suggested a late eleventh/early twelfth century date (Phase V). Andenne and Paffrath-type wares continued to Phase XII when glazed and partially glazed wares associated with the thirteenth century began to appear.

The method of study was to establish the technical classification of the fabrics before proceeding to examine the potting techniques used and to show the development of these fabrics as expressed by fabric percentages within each phase. It is hoped that this classification will assist in future interpretation when other sites in the region (to which closer dating can be assigned) have been described.

Acknowledgements

I am deeply grateful to the many people who advised me, but I can mention only a few here. They are Alan Carter and J. G. Hurst, also John Cherry at the British Museum and Dr. F. B. Atkins, University of Oxford, Department of Geology and Mineralogy.

Postscript

Twenty four very abraded sherds excavated from the Long Mound, Ashtree Farm, Great Yarmouth in 1948 ⁸⁵ were compared with the 1974 Great Yarmouth Fabric Types. Twenty three sherds were similar to Fabric 5; twenty were uniformly reduced, while three sherds were oxidised with partial orange/green glaze. This group (or groups ?) should not be earlier than Phase XII (late twelfth/early thirteenth century). It was originally dated to the eleventh/thirteenth centuries. One sherd was of nineteenth century red earthenware.

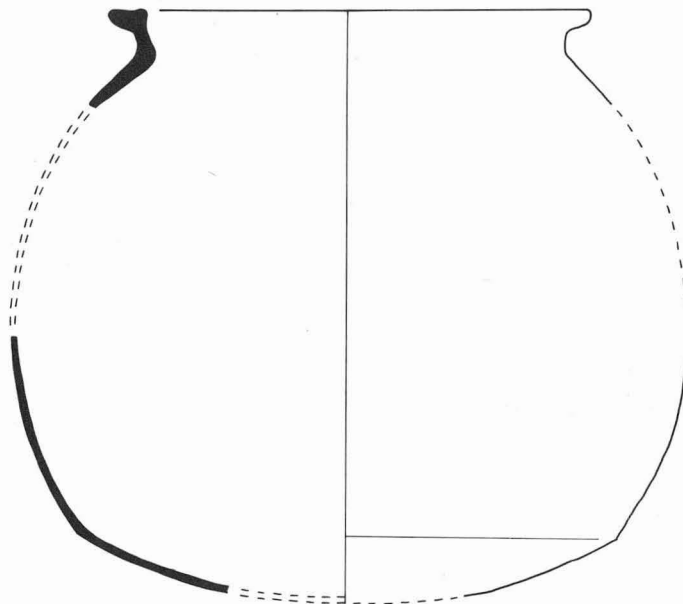


Fig. 61. Pottery. Cooking pot from beneath Row 113. Scale $\frac{1}{4}$.

The cooking pot found beneath Row 113 in 1954, and mentioned in Green & Hutchinson (1960) ⁸⁶ is here published in full (Fig. 61). Two rimsherds and a large piece of the base survive in the Merchant's House, Row 117, Great Yarmouth (marked GYP.12, 19 and 25). All three pieces are heavily burnt, and the surfaces are part covered with accretions. The pot is of Fabric 5, and is reduced very dark grey 7.5YR 3/0 (in fracture). The rim form is comparable with those from Phase XII of site 1032. The vessel was originally dated to the second half of the twelve century. This dating is substantially correct, although a late twelve/early thirteenth century date seems more likely.

IX. ZOOLOGICAL EVIDENCE

HUMAN BONES by Bari Hooper

Summary

The remains consist of the heavily disturbed bones of at least nine adults and five children. Six examples of osteoarthritic disease are

present, and one possible case of syphilis. Other notable features include a healed leg fracture and a single 'squatting facet'.

The bones were recovered from two features, 365 and 366, and from the disturbed surface around these features. Associated finds included slabs of sandstone and eighteenth/nineteenth century brick rubble. It seems most likely that the bones had been disturbed and hastily reburied during the construction of the Brewery, and that they were originally associated with the meeting house of the Particular or Calvinistical Baptists, which existed in the eighteenth century.

The skeletal material examined consists of over one hundred and fifty bones and fragments representing a minimum of nine adults of both sexes, and five children (Table 8). Owing to the circumstances of their original disturbance and subsequent reinterment, it has not been considered necessary to measure any of the bones. The substance of this brief report deals entirely with pathological and functional changes. If the bones are a fair sample of their grave group, their general morphology suggests a people of medium stature.

Disease

Osteoarthritis is present in six bones, the most severely affected being a left femur head which had osteophytic lipping and eburnation of the joint surface. Osteoarthritis of the hip is one of the most common forms of the disease, affecting mainly the elderly. It is a degenerative wear and tear process which considerably impairs hip movements and often causes severe disablement⁸⁷. Milder osteoarthritic changes are present at the articular margins of two femora, one fibula, one vertebra and a metatarsal.

An adult left tibia exhibits severe inflammatory lesions throughout its length. The normally smooth surface is badly pitted and has patches of periosteal bone formation. A longitudinal section through the bone shows areas of osteophytic thickening and necrosis of the cancellous tissue. Osteo-periostitic reaction of this nature is a characteristic feature of advanced syphilis⁸⁸, but without recourse to examination of the whole skeleton, treponemal infection cannot be proven. Some non-specific infections may well simulate the characteristic lesions of syphilis of bone.

Another adult left tibia has periostitis over much of its surface. As in so many other archaeological instances of inflammation of the periosteum, it is impossible to identify the infection.

Trauma

An adult right tibia has a mid-shaft compound fracture. The severely displaced ends of the bone have reunited successfully, but with a gross distortion of the profile.

Slight reactionary changes can be seen at the inter-osseous ligament attachment point of a fibula and at the psoas major muscle attachment

areas of two femora. These changes probably result from ligamental and muscular strains received in minor accidents.

Functional change

A right tibia, probably female, has a 'squatting facet' at the ankle joint. 'Squatting facets' are a direct consequence of a person habitually resting in a squatting position with the feet in extreme dorsiflexion. These facets are commonly noted among early and middle Saxon groups, but are seldom seen in post-Conquest remains⁸⁹.

TABLE 8

Type of Bone	No. of bones or fragments	Minimum number of individuals represented		
		Adults, male & female	Children	Infants
Skull	31	3		1
Thoracic vertebra	3	1		
Sacral vertebra	1	1		
Clavicle	2	2		
Scapula	4	1	2	
Humerus	13	4		1
Radius	5	3		
Ulna	6	3		
Rib	9	1	1	1
Pelvis	6	2		
Femur	30	9	1	3
Tibia	31	9	1	
Fibula	10	3		
Metatarsal	3	1		
Patella	1	1		
Totals	155	9	2	3

THE ANIMAL BONES

by Alison Gebbels

Animal bones from twelve phases and some unphased material was examined. As these phases span two hundred years an assessment of minimum numbers, and a comparison of the relative frequency of species was not calculated. It was felt that any interpretation based on the relative importance of species in the different phases would be misplaced owing to the short time span of total occupation. Also the small amount of material in some of the phases made any statistical work of little value.

Minimum numbers were difficult to assess, owing to the fragmentary

Zoological Evidence

nature of the material as a result of butchery. Generally sheep are the predominant species with varying proportions of pig and ox; substantial amounts of bird bone were present in each phase, and these will be reported on separately.

Measurements were taken where possible and these are similar to those normally made at the Ancient Monuments Laboratory.

The small size of Bos sp. is interesting, as some individuals although fairly mature were of extremely small stature as seen from the measurements. It is hoped to find some similar reference material to compare these with.

The following species were present in each phase:

TABLE 9

Phase I

Bos sp. (ox), Sus sp. (pig), Ovis sp. (sheep)

Phase II

Bos sp. Sus sp. Ovis sp. Avies sp. (birds)

Phase III

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase IV

Bos sp. Sus sp. Ovis sp. Cervidae (deer), Avies sp.

Phase V

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase VI

Bos sp. Sus sp. Ovis sp. Cervidae? Avies sp.

Phase VII

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase VIII

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase IX

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase X

Bos sp. Ovis sp. Avies sp.

Phase XI

Bos sp. Sus sp. Ovis sp. Avies sp.

Phase XIIBos sp. Sus sp. Ovis sp. Cervidae Avies sp.

Butchery was apparent on most bones, long bones were generally cut at their proximal and distal ends; ribs and vertebrae were cut into small pieces. Some of the material was very eroded and consequently in poor condition. Burning was observed in varying degrees, and mostly the bones were identified as sheep.

KEY TO ABBREVIATIONS OF MEASUREMENTS
USED IN TABLE NOS. 10 - 13

DB	=	Distal Breadth
DD	=	Distal Depth
HQ	=	Maximum width of the head
HT	=	Head to Trochanter
L	=	Length
LCW	=	Lateral Condyle Width
LDD	=	Lateral Distal Depth
MB	=	Medial Depth
MCW	=	Medial Condyle Width
MD	=	Medial Depth
MDD	=	Medial Distal Depth
NB	=	Notch Breadth
PB	=	Proximal Breadth
PD	=	Proximal Depth
PJB	=	Proximal Joint Breadth
OL	=	Olecranon Length
WLC	=	Width of Lateral Condyle
WMC	=	Width of the Medial Condyle
1	=	First Measurement
2	=	Second Measurement

TABLE 10. MEASUREMENTS OF SHEEP BONES

Ovis sp. Sheep Metacarpal/Metatarsal in mm.

L.	PB	PD	MB	MD	DB	MDD1	MDD2	LDD1	LDD2	WMC	WLC	R/L	Context No.	Phase
-	18.5	19	10.5	10.2	-	-	-	-	-	-	-		255	V
-	19.5	20.5	11.7	10.0	-	-	-	-	-	-	-		265	V
135.3	20.1	20.4	12.5	11.5	24	18.5	9.9	15.9	9.5	11.4	11.5	R	439	IV
139	19.5	17.1	11.5	10.8	24.8	15.2	10.4	15.0	9.6	11.6	10.2	R	406	VI
-	-	-	11.8	11.0	23.0	15.0	10.4	14.9	9.2	11.2	10.4	R	421	VI
134	18.5	18.5	11.1	10.2	22.0	14.2	8.0	14.4	9.5	10.4	9.8	R	437	V
-	20.0	20.0	12.1	11.5	-	-	-	-	-	-	-		406	VI
122	21.0	15.4	12.4	9.7	23.3	15.3	10.5	15.0	10.0	11.0	10.8	L	171	VII
123	20.2	21.2	10.3	10.7	23.4	15.8	10.0	15.5	9.8	11.0	10.0	R	171	VII
177	21.9	15.3	13.5	10.2	23.0	14.4	10.5	14.0	10.0	10.9	10.5	R	171	VII
124	22.4	17.5	13.5	9.7	24.5	15.7	10.8	15.1	11.3	11.7	11.5	R	171	VII
-	-	-	12.8	11.6	24.0	15.6	10.3	15.0	9.5	11.5	10.5	R	328	VIII
-	23.5	17.5	13.2	10.0	-	-	-	-	-	-	-		247	VI
-	-	-	-	-	23.2	14.5	9.7	14.0	9.0	11.0	10.0	L	310	VII
128	18.2	17.9	10.8	9.8	21.6	14.9	9.4	14.0	8.4	10.4	9.8	L	123	XII
-	21.1	15.0	13.3	10.0	-	-	-	-	-	-	-		132	XII

TABLE 10 (cont.)

-	21.4	1.62	13.7	10.0	-	-	-	-	-	-	-	-	123	XII
-	17.9	18.0	10.9	10.8	-	-	-	-	-	-	-	-	98	XII
-	19.0	20.0	10.8	10.2	-	-	-	-	-	-	-	-	123	XII
-	18.9	19	10.2	10.1	-	-	-	-	-	-	-	-	98	XII
-	-	-	-	-	23.2	15.8	10.6	15.2	11.0	11.2	10.8	R	132	XII

Ovis sp. Radius in mm.

L.	PB	PD	MB	MD	DB	DD	PJB	L/R	Context No.	Phase
-	32.9	17.6	17.1	8.9	-	-	29.2		424	V
137.6	28.2	13.5	14.8	7.7	25.0	16.3	26.0		265	V
-	-	-	-	-	27.0	19.0	-		342	V
-	31.1	16.9	-	-	-	-	28.0		424	V
-	29.7	14.9	14.0	8.2	-	-	27.1		342	V
-	27.9	14.6	13.7	8.3	-	-	25.9		424	V
-	29.1	16.0	15.2	8.0	-	-	25.3		168	VI
-	29.4	15.0	15.3	8.0	-	-	26.9		406	VI
-	28.0	14.4	-	-	-	-	-		406	VI
137	25.5	13.7	14.5	8.2	27.1	16.5	-		322	VII
-	31.8	16.3	15.2	8.0	-	-	28.6		171	VII

TABLE 10 (cont.)

-	-	-	-	-	27.4	18.5	-	-	297	VII
-	27.2	14.5	-	-	-	-	24.4	128	XII	
-	27.0	14.6	-	-	-	-	24.8	123	XII	
-	29.3	15.0	-	-	-	-	27.2	128	XII	
-	28.9	15.0	-	-	-	-	26.2	98	XII	
-	28.5	14.2	-	-	-	-	25.6	132	XII	
-	30.0	14.5	8.0	-	-	-	27.8	123	XII	
-	27.9	15.0	15.0	9.8	27.5	10.5	-	318	IV	

Ovis sp. Femora in mm.

L1	L2	DB	LCW	MCW	DD	MB	MD	HO	HT	L/R	Context No.	Phase
-	-	42.3	15.5	17.0	24.8	-	-	-	-	L	346	V
-	-	36.7	15.5	-	18.4	-	-	-	-	R	256	V
-	-	36.2	14.0	14.5	22.0	-	-	-	-	R	265	V
-	-	36.5	14.5	13.5	21.0	-	-	-	-	R	346	V
-	-	35.1	14.1	11.9	19.0	-	-	-	-	L	406	VI
-	-	40.9	15.7	15.9	24.7	-	-	-	-	L	436	V

TABLE 10 (cont.)

Ovis sp. Humerus in mm.

L1	L2	PB	PD	DB	DD	L/R	Context No.	Phase
-	-	-	-	24.9	21.6		406	VI
-	-	-	-	27.5	24.5		325	VI
-	-	-	-	30.1	24.1		406	VI
-	-	-	-	30.0	21.3		407	V
-	-	-	-	29.3	25.5		406	VI
-	-	-	-	29.0	22.6		310	VII
-	-	-	-	30.0	26.5		171	VII
-	-	-	-	30.0	23.0		171	VII
-	-	40.8	38.4	-	-		197	IX
132	120.0	34.1	39	30.3	-		132	XII
-	-	-	-	27.2	23.0		123	XII
-	-	-	-	28.3	25.0		123	XII
-	-	-	-	26.4	25.0		132	XII

Ovis sp. Tibia in mm.

L1	L2	PB	PD	MD	MB	DB	DD	L/R	Context No.	Phase
-	-	37.0	37.0	-	-	-	-		318	IV

TABLE 10 (cont.)

-	-	-	-	-	-	23.5	18.0	436	V
-	-	-	-	-	-	26.6	21.2	255	V
-	-	-	-	11.0	13.0	25.1	19.3	406	VI
-	-	-	-	-	-	24.5	19.3	432	VI
-	-	-	-	-	-	25.4	20.0	406	VI
-	-	-	-	12.2	9.8	24.0	19.0	310	VII
-	-	-	-	12.9	10.0	23.0	18.6	327	VIII
-	-	-	-	13.4	10.4	24.4	18.4	310	VII
-	-	-	-	11.9	10.0	23.9	18.9	171	VII
-	-	36.0	-	12	11.2	-	-	98	XII
-	-	-	-	14.5	14.0	25.8	18.5	132	XII

TABLE 11. MEASUREMENTS OF OX BONES

Bos sp. Ox Metacarpal/Metatarsal in mm.

L	PB	PD	MB	MD	DB	MDD1	MDD2	LDD1	LDD2	WMC	WLC	R/L	Context No.	Phase
202	44.0	38.0	24.0	22.5	45.0	28.0	20.0	26.0	20.0	22.0	20.0	RR	444	III
195	40.0	38.4	21.3	21.0	45.7	27.0	21.4	26.0	19.8	21.9	20.8	R	322	VII
204	40.9	40.0	20.4	22.6	44.3	27.4	20.0	26.6	18.5	21.0	20.0	R	310	VII
-	-	-	-	-	46.6	28.0	21.0	26.9	18.3	23.0	21.9	L	341	VII

TABLE 11 (cont.)

192	39.0	36.6	22.4	21.6	44.0	24.8	19.2	24.0	20.5	20.2	20.2	R	186	VIII
-	-	-	-	-	43.3	27.0	20.2	26.0	18.0	20.0	20.0	L	267	VIII
-	45.1	27.7	-	-	-	-	-	-	-	-	-		128	XII
-	49.0	28.6	-	-	-	-	-	-	-	-	-		98	XII
-	43.0	-	-	-	-	-	-	-	-	-	-		128	XII
-	-	-	-	-	47.5	26.6	21.0	25.8	18.4	22.6	21.6	R	123	XII
-	-	-	-	-	44.0	26.1	19.9	25.4	19.0	21.0	20.2	R	123	XII
-	-	-	-	-	43.0	25.4	19.2	24.7	18.0	20.7	20.2	R	128	XII
-	-	-	-	-	48.7	26.7	20.2	27.4	22.4	23.6	23.0	L	128	XII

Bos sp. Radius in mm.

L	PB	PD	MB	MD	DB	DD	PJB	L/R	Context No.	Phase
-	68.2	-	-	-	-	-	61.0		267	VIII
-	62.0	34.8	-	-	-	-	57.6		123	XII
-	66.0	34.0	-	-	-	-	58.4		123	XII
-	-	-	-	-	55.0	34.0	-		132	XII
-	-	-	-	-	57.3	31.6	-		98	XII
-	-	-	-	-	50.1	30.0	-		98	XII

TABLE 12. MEASUREMENTS OF PIG BONES

Sus sp. Pig Ulna in mm.

OL	NB	L	L/R	Context No.	Phase
-	10.5	-		406	VI (no epiphysis)
-	12.8	-		406	VI

Sus sp. Tibia in mm.

L1	L2	PB	PD	MD	MB	DB	DD	L/R	Context No.	Phase
-	-	56.4	-	30.0	21.0	46.0	37.8	L	350	IV
-	-	44.8	41.0	-	-	-	-		350	IV

TABLE 13. MEASUREMENTS OF ROE DEER BONE

Caproelus sp. Roe Deer Radium in mm.

L	PB	PD	MB	MD	DB	DD	PJB	Context No.	Phase
155	30.0	18.0	15.0	9.8	27.5	20.5	-	318	IV

FISH REMAINS

by Alwyne Wheeler and Andrew Jones

'Before the herrings there commonly cometh a fish about a foot long, by fishermen called a horse, resembling in all points the Trachurus of Rondeletius.' (Sir Thomas Browne, 1662)

INTRODUCTION

This report is concerned with the fish bones retrieved and identified from the Great Yarmouth site excavated in 1974. As a consequence of the methods of retrieval employed it presents a far more complete record of the fishes consumed or caught by the early medieval inhabitants than has hitherto been available for any site in England.

Nineteen species of mainly marine fish have been identified from various remains. Their biology is discussed in the context of the information it can provide as to fishing methods and places. Considerable information emerges concerning the comparative importance of the various species to the fishing industry, and of the sizes and body weights of the more important species. In addition the opportunity is taken to discuss in a general way the methods of retrieval of fish remains and the most informative parts of the fish skeleton on which the archaeologist should concentrate.

The study of animal remains of any kind from an excavation has always been complicated by heavy bias in the method of retrieving the evidence. Too often the implications of this bias are skimmed over if they are commented on at all. With fish remains retrieval bias is probably greater than in any other group for they are usually smaller and have more fragile hard remains than other groups of edible animals. As a consequence their survival at any site is less likely; a bias which it is impossible to assess. More serious, because it is avoidable, is bias due to failure to retrieve the bones excavated. This may be due to two factors, failure to recognise the fragment as fish - for example fish otoliths and certain dermal structures are often mistaken for seeds or fragments of mollusc shell, or to the inability of the excavator to distinguish the smaller fish remains from the soil.

The work of Payne ⁹⁰ demonstrated the importance of sifting to recover mammal bones, and that its use produced a different and presumably more representative assessment of the fauna. Fish bones recovered by sifting from the spoil heaps at Sitagroi by Payne showed that at least nine species of fish were represented in the spoil where no fish remains had been detected by conventional recovery methods ⁹¹. Experience gained at Great Yarmouth during the 1974 season has confirmed that a more representative sample can be obtained only by sieving.

Material and Methods

Two methods were employed for the retrieval of fish remains. The first was conventional hand picking of excavated soil to extract mammal and fish bones, pottery, and metal etc. Additionally, some 2130 kg. of soil was processed through a flotation tank. The design used was one based on the Siraf Unit 92. It was modified by fitting a recycling centrifugal water pump and settlement tank. One millimetre mesh was used within the tank and also in the weir sieve. Any finer mesh was found to clog quickly and overflow.

No precise strategy was employed in sampling but an overall plan to sample as many major layers, both within and outside of structures was carried out.

The very tedious sorting of residue from the flotation tank was done largely by inexperienced volunteer school children under the supervision of one of the authors (Andrew Jones).

The bones were identified at the British Museum (Natural History) using comparative skeletal material. It was found that completely disarticulated skeletons are more convenient to work with than the partially articulated skeletons normally prepared for taxonomic studies. The Museum collections of otoliths and scales were employed for the identification of these structures.

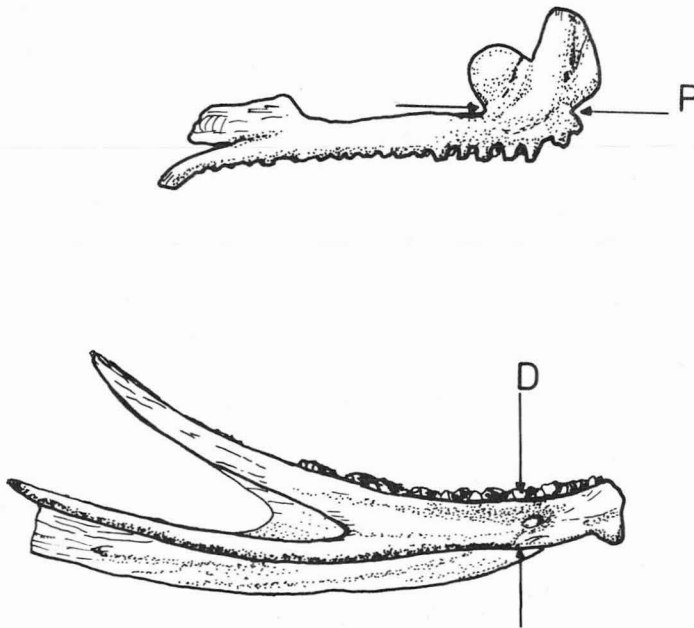


Fig. 62. Cod jaw bones. Points of measurement across Premaxilla (P) and Dentary (D). Scale $\frac{1}{1}$.

Measurements were taken on certain bones of cod, whiting and haddock, using a conventional dial caliper reading to 0.1 mm. These measurements were on the premaxilla, the width across the base of the ascending process and articular process of the premaxilla (P) and the depth of the dentary across the proximal edge of the foramen from the base of the tooth rows to the angle of the bone, not to the ventral shelf, in the distal region (D), (Fig. 62).

RESULTS

Fish Remains Identified

Various skeletal or dermal remains are identifiable according to the specific features of the fish concerned. The range of such structures identified are shown in Table 14.

TABLE 14

Species or Group	Jaws	Other Head Bones	Vertebrae	Otoliths	Scales	Spines
Elasmo-branches			P		Dermal Denticles	Spurdog dorsal spine
Herring	P	P	P		P	
Eel	P	P	P			
Garfish	P					
Cod	P	P	P	P		
Whiting	P	P	P	P		
Haddock	P	P				
		+Clavicles				
Ling		Vomer	P			
Bass	P	P			P	
Horse Mackerel	P		P		P	Articulating spines
Mackerel	P	P	P		+Scutes	
Gurnard		P				P
Flatfishes	P	P	P		Turbot Tubercle	Anal pterygiophores

P = Presence

The most useful remains found were jaw bones, i. e. the premaxilla (upper jaw) or dentary (lower jaw), which are almost always clearly diagnostic to species. They tend to be strong heavy bones that survive well. Other head bones are not so distinctive but in the case of the gurnard (characteristic sculptured cranial bones), of halibut (maxilla), bass (strongly toothed subopercles), ling (vomer) and haddock (post temporals) they were used as they are very characteristic.

TABLE 15

P H A S E	Approx. wt. of recovered bone (gm.)	Spur dog	Thorn back Ray	Cartilaginous Fishes	Eel	Conger Eel	Garfish	Herring	Whiting	Cod	Haddock	Ling	Bass	Horse Mackerel	Mackerel	Tub Gurnard	Turbot	Flounder	Plaice	Halibut	Dover Sole	Other Flatfish	
I	85		xx			x		xxx	xx	xxx	x			xx	xx								
II	280		xx			x		xxx	xxx	xxx	x			xx	xx	x			xx				x
III	40		x			x		xxx	xxx	xxx				xx	xx				x				
IV	60					x		xxx	xx	xx				x	xxx								
V	140			x	x	x	x	xxx	xxx	xxx				xx	xx				xxx				x
VI	200		x		x	x		xxx	xx	xxx	x			xx	xx				xxx		x		x
VII	1080	xx	x		x			xxx	xxx	xxx	xx	x		xx	xx		x		xx				x
VIII	2270		x		x	xx		xxx	xx	xxx	xx	x	x	x	x		x	x	xx		xx		x
IX	250		x		x	x		xxx	xx	xxx	xx			x	x							x	x
X	120				x	x		xxx	xx	xxx	xx		x	xx	xx				x				x
XI	100		x	x	x			xxx	xx	xxx	xx				xx				x				
XII	2200			x	x	x		xxx	xx	xxx	xx	xx	x	x	xx	x			xxx	x			x

x - Species present

xx - Fairly frequent

xxx - Most abundant species

Fish Species Identified

The full list of species of fish identified is presented in tabular form with Phases indicated in Table 15. It should be clear from Table 14 that the evidence for the presence of any species in any one phase is derived from varied and non-comparable data and for this reason it is only possible to present a subjective assessment of abundance.

This evidence suggests that herring, cod, whiting and mackerel dominated in all phases, and it seems a fair inference that they were the most important species captured. Plaice also occurs in most samples, as does haddock and the conger eel (although less abundantly). The remaining fishes are represented by relatively few bones and are widely spread through the phases, although they were probably of less significance as food fish than those species already mentioned.

The most numerous bones in the sample were vertebral centra. Unfortunately they are not immediately distinctive although they can be grouped into families, i. e. gadoid (cod family), flatfish and mackerel type. However, some fish, notably conger and the common eel, have characteristic vertebrae.

Otoliths are usually clearly determinable. Only cod and whiting otoliths were recovered; these were broken or abraded and therefore served only as confirmatory evidence for identifications based on other remains. It is possible that some smaller ones were overlooked in residue sorting.

Despite the claims of Casteel ⁹³ the authors are of the opinion that the precise identification of all fish scales retrieved from archaeological excavations is impossible. However, some dermal remains were identified with a heavy bias towards the more distinctive features such as the enlarged denticles (bucklers) of thornback ray, scutes (and scales) of horse mackerel, the dermal tubercles of turbot and herring scales.

Fin spines and rays, and elongate spine-like bones occurred in abundance, the fin rays proved to be so undiagnostic as to be valueless. Spurdog and gurnard dorsal spines, and anal spines of horse mackerel were also identified. Spines occasionally were diagnostic especially the first anal ptergiophore of flatfish, which is a long curved bone with a very hard bony spike at the distal end which in fresh fish protrudes through the skin in the proximity of the vent.

Comparison of handpicked and flotated samples

The species identified from bones recovered by both methods within Phase VIII are set out in Table 16. No record was kept of the total quantity of excavated soil but in each case the volume processed by flotation was a small fraction of the total excavated volume.

The comparison clearly shows the limitation of handpicking as the sole method of obtaining material. Very few species are represented by the handpicked material and these were mainly the large specimens with heavy bones.

TABLE 16

Context No.	Species represented	
	Hand picking	Flotation
208	Cod	Cod, Thornback ray, Herring, Horse Mackerel
267	Cod, Plaice	Cod
290	Cod, Plaice	Cod, Whiting, Haddock, Plaice, Flounder, Sole, Eel, Mackerel, Thornback ray and Flatfish
291	Cod	Cod, Whiting, Herring
311	None	Herring, Whiting, Cod, Turbot
416	Cod	Cod, Whiting, Ling, Conger, Bass, Sole, Thornback ray, Horse Mackerel, Herring, Mackerel, Plaice, Eel

Comparison of the present data with the results of excavations of a medieval site at Baker Lane, King's Lynn in which only eight marine fish species were identified from hand-picked bones⁹⁴ shows in a striking manner the value of sieving. The King's Lynn fish were all identified from large bones (following the failure of wet sieving due to the organic nature of the soil) and all were large species. The Great Yarmouth fish represented a much broader spectrum of the potential food fish of the region, and included the remains of several smaller species which were probably of major importance to the fishing industry and to the diet of the inhabitants of the region.

The estimation of cod weights from archaeological material

The relationship of length to weight in normal fish is logarithmic, and within certain limits the weight of a specimen of known or estimated length can be assessed moderately accurately by plotting against a regression for these parameters. It follows therefore that if certain distinctive and positively identified archaeological bones can be measured accurately and these measurements related to those taken from recent bones of specimens of known length, then an estimate of the length and thus the weight of the archaeological fish can be made.

Measurements of premaxilla width and dentary depth (as explained under Material and Methods) were taken on the bones of eight cod of known length. These measurements are plotted graphically in Figure 63 in which a clear linear relationship is established. The length to (guttled)

weight relationship of North Sea cod has been given by Blacker ⁹⁵, and his data are set out in Table 17.

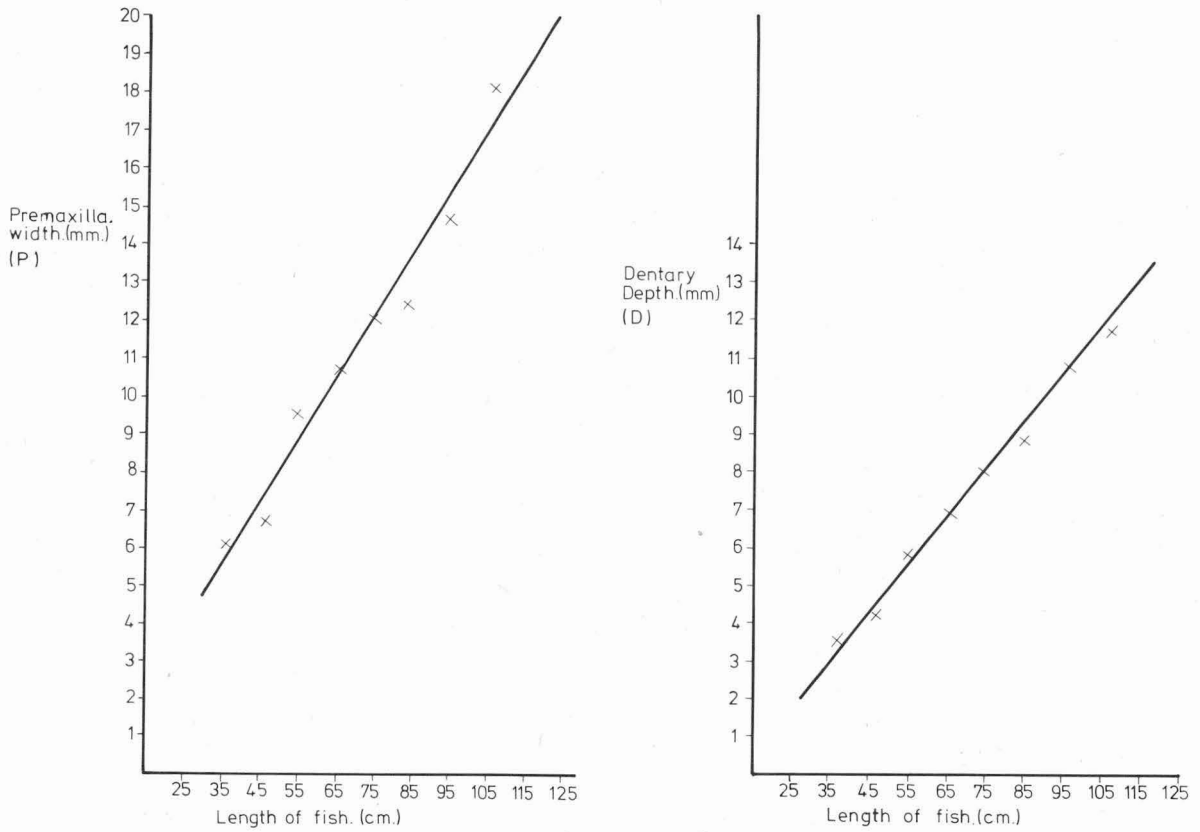


Fig. 63 Relationship of premaxilla width and dentary depth with total length of cod.

TABLE 17

Total length cm.	20	30	40	50	60	70	80	90	100
Average wt. (gutted) kg.	0.073	0.204	0.545	1.090	1.884	2.996	4.449	6.356	8.671

These data are plotted graphically (Fig. 64) in the form of log weight against length of fish. Estimation of gutted weight of fish of known or estimated length can be made directly from this graph. The measurements of premaxilla width and dentary length are also given and related to the length of the fish.

Using this regression it is possible to estimate directly the gutted weight of a cod from measurements made on the premaxilla and dentary bones recovered from archaeological sites.

Zoological Evidence

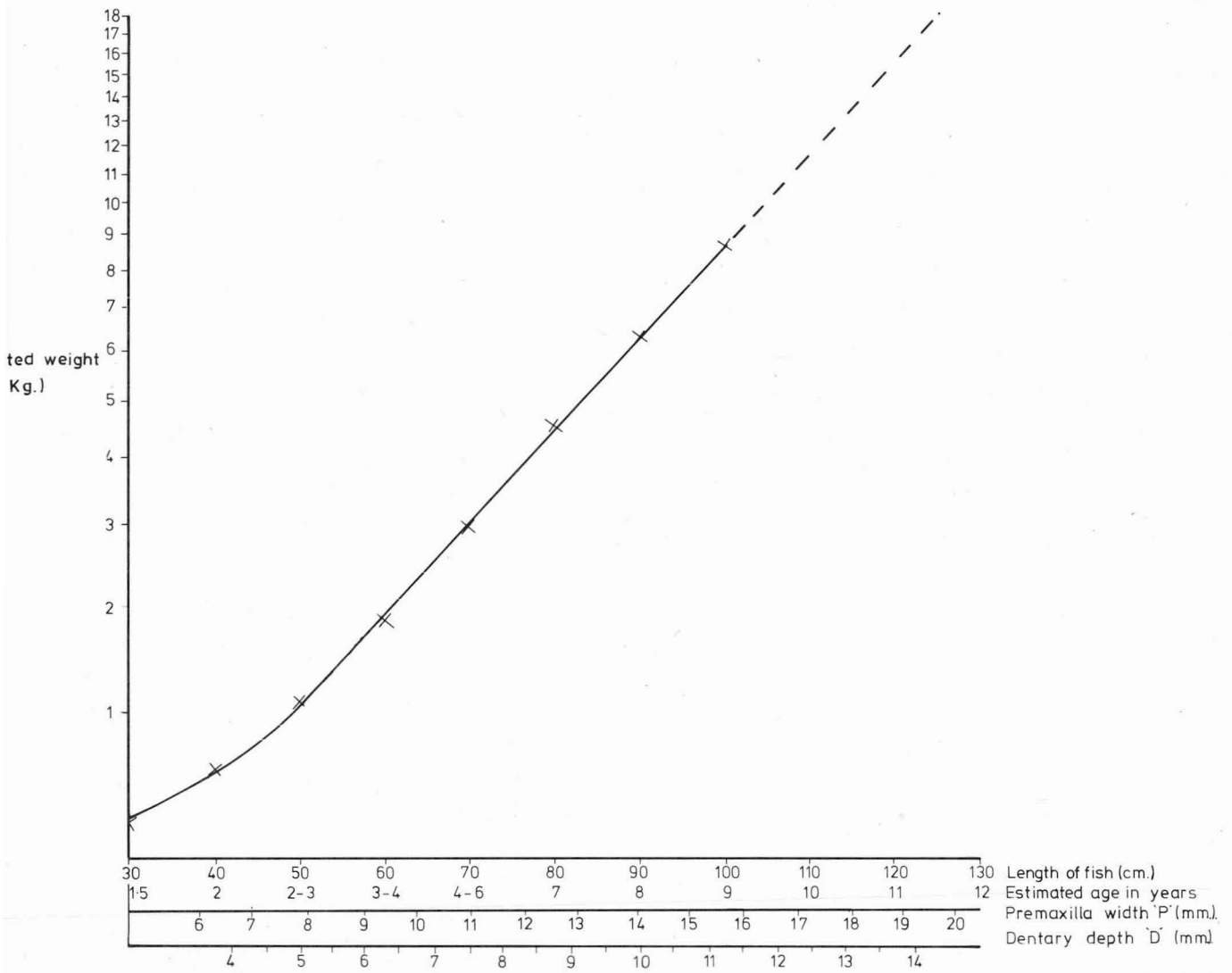


Fig. 64 Length/weight relationship of cod used in the estimation of fish gutted weight from jaw bone measurements.

The measurements made on all the archaeological cod premaxillae and dentaries which were complete enough to permit accurate measurement are tabulated in Table 19. It is interesting to note that the survival of both pairs of bones is almost equal. Of the two, the premaxilla probably gives a more accurate representation of the sample as the size range of the measurement taken across the ascending processes is larger, and consequently measuring error is less significant, and also the points of measurement are more clearly defined. However, in cod bones recovered

from excavations at King's Lynn the ascending processes of the premaxillae were frequently damaged, and in estimation of gutted weight Wheeler (in press) also employed a measurement of maximum width of the premaxilla. Comparison of measurements of premaxilla width, premaxilla process width, and dentary depth in the King's Lynn samples produced broadly comparable results and it might be suggested that any of these, and possibly other measurements of head bones, could be employed to estimate sizes of fish.

Employing the total measurements of premaxilla and dentary bones set out in Table 19 converted to estimated gutted weights by means of the regression line in Fig. 64, a mean weight for each fish can be established. The average of such estimated weights indicated by each bone, left and right, is given in Table 18 and shows that all sources give a relatively constant figure, which suggests that confidence can be placed in these methods of estimating weight.

TABLE 18

	<u>Left</u>	<u>Right</u>	<u>Mean</u>
Premaxilla	5.1 kg.	4.6 kg.	4.85 kg.
Dentary	4.5 kg.	4.8 kg.	4.7 kg.

The analysis of gutted weight of cod represented by bones can be extended still further to assess the minimum and maximum weights represented. The smallest premaxilla measured (6.1 mm.) came from a fish estimated to weigh 0.5 kg., the largest (20.2 mm.) represented a fish weighing c. 20 kg; the smallest dentary measured (4.7 mm.) and the largest (13.1 mm.), and represented fish of c. 0.9 and 13.3 kg. respectively. Clearly the figures are not directly comparable as there is no certainty that the bones were derived from the same two fish.

In Fig. 65 the frequency of occurrence of cod of estimated weight is expressed in the form of histograms, based on data derived from dentary and premaxilla bones for Phases VIII and XII (in which the cod is best represented). From this it can be seen that in Phase VIII cod occurred in two well represented size classes (weighing between 0.5 - 2 kg. and 4.0 - 8 kg. - premaxilla measurements; and 1 - 2 kg. and 3.5 - 6 kg. - dentary measurements). In Phase XII, however, there is only one broad peak of fish of 4 - 8 kg. estimated weight (premaxilla measurements) and 2 - 7 kg. (dentary measurements), with a single smaller fish represented which weighed c. 0.5 kg. The possible significance of this is discussed below.

Calculations of gutted weight could be made for whiting and haddock, although fewer bones are present, but due to sparsity of adequate comparative material this has not been attempted. The measurements made on these species are given in Table 20.

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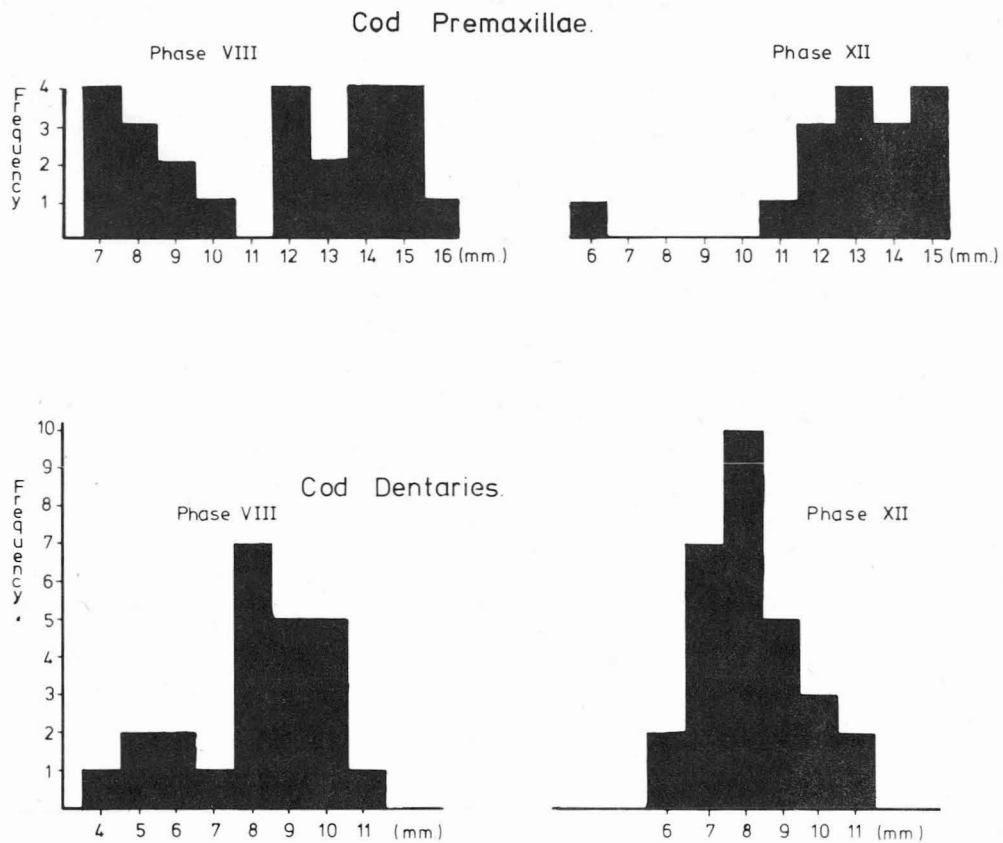


Fig. 65 Frequency of occurrence of premaxilla and dentary bones in 1.0 mm. classes in two phases, VIII and XII.

DISCUSSION

It is important to emphasise at the outset that the fish bones finally identified from any site can only represent a small proportion of the fish actually consumed at the site. However carefully retrieval is undertaken and the remains identified, there is likely to be an unquantifiable element of fish species which are not represented by remains. This is especially true of the elasmobranchs (sharks and rays) in which the skeleton is cartilaginous and in which the only hard parts likely to persist are the skin denticles, jaw teeth, and occasional fin spines, the first two categories are usually small and apt to be overlooked, the third not being present in all species. In the present samples the only elasmobranchs identified were spurdog, on the basis of the dorsal fin spines, and thornback ray in which certain dermal denticle are enlarged, and survive in the soil. Some elasmobranch centra were found but were not identified. However, it is quite possible that larger quantities of the smaller sharks could have been captured and have left no trace at the site.

To some extent the present-day distribution, and habits of the species of fish identified throw light on the interpretation of the results. Some biological notes are given here based largely on Wheeler ⁹⁶.

Spurdog, Squalus acanthias. A very common small shark which occurs in large schools both inshore and in deep water; it weighs up to a maximum of 9 kg. It can be caught in nets and on a hook and line.

Thornback ray or roker, Raja clavata. Probably the most abundant ray on the East Anglian coast, found from 2 to 60 m. It is captured in trawls, occasionally in seine nets, and on hooks.

Eel, Anguilla anguilla. Found both in freshwater, in estuarine, and even in fully marine conditions in inshore waters. Eels can be trapped in river mouths when migrating downstream as maturing adults, they are also commonly taken by multipronged spear, and can be taken on a hook.

Conger eel, Conger conger. Mainly an inhabitant of rocks or rough ground, and usually captured on hook and line, or possibly in traps. The species can be caught in shallow water (3-5 m.) but is more common in depths of 20 to 60 m.

Garfish, Belone bellone. A surface-living fish found moderately commonly in the North Sea in inshore waters especially in late summer and autumn when it often enters estuaries. It can be caught in floating nets (drift nets such as are used for herring), and will also take a bait.

Herring, Clupea harengus. A pelagic fish, which performs extensive migrations and in the vicinity of Great Yarmouth occurred most abundantly in October and November (when the traditional nineteenth/early twentieth century drift-net fishing was prosecuted). The most effective method of capture, before the recent development of mid-water trawling, was by means of floating nets at the surface. Although herring is relatively small (approx. 0.5 kg.) it occurs in enormous shoals. It undoubtedly was a major food resource made all the more valuable by the ease with which it can be preserved (smoked or salted) for later consumption.

Whiting, Merlangius merlangus. In the North Sea a very common fish which is found in shallow water (30 to 100 m.), and often closer inshore. It lives more in mid-water than on the seabed, and although it can be caught in trawls, and beach seines, it is also taken in numbers on hooks. Any attempt to calculate the length and weight of whiting by measuring the dentary depth and premaxilla process width is complicated by the small size of the bones. This can result in a very narrow range of measurements in which measuring error is accordingly more serious. In addition, it has proved difficult to obtain large specimens which has limited the possible comparisons. With these qualifications only a tentative assessment of the lengths and weights of whiting represented by these archaeological bones can be given. Large whiting are certainly

Zoological Evidence

represented, possibly as long as 46 cm. (0.12 kg.), but the majority appear to have been around 43 cm. long (0.5 kg. in weight).

Cod, Gadus morhua. Abundant in the North Sea, occurring both offshore and in inshore waters, usually just above the sea bed. It becomes more common close inshore during the winter and can be caught then on hook and line, and occasionally in shore seines, as well as by trawling.

Haddock, Melanogrammus aeglefinus. Although today the haddock is most common in the northern North Sea, there is evidence that it was once abundant in the central and southern North Sea. It is a bottom-living fish, uncommon in depths of less than 60 m. It will take a baited hook, but is mostly taken in trawls. The size and weight of haddock represented by the premaxilla and dentary bones recovered has been estimated. As can be seen from Table 20 eight haddock premaxilla but only three dentary bones are represented. Comparison with recently prepared bones from fish of known length suggests that the Great Yarmouth haddock were large, ranging in total length from 62 - 91 cm., average 76.75 cm. (based on premaxillae) and 68 - 77 cm., average 72.6 cm. (based on dentary bones). These lengths correspond to fishes of 1.8 - 5.4 kg., average 3.375 kg. (premaxillae), and 2.66 - 3.6 kg., average 3.15 kg. (dentary bones). Clearly, due to the sparsity of dentary bones in the sample the average length and weight are tentative for this comparison.

Ling, Molva molva. Most common in the northern North Sea, today the ling is a relatively rare fish on the Norfolk coast. It is an active mid-water predator, found in depths of 100 to 400 m., although mainly young fish occur in the shallower of these depths. It is caught on long-lines and in trawls.

Bass, Dicentrarchus labrax. A common inshore fish which in the North Sea becomes noticeably more abundant during the summer months as a result of northward migration. It lives mainly at the surface and down to depths of 30 m. It is an active predator on fishes and can be caught on hook and line, in floating nets, and occasionally in shore seines.

Horse mackerel or scad, Trachurus trachurus. An extremely common fish in the southern North Sea, which becomes more common in inshore waters in the summer as a result of migration. It forms schools and can be caught in floating nets as well as in trawls. It is a relatively small fish rarely attaining a weight in excess of 1 kg.

Mackerel, Scomber scombrus. A very common and abundant fish all round the coasts of the British Isles, although in the southern North Sea it is sporadic in its occurrence and becomes common only during the summer. It is surface-living, found in large schools, and can be caught on hooks and in floating nets.

Tub gurnard, Trigla lucerna. The commonest and largest of the gurnards in inshore waters, the tub gurnard is a bottom-living fish which attains a weight of 5 kg. It can be caught on hook and line and is often taken in trawls. It lives at depths of 50 to 150 m., although small specimens can be found in shallower water.

Turbot, Scophthalmus maximus. A very large flatfish which can attain a weight of up to 25 kg. It lives on the bottom in depths of 20 to 80 m. (although small specimens occur closer inshore) and is usually caught on hook and line, although some are taken by trawl.

Flounder, Platichthys flesus. A common inshore flatfish which is distinguished by its ability to penetrate rivers and live (although not breed) in freshwater. It lives on the bottom, on sand or mud, in shallow water and can be caught by seine net, by spearing and on hooks. It may weight up to 2.5 kg.

Plaice, Pleuronectes platessa. A very abundant flatfish which lives on sandy and muddy grounds from 5 to 70 m. depth. On the East Anglian coast it is very common and caught in large numbers in trawls, and less often in shore seines. It can also be caught on hook and line, small specimens can be speared in shallow water and caught in inter tidal fish traps.

Halibut, Hippoglossus hippoglossus. A very large flatfish which grows to a weight of over 100 kg. The halibut is very rare today in the southern North Sea, although it occurs in deep water in the northern areas. It forages actively above the sea-bed, and in mid-water in 100 to 1000 m., and is captured mainly on hooks, and less often in trawls.

Sole, Solea solea. Found both onshore and offshore in depths of 5 to 40 m., the sole is most abundant on sandy grounds. It is common today in the vicinity of Great Yarmouth, and much of the catch is taken by trawling. It can be caught in shore seines and, although rarely by hook and line.

Consideration of the biology of the fishes represented by identified bones and other remains at Great Yarmouth permits some suggestions to be made as to fishing methods, the areas fished and seasonality of fishing.

Of the nineteen species represented, five can be positively classed as pelagic (surface-living) - herring, horse mackerel, mackerel, garfish and bass. Although the bass, the mackerel and the garfish could be caught on hooks fished near the surface, the herring and horse mackerel are most likely to be caught in surface nets. Hodgson ⁹⁷ who commented 'The East Anglian (herring) fishery is supposed to have begun about the year A. D. 495', pointed out that there is no clue as to the place or date of origin of the drift-net - the

Zoological Evidence

traditional herring net of the area. His supposition that it may have evolved from a shore seine (a wall of netting with floats and weights, rowed out in an arc into the sea and drawn in to the shore), which was equipped with extra floats and set in deeper water to hang vertically in the path of schools of fish, seems plausible. If such nets were used by the Great Yarmouth fishing community to catch herring, then it would be expected that the same net would be used outside the herring season to catch such food fish as mackerel and scad, while bass and garfish would be incidental catches for such a net.

The fish hooks (Phase I - IX) recovered at this site are all large. Many have a distinct barb although in others presumed corrosion of the tip has truncated the point below the barb. Hooks of this size recovered would only have been effective in the capture of the largest fishes represented by the fish remains, e.g. spurdog, conger eel, ling, cod, large haddock, turbot and halibut. Such hooks would have been fastened to a line by means of a short snood whipped on to the flattened spade end of the shank. It may be assumed that several hooks would be fastened to the single line as this is clearly a more efficient method of fishing. Possibly smaller hooks were used to catch the other species of fish but have not survived at, or been recovered from, the site. Many of these smaller fishes, notably whiting, plaice, small cod and sole could also be captured in a shore seine, and a fishing community which was employing floating nets to catch herring would clearly have the capacity to construct a seine net capable of being worked from the shore by means of a boat. Finally, two species, the eel and the flounder, were probably captured in the rivers or tidal waters at Great Yarmouth. Both can be caught on hooks, both can be speared - and the many-pronged iron leister was a traditional means of catching eels in East Anglia, as it was in the Netherlands, and elsewhere. Eels too could be caught on their migration down-river in traps - probably made of wicker.

Most of the species identified in the samples examined could be caught off Great Yarmouth at the present time. Three would, however, be classed today as rare or uncommon. The haddock was at one time more common in the southern North Sea than it is today, the change in status being due either to climatic alteration or heavy fishing pressure, or to both combined. It is possible, therefore, that during Phases I and II, and IV - XII in which haddock bones are numerous, that this species may have been more plentiful off Great Yarmouth than it is today. With the ling and the halibut there is no reason to suppose that their status today is different to that in the medieval period, and their presence in Phases VII, VIII and XII (see Table 15), is probably due to importation from more northerly fishing ports where both species are more common. Wheeler (in press) suggested that the presence of large numbers of ling bones, and large cod bones at medieval King's Lynn was probably due to the importation of salted fish from a fishing port, or ports, on the Yorkshire coast or northwards, or alternatively

that King's Lynn vessels were fishing in these latitudes and landing salted fish at their home port. This would similarly explain the presence of ling and halibut at Great Yarmouth in these later Phases.

It could also be inferred that the cod bones which represent two widely divergent length groups might be the result of two fisheries. Young cod are today common in winter in the southern North Sea, but large ones are less so. The frequency of occurrence histograms (Fig. 65) show two distinct groups of cod are represented by the remains in Phase VIII, and it is tempting to interpret this as evidence of a local fishery which produced the smaller fish (possibly mainly as the result of a winter fishery), and of importation of fish from distant waters. The evidence is not clearcut, however, and it is possible that larger cod were more common in the southern North Sea in medieval times than they are today.

The fish remains have not been directly analysed for seasonality of capture but from what is known of the biology of the species it is possible to make some suggestions with regard to this possibility. Most importantly the herring is known to make extensive seasonal migrations, which brought them into the vicinity of Great Yarmouth in autumn, and the traditional drift-net fishery of the nineteenth and early twentieth century was prosecuted from there and Lowestoft from October to November. Although herring could be captured at other seasons, for example, the March to April fishery for spent herring off Lowestoft ⁹⁸, the autumn season would be more productive in its yield of good quality fish.

The occurrence of bass and garfish both suggest that fishing took place in the summer and autumn; as both species become distinctly more abundant in the coastal waters of East Anglia in these seasons. The horse mackerel and the mackerel are also seasonal in coastal waters, although both may be present all year round in the North Sea. The traditional nineteenth and early twentieth century Lowestoft fishery for mackerel using drift nets was prosecuted during May and June ⁹⁹. In contrast cod and haddock would today only be captured in quantity in winter time in the vicinity of Great Yarmouth.

The conclusion must therefore be that fishing in this area was prosecuted by several methods (nets, and hook and line being most used) probably at all seasons of the year depending on the availability of the various species. The near proximity of the river would permit fishing even when weather conditions prevented sea going, and the occurrence of flounder and eel are possibly a result of this.

Acknowledgements

We would like to express our thanks to Mr. Oliver Crimmen for assistance in preparing comparative material of cod, and for his general help.

TABLE 19. COD

PREMAXILLA				DENTARY			
No.	Phase	Left	Right	No.	Phase	Left	Right
457*	I	9.7		387	II	12.4	
396*	II	6.1, 7.9	6.2, 14.7	353	III	11.6	
353	III	17.5		318	IV	11.1	11.7
318	IV	14.5	14.1	255	V		11.8
255	V	13.1, 16.7		424	V		11.4
256	V		15.6	306	VI	7.4	
265	V	16.0, 10.7	14.1	374	VI		10.1
432	VI	13.7	12.8	171	VII	13.1, 5.6	11.8, 5.4
113*	VII	13.5	10.2	113	VII		7.3, 10.0
113	VII		9.7	310	VII	8.2	
310	VII	15.9		322	VII	11.5	
341	VII		9.2	330	VII	8.5	
171	VII	20.2, 13.7	20.1	186	VIII	9.7	
		14.6, 11.2		207	VIII	5.7	
195	VIII	10.0, 15.3		215	VIII	8.3	
215	VIII	12.5		267	VIII	10.8	10.8
267	VIII	13.7, 14.7		274	VIII	8.6	7.9
		15.8		275	VIII		9.3
274	VIII	9.7, 15.8		290	VIII	10.7	9.5, 10.4
285	VIII		16.6				8.8, 7.9
290	VIII		14.3				11.8
290*	VIII	12.5	7.0, 9.4	290*	VIII		9.1, 8.8,
			13.0, 15.2				8.1
416	VIII	12.6, 12.6	14.4, 14.2	416	VIII	8.9	10.0
416*	VIII	7.5, 8.7	7.6, 7.8	416*	VIII	5.9, 4.7	6.3, 9.2
			8.2, 8.7			6.8	
160*	IX	10.3		182	X		6.1
123	XII	12.0, 12.3	13.1, 13.3	68	XI		9.1
		13.6, 13.9	15.1	109	XII	7.1	
		15.7		123	XII	7.7, 8.6	9.4, 8.8
137*	XII		6.6			9.2, 8.4	8.9, 8.5
354	XII	14.5, 15.7	11.5, 14.0				8.4
			13.8, 12.4	137*	XII		9.1, 7.4
356	XII	14.8		356	XII	9.8, 10.9	8.0, 7.8
						8.3	
				354	XII	9.1, 7.6	10.7, 11.3
						10.2, 8.9	8.6, 7.6
						7.4	6.8
				364	XII	11.0	
		(38)	(30)			(33)	(38)

* = Bone retrieved by flotation.

All measurements in mm.

TABLE 20. WHITING

PREMAXILLA				DENTARY			
No.	Phase	Left	Right	No.	Phase	Left	Right
396	II	6.8, 5.8 5.9, 6.8	6.1, 5.6 7.1, 6.2 4.1	387	II	3.5	
446*	III	5.2, 6.2		396*	II	4.2, 4.5 3.8, 4.4	4.0, 5.1 3.5, 4.2 3.9, 3.6
342	V	6.8		446*	III	3.9	3.6
265*	V	5.1	5.3	438	IV	3.8	
406*	VII	6.2		342	V	5.4, 4.6	
341*	VII	6.1, 7.1 6.3, 6.8		265*	V		3.1
113*	VII	6.9		257	V	2.8	
416*	VIII		6.8	406*	VI	3.3	4.1
290	VIII	6.5, 7.2 5.2	6.8, 6.5	341*	VII	5.0, 3.8	4.1, 4.0 4.5
84*	XI		5.9	297	VII		4.9
109	XII	4.8		113*	VII		4.2, 3.8
137*	XII	6.8	7.2	171	VII		4.8
358*	XII	5.4		327	VII	4.9	
				416*	VIII	4.8	
				290	VIII		4.5
				244	IX		4.6
				84*	XI	4.4	4.2
				127	XII		5.2
				109	XII	2.9	
				356	XII	4.2	2.8
				123	XII		5.4
				358*	XII	3.1	
HADDOCK							
Premaxilla				Dentary			
457*	I	6.6		160	IX	5.0	
297*	VII		8.0	354	XII		5.1
341*	VII		6.2	109	XII	4.6	
290*	VIII		8.6				
137*	XII	7.8, 8.9					
109	XII	8.0, 6.6					

* = Bone retrieved by flotation.

All measurements in mm.

THE INSECT REMAINS

by Andrew Jones

Although large quantities of soil were processed through a flotation tank very few insect remains were recovered. The finds, most of which were unidentifiable, were examined by workers in the Entymology Department of the British Museum (Natural History). Table 21 is a summary of the identified species. The flies are consistent with human occupation.

TABLE 21

Context No.	Latin Name	English Name	Phase
24	<u>Blaps lethifera</u> Marsh	Cellar Beetle	-
315	Muscidae puparis ? <u>Musca</u>	House Fly	X
325	Calliphoridae larva ? <u>Calliphora</u>		VI
358	<u>Drosophila</u> larva	Fruit Fly	-
422	Muscidae puparis ? <u>Musca</u>	House Fly	VI

By far the most interesting are the specimens of Blaps lethifera, this beetle being recorded less than twenty times in this country. A probable explanation of its presence is that it arrived in Yarmouth on a ship that came from the continent. The limited amount of identified material make it impossible to draw any conclusions.

THE MOLLUSCAN REMAINS

by Andrew Jones

The mollusc shells collected from the site fall into two categories: Shellfish, i. e. Cockles, Whelks, Mussels, Oysters, Dog Whelks and Periwinkles, which were harvested deliberately for their food value; and other shells which represent the indigenous fauna of the site or accidental introduction ¹⁰⁰.

Shellfish

It is well known that man has exploited shellfish for centuries to supplement his diet. It is therefore not surprising to find large quantities of marine edible molluscs on a site which owes its existence to the sea.

The sea level of the Norfolk coast in the eleventh and twelfth centuries was lower than at the present, thus the area now known as Breydon Water would have been an ideal habitat for many species of shellfish. However, some species, notably Periwinkle, are more typical of rocky shores of which there are few in Norfolk.

TABLE 22 101

<u>Pupilla muscorum</u> L.					31						5	1	2
<u>Phytia myosotis</u> Draparnoud				2									
<u>Ostrea edulis</u> L. edible oyster	2	29	1	5	12	6	6	41	3	5	3	21	
<u>Nucella lapillus</u> L. Dog whelk							1					3	
<u>Mytilus edulis</u> L. Mussel	4			2	9	6	4	9	6	2	4	7	
<u>Littorina littorea</u> L. Periwinkle	2						35	39				2	
<u>Hydrobia</u> spp.				6	3				1	6	1		
<u>Cerastoderma</u> (<u>Cardium</u>) <u>edule</u> L. Cockle					1	3	2	7				154	
<u>Ceciloides acicula</u> Müller					2								
<u>Buccinum undatum</u> L. Common whelk						2	1	9	4	2	1	16	
<u>Assiminea grayana</u> Fleming					2								
P H A S E	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	

Numbers represent total of identifiable specimens
in each Phase.

The probable explanation of the presence of these shells is trade with the east coast of Lincolnshire or Yorkshire. Earlier (p.221) this possibility was raised with regard to fishing. It is probable that boats going to Yarmouth would carry shellfish as well as wet fish.

Other Molluscan remains

These shells were in all cases retrieved by flotation and are of two types. Pupilla muscorum and Ceciloides acicula are snails known to inhabit sand hills, the other genera, Hydrobia, Assiminea and Phytia are all brackish water or estuarine dwellers and probably arrived on the site on fishing tackle or in clay for building.

X. BOTANICAL EVIDENCE

THE PLANT REMAINS ¹⁰²

by Andrew Jones

Introduction

The study of plant remains from archaeological contexts is still in an embryonic stage. The value of such work is not yet fully understood. Here it is intended to simply publish the range of material recovered and draw tentative conclusions regarding the possible uses to man of the identified material.

Often when dealing with plant remains the problem of disturbance of soil by natural agents (e. g. rabbits) influences the interpretation of the results. Here however because of human occupation and the build up of sealing deposits of sand all plant remains can be considered to be in their undisturbed archaeological context.

Methods and Materials

The majority of the plant remains were collected by the same process described in the fish bone report (p.209), but some samples of rushes etc. were collected by hand.

The flot from the flotation tank was packed in paper kitchen towel and allowed to dry out slowly. One millimetre mesh was employed in order to facilitate the processing of large quantities of soil. Hence the remains recovered are a partial sample of the potential plant population of the site. Plants with seeds smaller than 1 mm. in size were not retrieved.

Results

Large quantities of plant material were retrieved. These have been divided into three broad groupings, (i) Cereals and pulses, (ii) Other seeds, and (iii) Miscellaneous plant remains. These categories have been devised for convenience and do not strictly obey biological conventions.

(i) Cereals and Pulses

It is clear from Table 23 that the majority of the cereals recovered from the site are oats (55%). Gerard ¹⁰³ writing at the end of the sixteenth century gives some idea of the wide use of oats.

'Of Otes

Avena vesca, common otes, is called Vesca, a Vescendo, because it is used in many countries to make sundry sorts of bread, as in Lancashire, where it is their chiefest bread corne for Jannocks, Haver cakes, Tharffe cakes, and those

TABLE 23 104

PHASE	CONTEXT NO.	TYPE OF FEATURE	VOLUME OF SOIL SAMPLE in kg.	Cereals +					Pulses +			
				<u>Avena spp.</u> Oats.	<u>Hordeum vulgare</u> 6 rowed barley	<u>Secale Cereale</u> Rye	<u>Triticum aestivum</u> Bread wheat	<u>Triticum spp.</u> Wheat	<u>Graminae</u> Grasses 105	<u>Pisicum sativum</u> Field pea	<u>Vicia faba.</u> Horse bean	<u>Vicia spp.</u>
II	387	Pit	15		1							
	396	Pit	15	15	6	1			1	1	1	
	449	Oc.	15									1
III	446	R. O.	75	1	1							
IV	438	Oven	15						1			
	439	R. O.	75	4	2	3			14		4	
V	250	D. S.	15	2	1							
	256	Y. S.	15		1				6			
	257	D. S.	15				1		5			
	265(i)	R. O.	75	1000*	84		20					
	265(ii)	R. O.	75	138	16					1	6	
377	Oven	15				1						
VI	169	D. S.	15		2			3				
	247	Pit	75	10	8		4		4			
	306	Oc.	75		506					13	4	1
	308	Fl.	75	6	20		3			3		
	406	D. S.	90	1	1		1		5			1
432	D. S.	15		4								
VII	341	D. S.	75	16	4		2			2		
VIII	113	D. S.	150	6	6		6		3	3		1
	208	Pit	15	4	1					2	1	
	217	Fl.	75	23	4			1		7		
	267	Oc.	15	4	4					2		1
	290	Fl.	75	11	43					10		4
IX	160	Pit	15		1							
	180	Oc.	75	23	3					5	1	
	197	Fl.	90	52	5						2	
	312	Fl.	15	7	5					1		
X	92	D. S.	15	7	3							
	135	Oc.	15	2	10		530					
	149	Oc.	15	12	1							
	164	Fl.	15	1								
	315	Pit	37 $\frac{1}{2}$	4								
	423	Fl.	75	5000*	17		22		3000*	11	5	29
XI	67	D. S.	15	7						3	3	
XII	123	Dn.	30	2	1							
Un pha sed	358	Pit	75	30	32		14			1	1	
	385	Pit	15							1		1
Approximate %				55	7	.06	6	.3	30	.9	.3	.5

TABLE 24 ¹⁰⁶

Latin Name	English Name	Habitat	Food	Herbal Medicine	Building
<i>Agrostemma githago</i> L.	Corn Cockle	Cultivated land	*		
<i>Atriplex patula</i> L.	Common Orache	Widespread	*		
<i>Chenopodium album</i> L.	Fat Hen	Widespread	*		
<i>Galium aparine</i> L.	Goose Grass	"	*	*	
<i>Juncus mari- timus</i> Lamarck	Sea Rush	Coasts			*
<i>Linum usitatis- simum</i> L.	Cultivated Flax	Arable lane	*	*	
<i>Platago major</i> L.	Broad leaved Plantain	Grassland	*		
<i>Polygonum persicaria</i> L.	Redleg	Widespread	*		
<i>Rubus fruticosus</i> L.	Bramble	"	*	*	
<i>Rumex crispus</i> L.	Curled Dock	"	*	*	
<i>Rumex obtusifolius</i> L.	Broad Dock	"	*	*	
<i>Sambucus nigra</i> L.	Elder	"	*	*	
<i>Solanum nigrum</i> L.	Black Nightshade	Cultivated land	*		
<i>Urtica dioica</i> L.	Stinging Nettle	Widespread	*	*	

* = Recorded use of plants

TABLE

PHASE	CONTEXT NUMBER	TYPE OF FEATURE	VOLUME OF SOIL SAMPLE in kg.	<u>Agrostemma githago L.</u>	<u>Atriplex patula L.</u>	<u>Brassica sp.</u>	<u>Carex sp.</u>	<u>Caryophyllaceae</u>	<u>Centaurea sp.</u>	<u>Chenopodium album L.</u>	<u>Cirsium sp.</u>	<u>Compositae</u>	<u>Convolvulus sp.</u>	<u>Cruciferae</u>	<u>Gaeolopsis tetrahit</u>	<u>Galium aparine L.</u>	<u>Juncus maritimus Lamarck</u>	
I	457	Fl.	15															2 ⁺
II	387	Pit	15															
	396	Pit	75															
	449	Oc.	15															
III	446	R. O.	75							1								
IV	439	R. O.	75		1							1						1 ⁺
V	250	D. S.	15				3			3								
	256	Y. S.	15															
	257	D. S.	15															
	265(i)	R. O.	75							9								16 ⁺
	265(ii)	R. O.	75				8		1	32								47 ⁺
	270	D. S.	15											3				
	346	D. S.	15							1								
	377	Oven	15															
430	Oc.	15			2													
VI	169	D. S.	15															
	247	Pit	75					1		42						1		2 ⁺
	306	Oc.	75				5	1		68								
	308	Fl.	75		4					3				1				
	406	D. S.	90		2					38			1					
432	O. S.	15			1								1					
VII	341	D. S.	75							1								
VIII	113	D. S.	150		2					1								
	217	Fl.	75							25								
	267	Oc.	15							3								
	290	Fl.	75							1								1 ⁺
	311	Fl.	15		2					1								
416	D. S.	75		3					4									
IX	180	Oc.	75		13	1				43								2 ⁺
	197	Fl.	90		4	1				16							7	
	312	Fl.	15							1							1	
X	92	D. S.	15			1				37							13	
	135	Oc.	15														1	
	149	Oc.	15							4				5				
	164	Fl.	15							1								
	315	Pit	37½			7				2				7				
423	Fl.	75	3	2	8	8	1	6	48		8		4				239 ⁺	
XI	67	D. S.	15															
XII	123	Dn.	30								1							
Un- pha sed	358	Pit	75	2						5								
	385	Pit	15	1														

Key to abbreviations used in Tables 23 and 24

* = Approximately + = Carbonised
c = Capsule Dn. = Drain
D. S. = Discoloured sand Fl. = Floor

which are called generally Oten cakes; and for the most part they call the graine Haver, where of they do likewise make drinke for want of Barley'.

Barley and Bread Wheat are also well represented. The grass figure is probably distorted by the large quantity of one deposit. However it is important to recognise the possibility that grass seed may have formed a substantial part of diet or it may represent animal fodder. Rye was also recovered in small quantities.

The pulses (peas and beans) are not very abundant but occur constantly through all phases and must have been important as a supplementary form of protein.

(ii) Seeds (Table 25)

Most of the seeds in this category are uncarbonised and have been preserved as a result of the soil conditions.

Many of the plants they represent are common weeds of cultivated land (e.g. Agrostemma githago) and probably arrived on the site as impurities in cereals. However, Table 24 demonstrates that many of them can be used as food or in herbal remedies. There is no direct evidence that these plants were used for the above mentioned purposes, apart from the fact that they are often found in the same deposits as cereals and pulses.

A small number of seeds, notably Plantago spp, and the large amount of grass seed may have been brought onto the site in the form of hay.

Seeds of a few plants inhabiting wet marshy areas were recovered (e.g. Carex sp.) but their small number may simply represent casual introductions.

Some seeds were carbonised. The sea rush (Juncus maritimus) was found within structures. Complete flowering heads probably once incorporated in the roofing and/or flooring material of the structures were retrieved. These have been preserved as a result of the burning of the buildings.

Other carbonised seeds are both from the same deposit 423. They are Cultivated flax Linum usitatissimum and Stachys sp. The former is an oil rich seed which has been found in the stomachs of Tollund and Graubell men ¹⁰⁸. The Romans used flax to make porridge by roasting and grinding it with barley, coriander and salt ¹⁰⁹. The seeds of Stachys sp. were also deliberately collected.

(iii) Miscellaneous Plant Remains

The dominant plant remains to be found, so far not discussed above,

are hazel nut shells Corylus avellana. These were found in all phases in considerable numbers, always carbonised.

Carbonised acorns, Quercus sp. were retrieved from two deposits.

Two cherry stones Prunus avium and one of sloe Prunus spinosa were also found.

Large quantities of vegetative remains of sea rush Juncus maritimus, which were found within the structures, were probably used for roofing or flooring material.

Summary

The plant remains provide a good picture of some of the activities on the site. Large amounts of cereals were imported (often containing impurities of weed seeds). There is evidence of some kind of animal feeding stuffs (probably hay) being brought to the site as well as the collection of wild food for human consumption.

CLAY SAMPLES

by Justine Bayley

Twelve samples taken from clay floors and ovens at various levels on the site were examined in an attempt to determine their origin. According to Mr. W. Corbett of the Soil Survey there are three possible local sources of clay; the chalky boulder clay from just inland, the sandy clays of the Norwich brick earths which outcrop on the coast a few miles south of Great Yarmouth and alluvial clays from the river.

The samples were examined visually both before and after firing to about 700°C in an oxidising atmosphere¹¹⁰. One sample (350) was X-rayed 'edge on' to see if the darker layers in it were due to iron deposition. No definite X-ray opaque layer was noted, although the laminar structure of the deposit was clearly shown. The dark bands in this and some of the other samples are therefore most likely due to staining by organic matter.

As can be seen from the table below over half the samples were chalky, although some (Group D) were far finer textured than others (Group B). The non-calcareous deposits were also divided on a texture basis, Group C being finer than the one sample which comprised Group A. This sample also contained far less iron than any of the others.

Group B are almost certainly chalky boulder clays. Group D, while still being calcareous, are of a far finer and more even texture which would tend to indicate water sorting. They may well be boulder clays reworked by the river and so could be described as alluvial. Group C are non-calcareous clays, probably of alluvial origin. Sample 210 (Group A) may represent the Norwich brick earths or it could come from a coarser alluvial deposit.

Without comparative material of known origin it is difficult to be more precise in assigning a source to any of the groups of material examined.

TABLE 26

Context No.	Phase	Description	State as submitted	Calcareous	Texture	Group
44	XI	Floor	unfired	no	finer	C
166	X	Hearth	part fired	yes	coarser	B
210	VIII	Daub	part fired	no	coarser	A
249	V	Oven	all fired	yes	coarser	B
296	VIII	Hearth	unfired	yes	finer	D
308	VI	Floor	part fired	no	finer	C
312	IX	Floor	unfired	yes	coarser	B
350	IV	Floor	unfired	yes	coarser	B
438	IV	Oven	part fired	yes	finer	D
455	II	Floor	unfired	yes	finer	D
456	III	? Oven	unfired	yes	finer	D
457	I	Floor	unfired	no	finer	C

CARBON-14 RESULTS

Two samples of charcoal were submitted to the Ancient Monuments Laboratory, and were analysed at the Carbon-14/Tritium Measurements Laboratory, Harwell.

1032.306 (HAR-1080) from layer 306 in Phase IV. Age b. p. (years) 1010 ± 70 : a. d. 940.

1032.197 (HAR-1079) from the surface of floor 197 in Phase IX. Age b. p. (years) 890 ± 70 : a. d. 1060.

XI. CONCLUSION

It is hoped that the 1974 excavation has provided a satisfactory picture of the level of material culture and of the nature of the economy in one area of early medieval Great Yarmouth. The fish bones and fish hooks demonstrate the importance of fishing. That this was an essential industry is suggested by the occurrence of animal bones, cereals, pottery, metal tools, and clay and wood for building, commodities available off the sandbank, and presumably often acquired in exchange for fish. Most of these commodities were local in origin, and despite the small quantities of imported pottery and the Scandinavian hones, there was little evidence on the site for extensive trade with the continent. Evidence for intense mercantile activity should be recoverable elsewhere within the early nucleus of the town, perhaps nearer the two rivers.

The excavated site is well placed for access to the Yare and Bure, though their exact eleventh and twelfth century courses are not certain. In this respect the theory of A. P. Baggs that the Yarmouth fishermen needed

'a strip of foreshore on which boats can be drawn up together with an area of higher ground behind it for a hut and possibly a garden' ¹¹¹ seems remarkably accurate. Although the 1974 excavation was very restricted, it has shown that there have been enormous changes of ground levels in the Fuller's Hill area since the early eleventh century. Consequently, it seems that no certain statements should be made about the origins of Yarmouth's street pattern without reference to below ground archaeology. This is not to say that there has been no continuity in street lines since the early medieval period; indeed the evidence from the excavation concerning George Street suggests such a continuity.

There is considerable need for a planned series of excavations in Great Yarmouth to be incorporated into future development projects. Only minor excavations have been undertaken in the past, and Yarmouth has received far less archaeological attention than other less threatened and less important towns ¹¹². The river shore-line has been examined only in the course of commercial excavation and areas abutting the town wall have been excavated on a small scale ¹¹³. Excavation is required on a number of properties fronting onto the three main north-south streets and preferably straddling one or more Rows, if such properties become available. Such projects would enable Yarmouth's expansion to the south to be understood and dated. They would also locate regions of the town given over to different trading and industrial activities at various dates. Excavations could make use of the particularly fine archives of the town for the thirteenth century and later. It seems certain that the earliest settlement was in the northern part of Yarmouth, and it is hoped that further work will be done there. The area to the north of the Northgate may also have been settled early, and so should be taken into account in any programme of excavations.

An excavation policy for Yarmouth would suffer financial difficulties different in scale to those in most other English towns. Wind blown sand produces not only well sealed deposits and finely differentiated stratigraphy, but also considerable engineering and financial demands. The 1974 season showed that unless a correct shoring system is used, early levels cannot be fully, efficiently or safely excavated. The difficulties could be compounded by the strong possibility that in some areas of the town, the lower layers might contain preserved organic material. The excavation and conservation of organic deposits is very costly. So future work should be guided by a carefully formulated series of priorities. There is consolation in the probability that, because of their depth, the earliest deposits in Yarmouth will be as inaccessible to development projects as they are to archaeological examination. Such deposits will fortunately survive all but the most large-scale building operations.

November 1975.

REFERENCES

1. The system in Great Yarmouth of three main north-south streets interconnected by narrow east-west passages or Rows was severely altered by enemy action in the Second World War and subsequent redevelopment. A discussion of the various explanations put forward to explain this system can be found in O'Neil (1953), 151-2.
2. Green and Hutchinson (1960), 132-133. Green and Hutchinson (1965), 89-90. In 1841 Lacon's Brewery sunk an artesian well. Beneath the surface soil lay 111 feet of shingle sand, followed by 49 feet of dark sand, 290 feet of dark coloured clay, 5 feet of flints and at the bottom the 'primeval chalk'. Palmer (1872), 4. The dark coloured clay seems to be Eocene London clay. Larwood & Funnell (1970), 340-341. The formation of the Yarmouth spit is discussed in Steers (1948), 35, 380-381.
3. Palmer (1847), 39.
4. Darby (1957), 141-2. Darby (1973), 57.
5. Clarke (1960)a, 168.
6. Darby (1957), 185-6; fig.47.
7. Fuller's Hill here refers to the high ground south west of St. Nicholas' Church and not specifically to the former east-west road of the same name now replaced by the widened A.47.
8. Ecclestone and Ecclestone (1959), 92. Druery (1826), 8.
9. Palmer (1872), 7.
10. Ecclestone and Ecclestone (1959), 92. Green and Hutchinson (1960), 144. The earliest reference to Cockle Water is in the Yarmouth Borough Court Rolls for 1312-1313. The name 'Cockel' implies shallow water unsuitable for shipping.
11. Ecclestone (1971), 31.
12. Ecclestone (1974), 131-133. St. Nicholas' Church was founded c. 1123 Parkin (1810), 364. The town wall was built between the late thirteenth and the end of the fourteenth century. Ecclestone and Ecclestone (1959), 84-5.
13. Druery (1826), 7.
14. Palmer (1847), 5-8. Rutledge (1963), 127-8.
15. Parkin (1810), 259. Parkin refers to accounts of Yarmouth's foundation in the eleventh century, but dismisses them as 'anachronism'. The size of the town in Domesday suggested to him that by the time of Edward the Confessor it was well established and already ancient.
16. Green and Hutchinson (1960), 142.
17. Meaney (1964), 185. Green and Hutchinson (1960), 131 and 139. The site is not included in the most recent list of Anglo-Saxon cemeteries in East Anglia. Myres and Green (1973), 258-262; map 3.

18. The complex problems of changes of land and sea levels cannot be discussed here. They are fully described in Green and Hutchinson (1960). For a very brief summary see Clarke (1960)b.
19. For a reconstruction of the plan of Yarmouth in the fourteenth century see Rye and Hurst (1968), fig. 1.
20. Norwich Record Office TC. 73/84 by John Laing.
21. I am grateful to Mr. P. Rutledge of Norfolk County Record Office for supplying me with advice concerning the history of Yarmouth.
22. Baggs (1963). Hoskins (1967), 26-8 and 33.
23. See Landsberg (1956), fig. 1.
24. Two plans of the Brewery have been consulted, of 1815 and 1890. Both are in the possession of Whitbread (Lacons). The line of the Rows on fig. 44 have been transposed from the 1890 plan.
25. Palmer (1872), 179.
26. The excavation was divided into 5 m. squares. The original lettering sequence has been retained throughout the following description (fig. 44).
27. For an account of the effects of vegetation on sand dune stabilisation see King (1972), 178-180.
28. At the start of the excavation an attempt was made to correlate all layers in section with the Munsell Colour Chart. This was abandoned after continued collapse and because of the ability of the sand to dry out almost instantly on exposure. Yellow sand here referred to is variable between very pale brown (10YR 7/4) and pale yellow (2.5Y 7/4). Brown sand here referred to is also variable, the most common readings being greyish brown and brown (10YR 5/2 - 5/3).
29. Charcoal was recovered by manual excavation and by flotation. All identifications included in this description have been carried out by Andrew Jones.
30. Three other contractors' demolition pits were examined during April 1974, in the southern part of the site. The recorded sections are not included in this report. The pottery was almost entirely of the thirteenth and fourteenth centuries.
31. On the Brewery plan of 1815 the width of Row 16 is just over 5 feet.
32. The following passage is a vivid description of the original 'Saxon' buildings in Yarmouth: '... their first houses were rudely made of stakes and hurdles, thatched with reeds and rushes, and plastered over with a clear shining earth, on which they drew their rude and barbarous tracings of coloured figures'. Druery (1826), 301-2.
33. Pipe Roll Society new ser. XXVIII, No. 216.
34. Turf-walled structures with stake-holes at Hound Tor provide a parallel for this method of building, e.g. Wilson and Hurst (1964), 282-3; fig. 91. At Yarmouth there was no evidence for turf, although

once burnt, it may not have been distinguishable. However the use of turf might explain the almost complete absence of burnt wattle impressed daub.

35. There was no definite evidence for the burning of peat in either oven, or in any part of the site.
36. I am grateful to Dr. Gill Cambers of the Centre of East Anglian Studies, University of East Anglia, for her advice on the problems of blown sand.
37. For an example of pollen analysis of wind-blown sand see Jope et al. (1959), 278-9.
38. Fresh water lies directly over Yarmouth's salt water table which itself lies at about O. D. or just above. Green and Hutchinson (1960), 130-131; fig.10.
39. Wade-Martins (1970), 67; fig.19i.
40. Unpublished in Norwich Castle Museum (N. C. M. 12.950). For a discussion of such objects see Brodribb et al. (1973), 116-117.
41. Unpublished in Norwich Castle Museum (N. C. M. 12.950.894). Another example was found in 1973 (information R. D. Carr).
42. Wade-Martins (1970), 65; fig.19d.
43. Ard-Mhúsaem ne h-Eireann (1973), 35.
44. Addyman (1969), 86; fig.16, nos.1-3.
45. Of three thirteenth century fish-hooks from Pevensey one is of similar size to the Yarmouth examples, while the others are longer than the Yarmouth average at c. 9 cm. and 14.5 cm. Dulley (1967), 228; fig.65, nos.4-6. Examples exhibited from Dublin are shorter: 4 cm. - 5.1 cm. Ard-Mhúsaem ne h-Eireann (1973), 38.
46. Waterman (1959), 96-97; fig.22, nos.36 and 37.
47. Radley (1971), 50; fig.11, no.17.
48. Holden (1963), 163-165; fig.35, nos.10 and 11.
49. Waterman (1959), 86-87.
50. Several Great Yarmouth people suggested that these objects were net-floats.
51. All references to Groups I, II etc. are from Dunning (1959).
52. Use has been made of privately circulated notes by D. P. S. Peacock 'Key to identification of common inclusions in pottery'.
53. For an explanation of Mohs' Scale see Hodges (1964), 178-9.
54. Hurst (1957), 42-60. Knocker (1967), 134-146.
55. P. S. I. A. (1949), 109.
56. The author has examined such sherds from by the Norwich Survey.

57. Hurst (1959), fig. 3, no.4. Hurst (1957), 40.
58. Hurst (1963), fig. 6, no. 22.
59. Hurst (1956), 43-70. Hunter (1975).
60. Carter (1972), 414-415.
61. West (1970), 104; fig. 8, no.10.
62. Dunning (1959), 67-69; fig. 38.
63. Jope (1952), 303; fig. 8, nos. 8-10. Dunning (1959), 44.
64. Hurst (1963), 155-156.
65. West (1970), 102; fig. 8, no.1. Hurst (1961), 259-261; fig. 66, nos.19-28.
66. Jope (1952), fig. 9, no. 6.
67. Van Es (1969), 199; fig.16.
68. Rye and Hurst (1968), 291.
69. Rye and Hurst (1968), 291.
70. West (1970), fig. 8, no.17.
71. Alan Carter pers. comm. See also Renaud (1956) and Barton (1974), 169; fig. 8, nos.31 and 32.
72. Francis (1913), 180-183; plates G & H; fig. 7.
73. It has been suggested that this type of cooking pot may have been used in the transportation of honey. Dunning (1968), 35-58; fig.19.
74. Jope and Threfall (1959), 242-243.
75. Borremans and Lassance (1956).
76. Hurst (1969), 121-123.
77. Bruijn (1959).
78. Dunning (1959), 56-60. Dorgelo (1956), 60; fig.18.
79. West (1970), 105; fig. 9, no. 37.
80. Hurst (1958).
81. Clarke (1970).
82. Rutter (1961).
83. Rye and Hurst (1968), 291.
84. Stead (1968), 1578.
85. Green and Hutchinson (1960), 131 and 140.
86. Green and Hutchinson (1960), 130; fig.10.
87. Adams (1971), 336-342.

88. Adams (1971), 79-81.
89. Wells (1964), 131-132.
90. Payne (1972).
91. Wheeler - unpublished data.
92. Williams (1973).
93. Casteel (1974).
94. Wheeler (in press).
95. Blacker (1974).
96. Wheeler (1969).
97. Hodgson (1957).
98. Hodgson (1957), 18.
99. Bolster (1974).
100. I would like to thank the staff of the Norwich Castle Museum, Natural History Department, who assisted in identification and made available reference collections.
101. Beedham (1972) was used as a basic reference in the compilation of this table.
102. I am most grateful to Mr. R. J. Flood of the National Institute of Agricultural Botany for his help in identification and his comments on the plant remains.
103. Woodward (1927), 24.
104. Renfrew (1973) was used extensively in the compilation of this table.
105. The grasses proved to be very difficult to identify, however the following genera were present Bromus agropyron and Lolium.
106. The following were used as general texts in the compilation of this table: Woodward (1972), Mabey (1972), Clapham et al. (1964), De Bairacli Levy (1966), Lloyd (1955) and Renfrew (1973).
107. Bertsch (1941) and Clapham et al. (1964) were consulted as general references in the compilation of the table.
108. Helbaek (1950). Helbaek (1958).
109. Rackham (1961).
110. Biek (1963).
111. Baggs (1963).
112. A great deal of valuable recording and pottery collections on development sites have been carried out within the town by Mr. C. G. Rye since the last war.
113. Green (1970). H. M. S. O. (1973), 96.

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28, 30 and 32 King Street, King's Lynn

by Hugh Richmond and Robert Taylor

AN INTERIM REPORT

Number 30 King Street was investigated by Vanessa Parker several years ago when the building was occupied and parts, along with the adjoining houses, were inaccessible to her ¹. Since then all three tenements, site 1088, have come under the same ownership and have been partially stripped in advance of renovation. This has revealed much new evidence. The present report gives a brief outline of the architectural and historical development of these buildings, and will be followed by a full description when building work allows a more detailed examination of a number of areas that are at present obscured.

The earliest building on the site, and the earliest so far discovered in King Street, is a two-storey stone house built *c.* 1200 parallel to the street and occupying the front part of nos. 30 and 32 (Fig. 66). Internally the gable walls have a two-bay wall-arcade probably on both floors (Plate XX), and high on the south gable is a window. On the ground floor the house was entered by opposed doors in front and back walls. The hall was on the first floor and may have occupied the whole length of the building.

Behind the south half of this house a stone wing was added in the later thirteenth century or even early fourteenth century. The west part of this range contained an open hall entered by opposed doors towards its west end, and lit by tall windows. Possibly access through the front range was moved to its present position immediately north of the original entrance at this time, an alteration that would be required by the new plan. These modernisations changed the axis of the house and converted the by now old-fashioned twelfth century house into one conforming to up-to-date ideas of domestic planning.

Either at this stage or, perhaps more probably, later, the site of the original house was subdivided. The history of the north part is lost until about the early sixteenth century when a timber framed house was built with a two-storey front range and an open hall in the rear range. This rear wing was largely rebuilt in the eighteenth century, and refashioned in the nineteenth century when a third storey was added to the front range.

Development of buildings at 28-32 King street King's Lynn

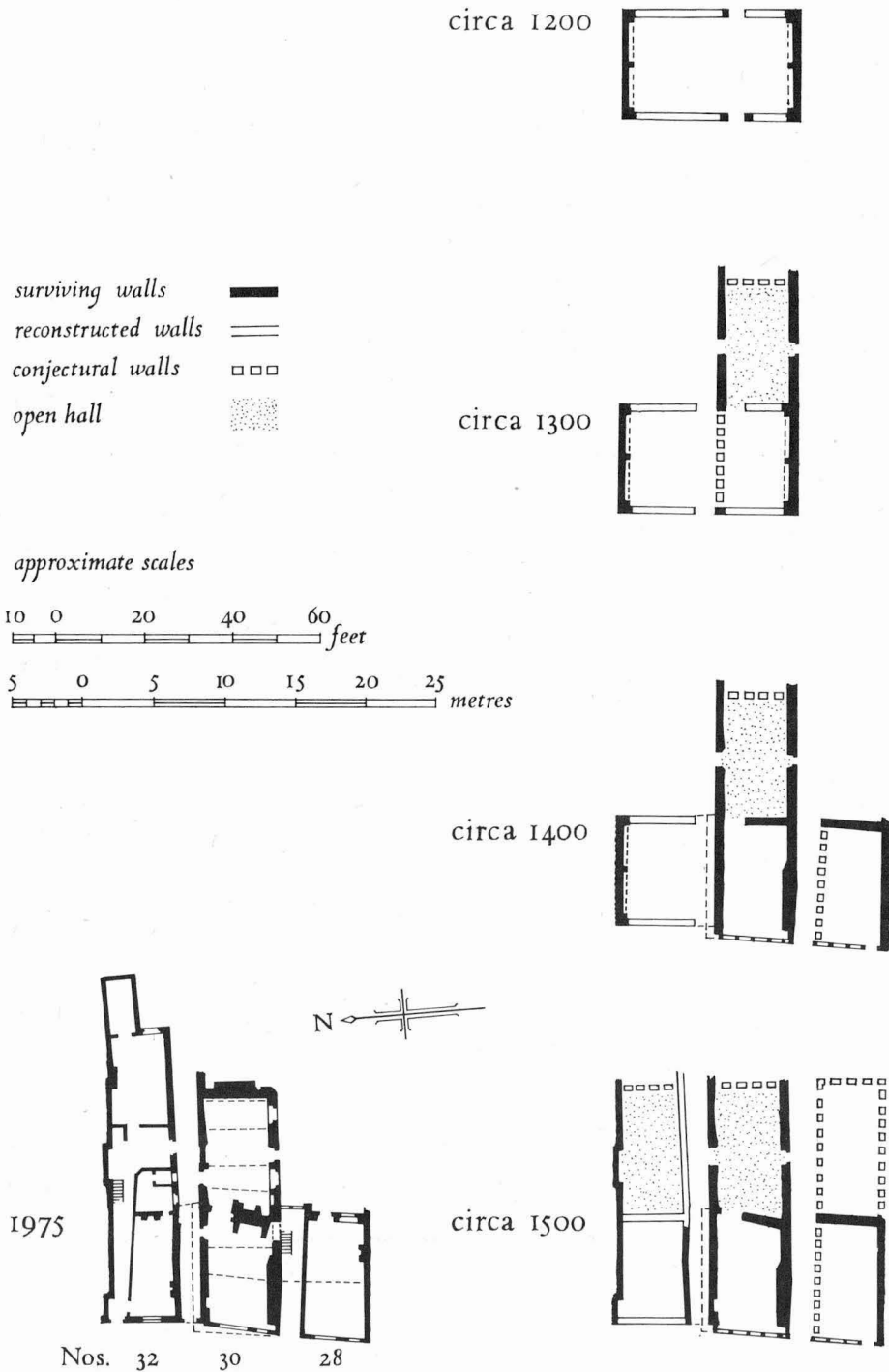


Fig. 66. The development of the buildings at 28, 30 and 32 King Street, King's Lynn.



Photo: Hallam Ashley for National Monuments Record

Plate XIX. King's Lynn: front elevation of
28, 30 and 32 King Street.

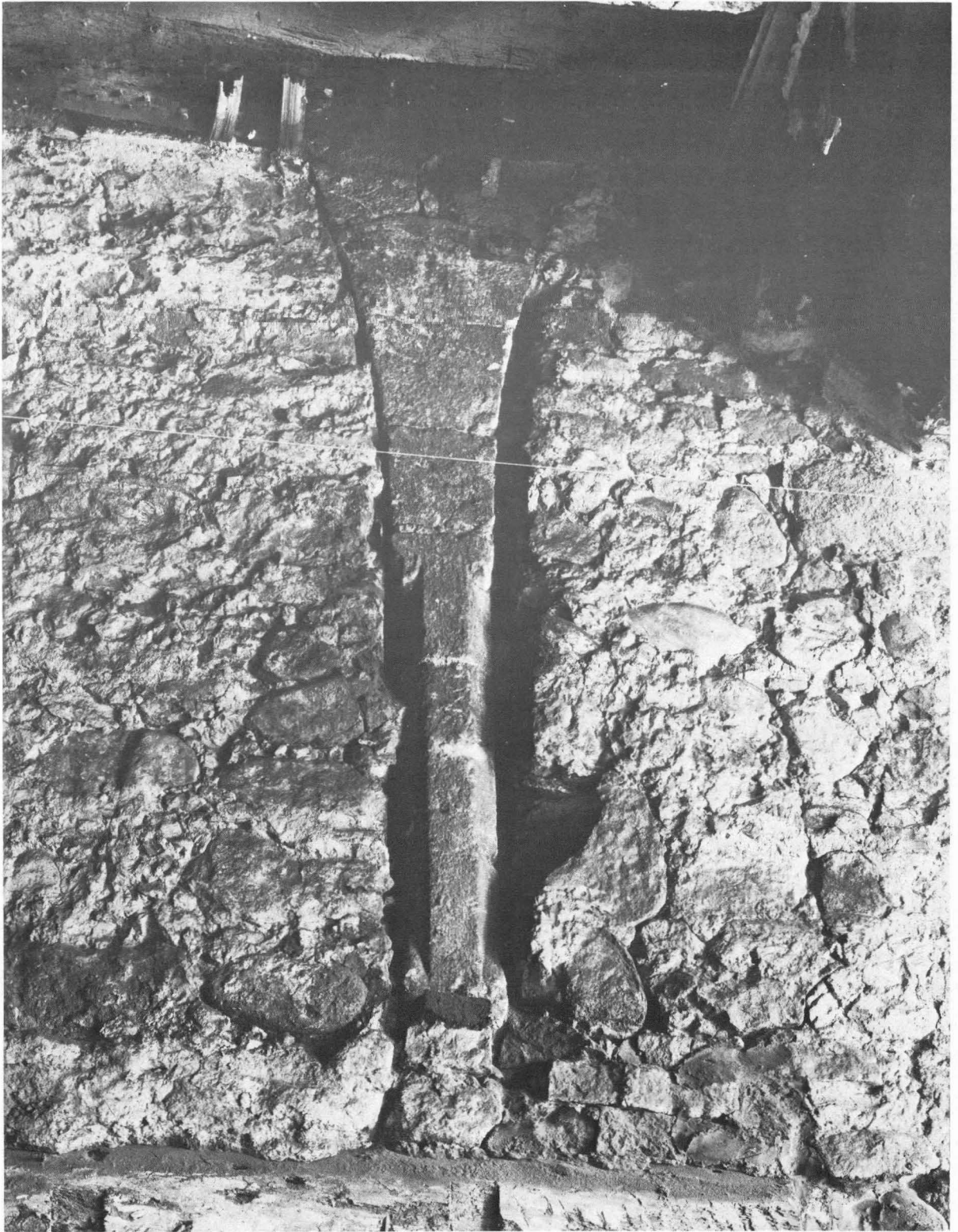


Photo: Hallam Ashley for National Monuments Record

Plate XX. King's Lynn: detail of twelfth century
wall arcade in 30 King Street.

An Interim Report

The south part of the original house was united with the plot to the south, now 28 King Street, and during the fourteenth century the front and rear walls of the twelfth century house were finally demolished and a large two-storey timber framed range was built along the front of the site. This range, which probably continued further to the south, consists of two separate units each of single-room plan; it had a pentice over the tall ground stage, and may have consisted of shops with lodgings over (Plate XIX). This appears to be a speculative development, perhaps for letting. It was reroofed in the late fifteenth or early sixteenth century.

The north tenement seems to have been united with the hall range behind it by the seventeenth century, when a shared chimney stack was inserted to heat the ground floors. The hall had been heightened and provided with new windows by the time it was floored over in the later seventeenth century.

November 1975.

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The Making of King's Lynn.

The Air Photographs Collection of the Norfolk Archaeological Unit

by Derek Edwards

I. SUMMARY

The Norfolk Archaeological Unit has established a County Index of air photographs and is conducting a programme of research flights for archaeology. This allows archaeologists and planning authorities access to the evidence for many sites recorded only by aerial photography. A description of the methods employed in the organisation of the Index is followed by examples of the results of both planned reconnaissance and surveillance flights.

II. ACKNOWLEDGEMENTS

The assistance of the following individuals and organisations is gratefully acknowledged: J. N. Hampton, the Air Photographs Officer of the National Monuments Record for advice on the index system and for supplying and processing photographic materials; the Anglian Water Authority and Professor J. K. St. Joseph of Cambridge University for donating photographs to the collection; the Ashmolean Museum, Oxford, Cartographical Services Limited, Fairey Surveys Limited, Hunting Surveys Limited, Meridian Airmaps Limited, and to the Planning and Highways Departments of Norfolk County Council for supplying details of available air photograph coverage of Norfolk; the Nature Conservancy Board, the University of Reading (Department of Agricultural Botany) and the Soil Survey of England and Wales for consent to obtain copies of photographs from projects commissioned by them; A. J. Lawson for permission to reproduce Fig. 74; Miss. E. A. Horne for indexing much of the material from the programme of research flights and R. G. Gregory whose skill as a pilot has contributed much to the success of these flights during 1974 and 1975.

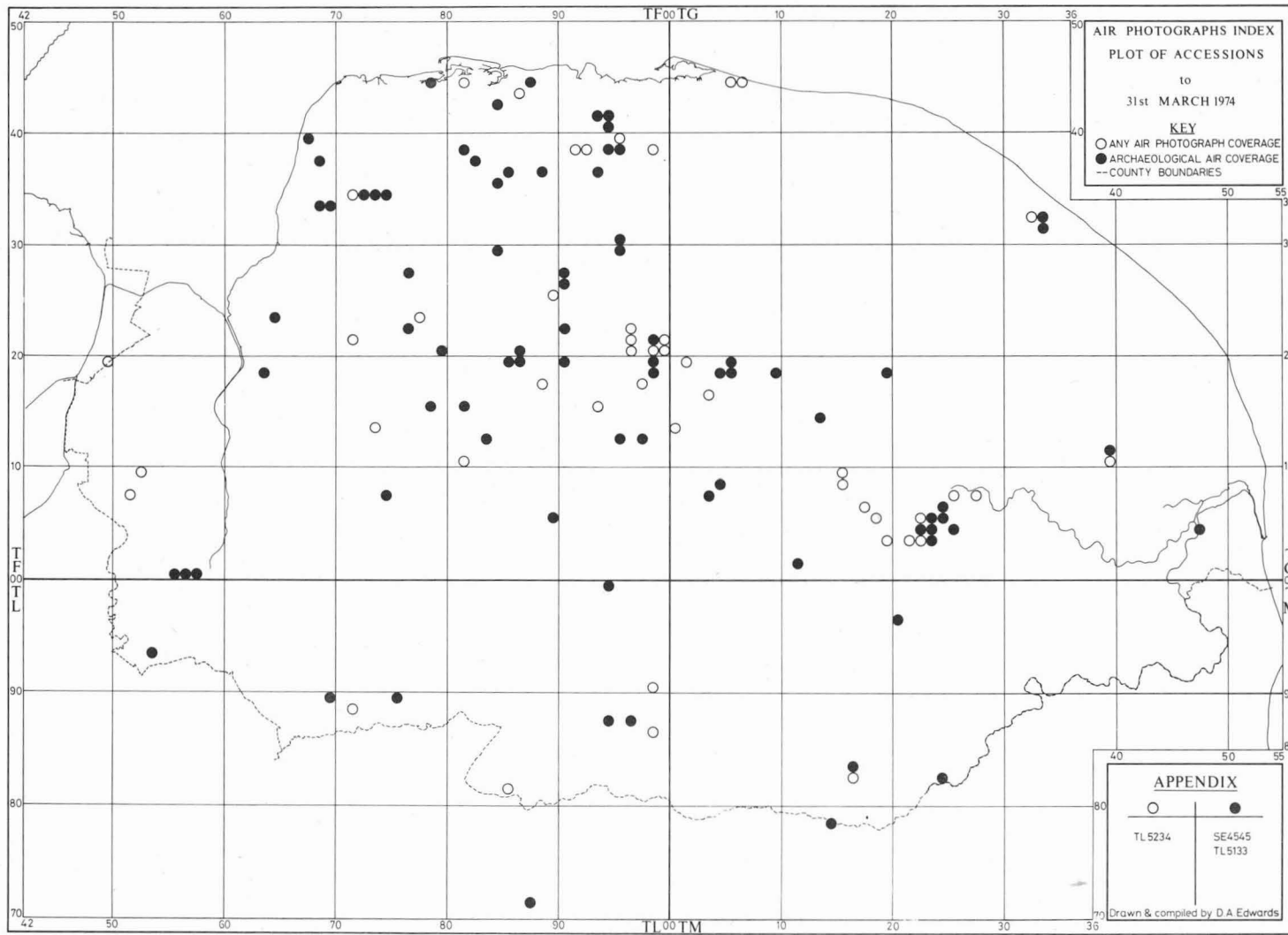


Fig. 67. Plot of photograph cover held by the Norfolk Archaeological Unit, 31 March 1974.

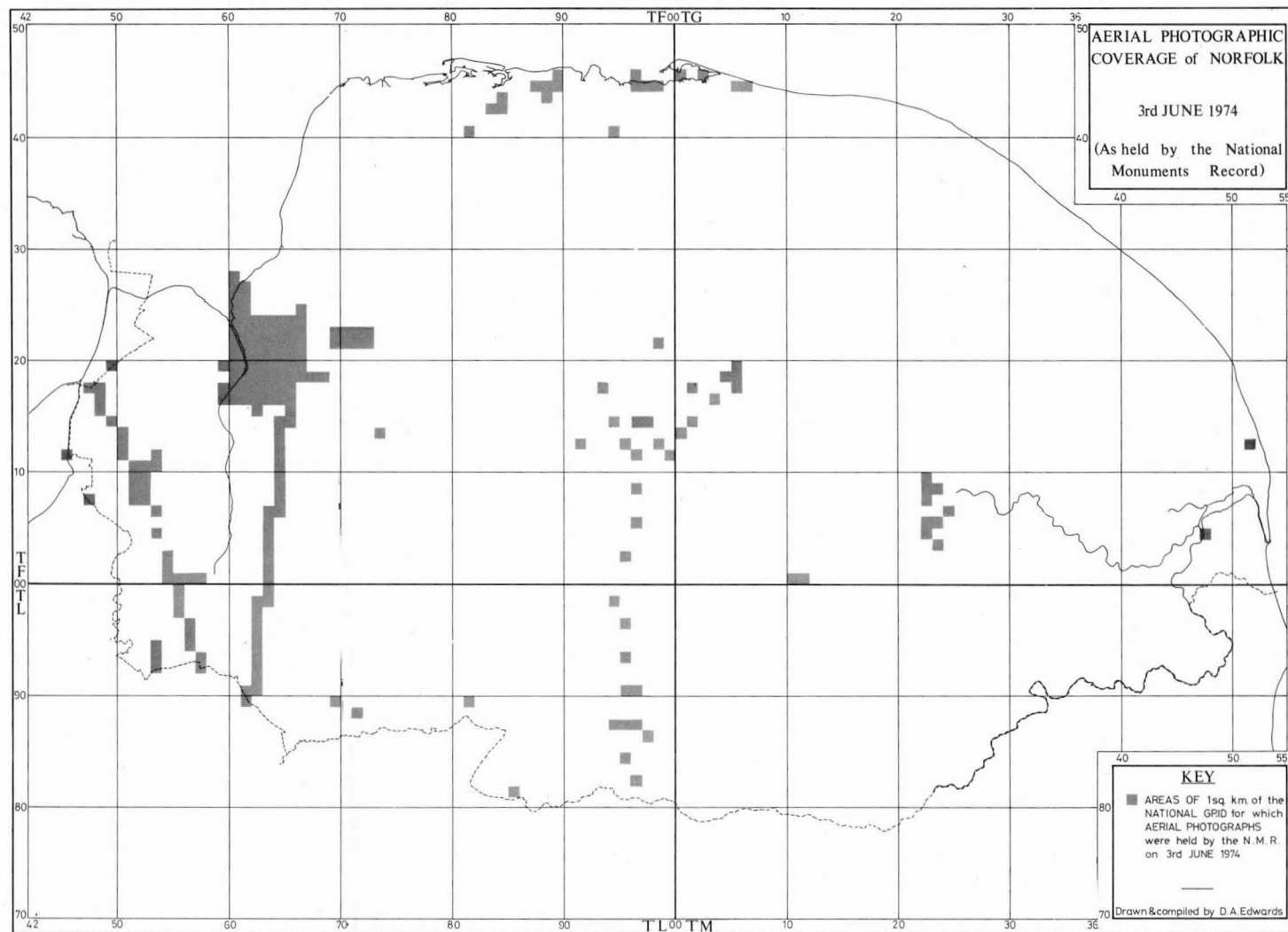


Fig. 68. Plot of air photograph cover of Norfolk held by the National Monuments Record, 3 June 1974.

III. INTRODUCTION

Most of the prints which formed the original collection (Fig. 67) were purchased from a range of sources which included the National Monuments Record to which the Index is closely linked and where copies of all material from its research flights are deposited. The programme of research flights was initiated because of the lack of available specialist archaeological air cover of the county (Fig. 68). It was based upon some four hundred and fifty known sites selected from the records of the Norwich Castle Museum. In 1975 the surveillance of many of these continued but it was extended to include sites discovered in the previous year and areas of proposed highway development.

A method of indexing photographs and slides similar to that used by the National Monuments Record was adopted by using the one kilometre squares of the National Grid as the basic units of reference to which the material is accessioned sequentially. To avoid confusion with the numerical sequence of the N. M. R. an alphabetical sequence was adopted for each square.

The aims of the Unit's air photographs index are:

- (i) to establish, in co-operation with the National Monuments Record, a county based archive of air photographs,
- (ii) to provide and publish, from the contents of the archive, photographs and plans of archaeological sites,
- (iii) to encourage the compilation of a national index and atlas of crop mark, soil mark and earthwork sites.

IV. THE INDEX SYSTEM

The collection is housed in standard filing cabinets divided into sections which correspond to the one hundred kilometre squares of the National Grid (TF, TG, TL and TM).

The sections are divided and further sub-divided by colour differentiated cards that represent the 'Eastings' (blue) and the 'Northings' (white) of the one hundred kilometre square.

The framework for accessions is provided by the 'Eastings' cards (numbered in their top left hand corner) entered in sequence, e.g. TF12--, TF13--, TF14--. The 'Northings' cards are then introduced into the Index as material becomes available for any one kilometre square. These cards are similarly lettered with the full four figure grid reference e.g. TF1234. In addition they are printed with a grid of alphabetical accession indices (A to Z, AA to AZ, AAA to AAZ, ABA to ABZ etc.) beside which are spaces that may be annotated appropriately 'print(s)' or 'slide(s)'. This ensures that no two like indices are issued.

Photographs are mounted upon cards which are installed between the 'Northings' cards in sequence of accession. These photograph mount cards are designed to accommodate either one or two prints of varying sizes, from the smallest to the present commercial standard nine inch square print. They are printed in both the top left and right hand corners with the information block reproduced below at full size:

AIR PHOTOGRAPHS INDEX Ref: T / /		
A. P. Unit Equivalent Reference: T / /		
Flight No.	Date:	N. G. R.
COUNTY NUMBERS:.....		
.....		
Photograph Subject(s):.....		
.....		
<u>External Material Data:</u>		
Source:.....		
Copyright:.....		
Negative Repository:.....		
Photograph Reference:.....		
Photograph Date:..... Vertical Photograph Scale:.....		
Date of Accession to AIR PHOTOGRAPHS INDEX:.....		
<u>Air Photographs Index Material Data:</u>		
Repository of Copy Negative:.....		
Repository of Copy Print:.....		
Repository of Copy Slide:.....		
<u>Air Photographs Index Process Data:</u>		
O. C. S. / 1:100,000 / 1:50,000 / 1:10,000 / 1:2,500 /		

The layout of the information block is largely self explanatory other than for the 'Air Photographs Index Process Data' section. This refers to (a) the inclusion of the subject of an air photograph in the Optical Co-incidence System (O. C. S.) ¹ of the Unit's Sites and Monuments Record and (b) to the scales of map overlays upon which the subject matter is recorded.

Prints from slides are indexed in the same manner as an original photograph but the print and the slide are cross-referenced in the 'Air Photographs Index Material Data' (A. P. I. M. D.) section of the information block:

Repository of Copy Negative:..... NORFOLK ARCHAEOLOGICAL UNIT
 Repository of Copy Print:..... THIS INDEX TF1234/A/A12
 or Repository of Copy Slide:..... THIS INDEX TF1234/A/SLIDE

V. SUPPORTING RECORDS

FLIGHT AND PHOTOGRAPHIC RECORDS

Detailed records of each flight are maintained and cross-referenced to the index and the photographic records. All negatives are filed in 'Paterson' negative files. Each film is interleaved with a record sheet that is cross-referenced to the Air Photographs Index, the National Monuments Record and the flight records. Films are indexed in alphabetical sequence and the frames of each are individually numbered.

SITES INDEX AND MAPS

For the convenience of users, an alphabetical card index of sites recorded in the collection is maintained. The site cards, indexed under Parish names, list all the relevant photographs.

The archaeological content of the collection is plotted at four scales on overlay sheets for Ordnance Survey Maps. Those at 1:100,000 scale are used to plot, by coverage or partial coverage of the one kilometre square, the nature and distribution of air photograph coverage in the collection. Two of these distribution maps are compiled annually. One indicates the accessions for the year April 1st to March 31st, the second indicates the total photographic coverage held in the collection.

Classification of the photographic coverage is shown thus:



The scale of 1:10,000 is also used for the compilation of distribution maps of commercial air survey coverage. Details of this are recorded upon overlays for 1:50,000 scale Ordnance Survey maps.

Detailed plans of archaeological sites are prepared on overlay sheets for Ordnance Survey maps at a scale of either 1:2,500 or 1:10,000, whichever is most compatible with the nature of the evidence. These overlays are in units of one square kilometre and indicate only contours and river courses in addition to the archaeological information.

As a standard for publication the 1:2,500 scale overlays are reduced to a scale of 1:10,000 (e.g. Figs. 70 and 71). Those at the 1:10,000 scale are reduced to 1:20,000 (e.g. Figs. 72 and 73).

Should it be necessary to utilise the Ordnance Survey 25" County Series maps the archaeological information is recorded directly upon them. Site plans are published at the original scale of 1:2,500 (e.g. Fig. 69). Details are then

transferred to overlays for the new metric Ordnance Survey maps as they become available.

PUBLIC ACCESS AND AVAILABILITY

The Air Photographs Index is open to inspection, by appointment. Copies of distribution maps, plans, prints and slides which are the copyright of the Norfolk Archaeological Unit are usually available on request, as are copies of the Index and mounting cards.

VI. CONCLUSIONS

Plans of archaeological sites, in units of one square kilometre, will ultimately form a segmented atlas of the county. If other archives were to adopt this practice it would soon be possible to compile a national index and atlas of crop marks, soil marks and earthworks.

VII. RECENT RESULTS

THE SAXON SHORE FORT AND CROP MARK COMPLEX AT BRANCASTER

Aerial photographs of the Roman fort at Brancaster have revealed a complex of crop marks, which cover an area of at least twenty three hectares. The crop marks indicate the plan of an extra-mural settlement, internal structures of the third century fort and the existence of an earlier fort.

The site of the Roman fort, one kilometre east of the centre of the present village, is identified as that of Branodunum in the Notitia Dignitatum. The fort is recorded as a standing structure in the seventeenth century ², but it was dismantled in 1770 when the masonry was used in the construction of a malt house at Brancaster Staithe ³. Trial excavations have been conducted within the area by Lee Warner ⁴, J. K. St. Joseph ⁵, Dr. Woodsend ⁶ and most recently by C. J. S. Green ⁷. Since 1973 the area has been the subject of regular aerial surveillance.

An early photograph records crop marks to the west of the fort ⁸. The plan of these features has been confirmed by geophysical survey. It indicates the line of a road from the vicinity of the west gate of the fort (Fig. 69, site 1002). Enclosures front onto this road which is intersected at right angles by another, 130 m. from the fort. The complex to the east is similar in plan and orientation to that on the west (Plates XXI, XXII, XXIII and XXV, site 1003). Some enclosures contain pit groups and at least one has a number of phases of occupation (Plate XXV). The east-west road is intersected 165 m. east of the fort by a second north-south road. This continues northward for 145 m; where it joins a second east-west road, then runs 35 m., turns eastward and divides. One fork continues parallel to the main east-west

BRANCASTER, NORFOLK

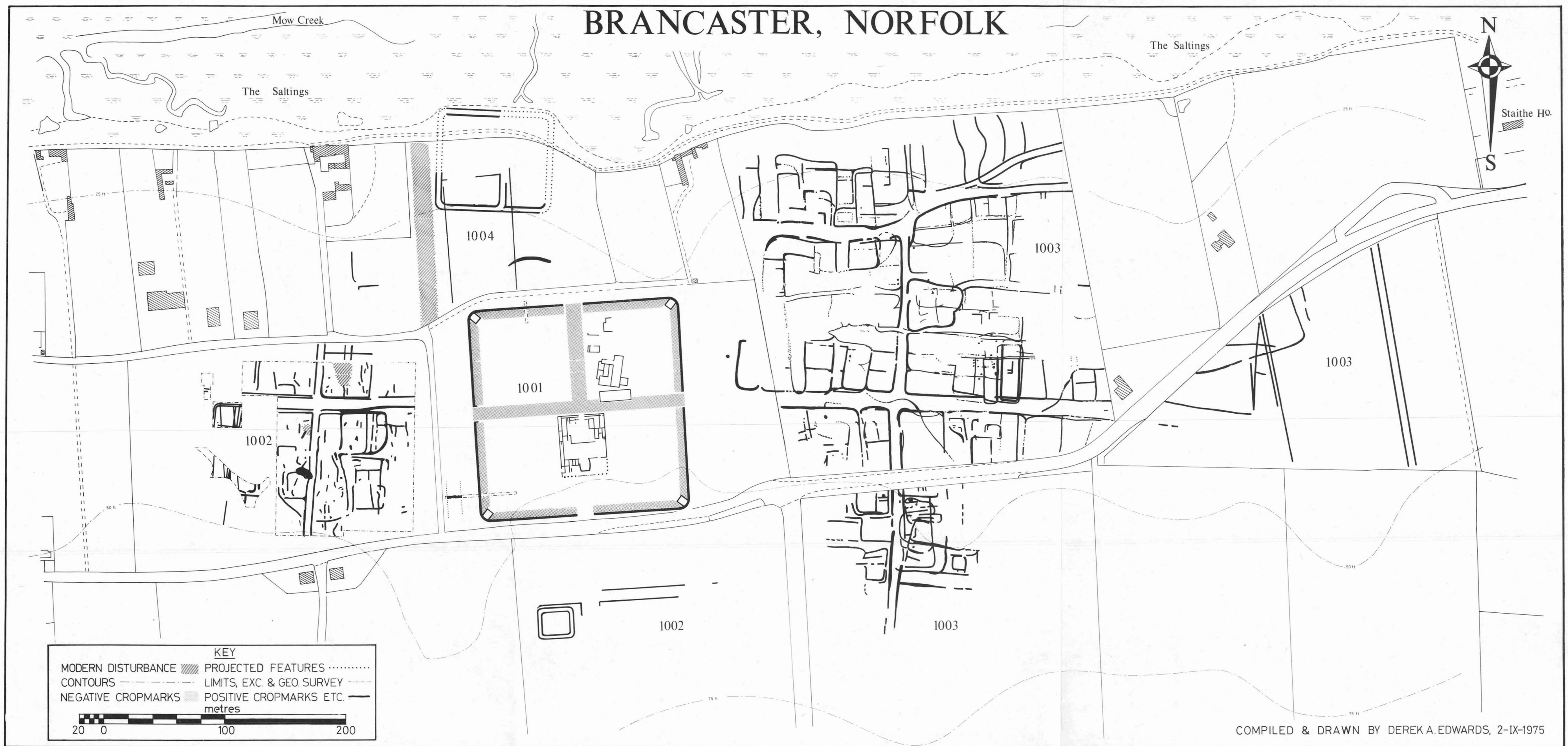


Fig. 69. Brancaster: the crop mark evidence, results of geophysical survey and excavation illustrating the Shore fort and the extra-mural settlement and a possible fort to the north.

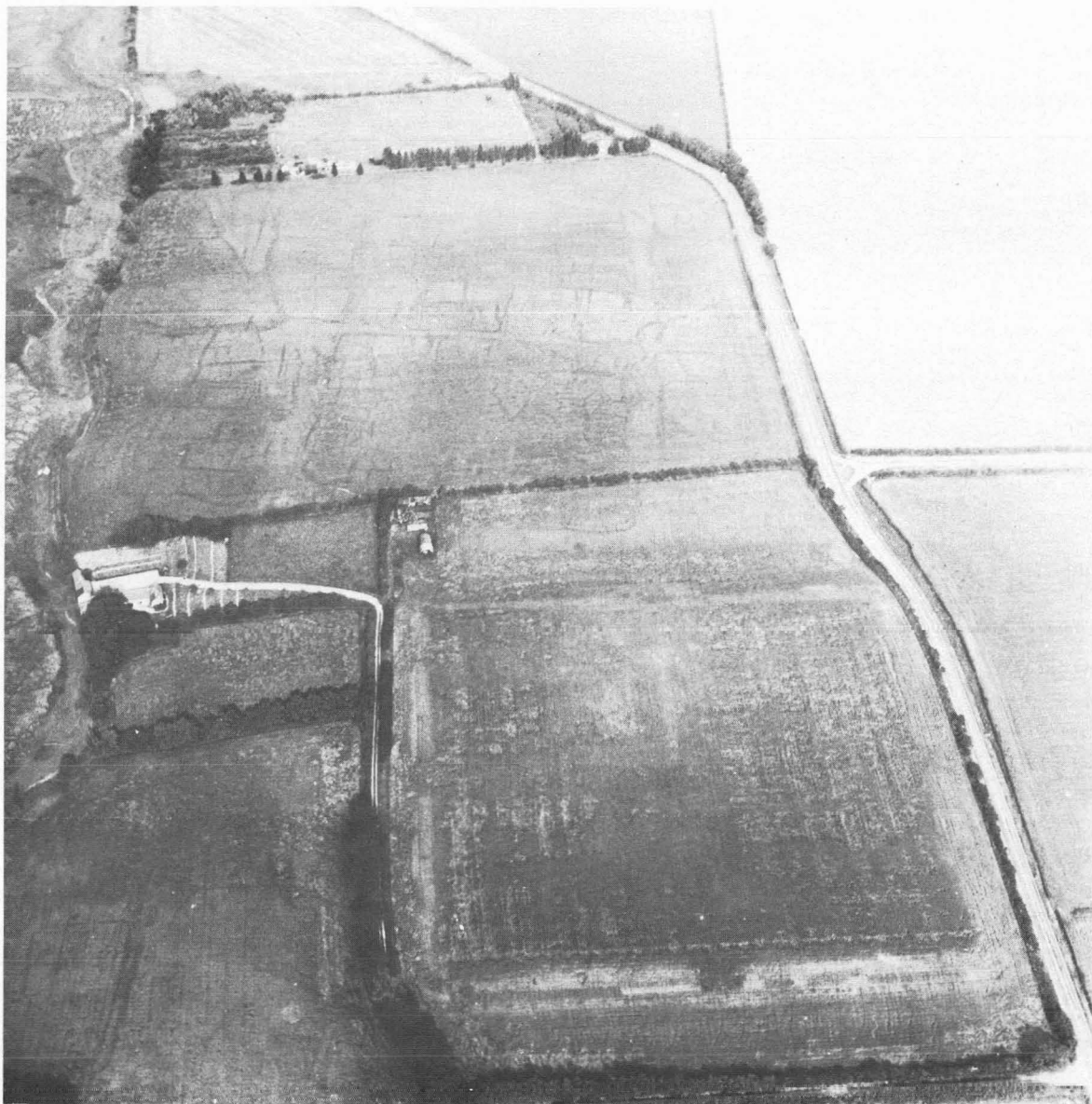


Photo: Derek Edwards

TF7844/G/AAE12

Plate XXI. Brancaster: the Saxon Short fort, settlement complex and possible fort to the north, from the west (4 July 1973).



Photo: Derek Edwards

TF7844/F/AAE11

Plate XXII. Brancaster: crop marks to the east of the fort, from the south (4 July 1973).

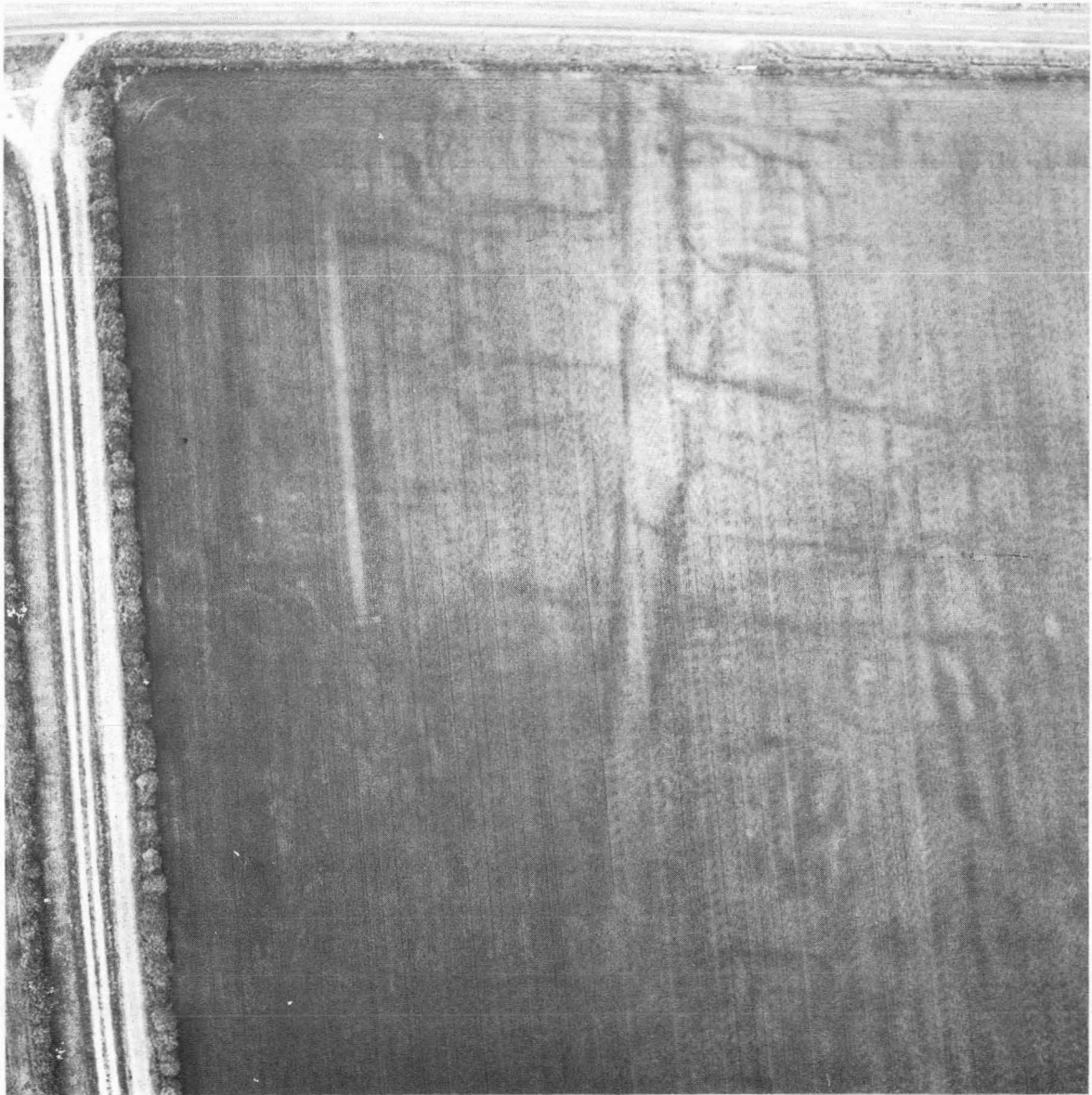


Photo: Derek Edwards

TF7843/D/ABX23

Plate XXIII. Brancaster: a vertical view of the crop marks
to the south east of the fort (4 July 1973).



Photo: Derek Edwards

TF7844/AM/ACP20

Plate XXIV. Brancaster: the fort from the south with evidence of the principia and other internal structures (10 July 1974).

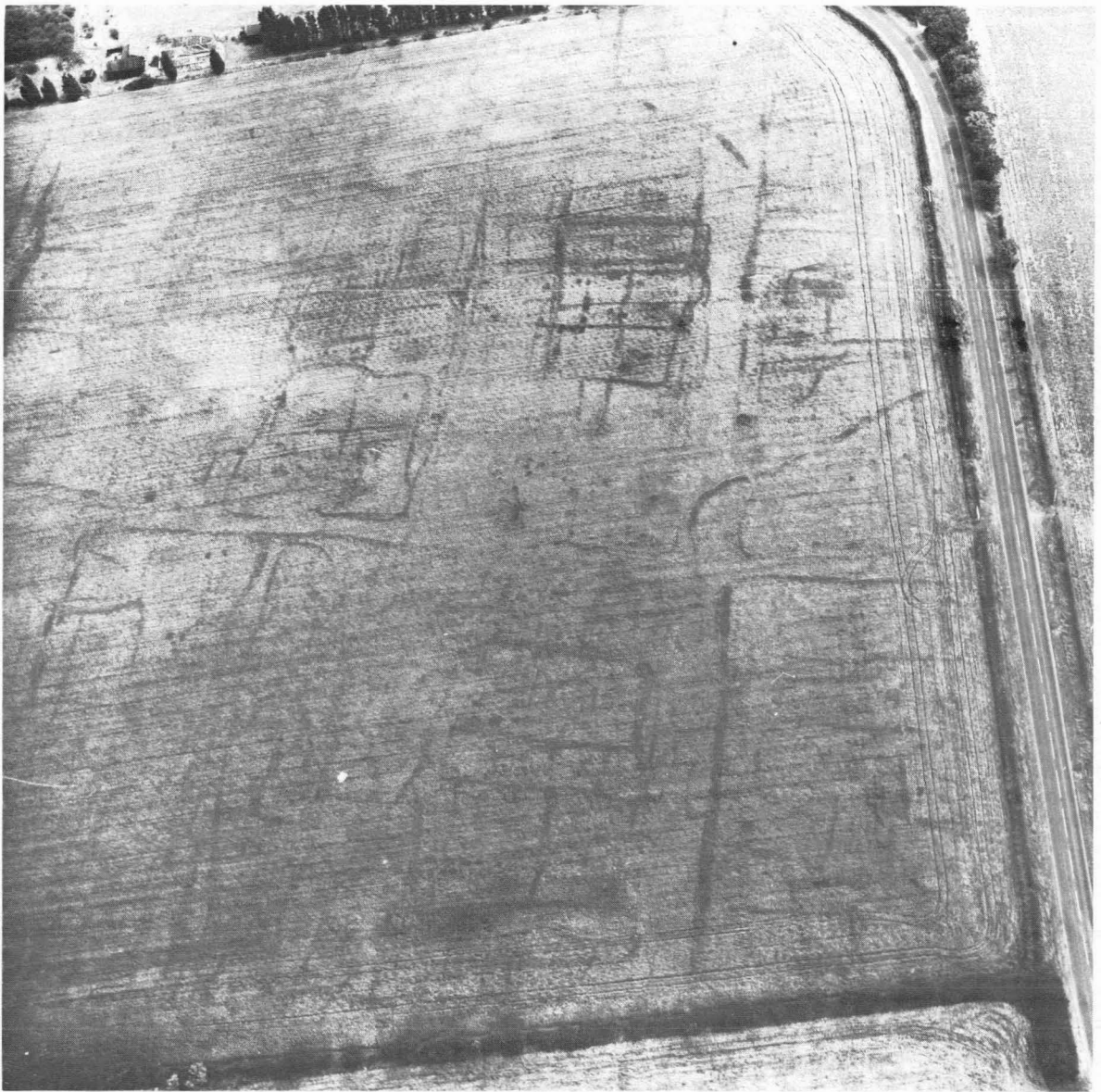


Photo: Derek Edwards

TF7844/ABB/ADL8

Plate XXV. Brancaster: the crop marks to the east of the fort, from the west (16 July 1975).

road and the other possibly towards Brancaster Staithe. Traces of another road are recorded 60 m. south of the fort, parallel to the main east-west road.

To the north, on the alignment of the crop mark complex, is a double ditched enclosure of which only the north side on the marsh edge and the south side remain. It is 85 m. long, with rounded south east and south west corners (Plate XXI, site 1004). It is 0.64 hectare in area and located upon a platform, separated from the fort by a wide shallow depression.

The fort is defined as a regular enclosure of 3.15 hectares, with rounded corners and four gates (Plate XXI). Each gate is central to the side in which it is located. Dark crop marks indicate the line of the walls where they have been robbed out and the earthen rampart behind this line is identified as a light area on all four sides into which intrude the internal corner turrets.

The fort is four degrees out of alignment with the complex which surrounds it (Fig. 69). This irregularity is such that the road cannot enter the west gate without a change of direction.

Soil marks, in an unpublished photograph, of the via praetoria and principalis⁹ (the east-west and north-south roads), suggest that there was no obstruction of passage from east to west or north to south, but this conflicts with the evidence of a later photograph (Plate XXIV) which records the principia as a crop mark on the south of the via principalis and in direct line with the south gate. The principia is almost square and the most prominent feature of it is the sacellum, which protrudes from its south side. Other internal structures have been recorded, particularly in the north east corner of the fort.

The contemporaneity of the fort and the complex which surrounds it is brought into question by two factors, firstly the disparity between the alignment of the fort and the complex which surrounds it and secondly by the presence of an enclosure, resembling a military camp, to the north and on the same alignment as the complex which surrounds the third century fort.

The building of the Saxon shore fort at Brancaster has been dated by excavation¹⁰ to the late third century. Two occupation levels were found within the fort and were dated by Professor St. Joseph to the mid or late third century and the mid fourth century. Both levels contained evidence of buildings which may be compared with those excavated to the west of Staithe House¹¹ by Dr. Woodsend and associated with material of the late second century. However, the recent excavation of enclosures to the west of the fort by C. J. S. Green indicates a fourth century date.

It is possible that the fort was imposed upon a pre-existing complex, by virtue of the misalignment, but the available dating evidence suggests a more complex sequence than may be immediately apparent.

THE CROP MARK COMPLEX AT COLTISHALL

Aerial reconnaissance in the Bure valley has confirmed the presence of crop marks first reported in the 1960's by Mr. Price, a pilot at R. A. F. Coltishall 12.

The complex is located upon the northern terraces of the Bure valley, one and a half kilometres north of Coltishall. It is composed of two sites. The first, at Herne's Farm, is on the 50ft. terrace and the second, at Ash Grove, is situated on an eminence overlooking a small valley which leads down to the river.

Site number 5788 is a double concentric ring ditch (Plate XXVI, Fig. 70). The diameter of the outer ditch is 35 m. and that of the inner is 25 m. Two pits appear to be associated with the site, one to the north west and another between the ditches on the north.

Site number 5789 is notable for a complex of features, the long axis of which is thirty two degrees east of Grid North, coincidental to the line of the valley which it overlooks (Plate XXVII, Fig. 70). The complex consists of a ring ditch, 10 m. in diameter, between two parallel linear features. Between these and at right angles to them is a line of three pairs of equally spaced pits. Immediately west of the ring ditch is a small square enclosure and to the south are a number of linear and rectilinear features.

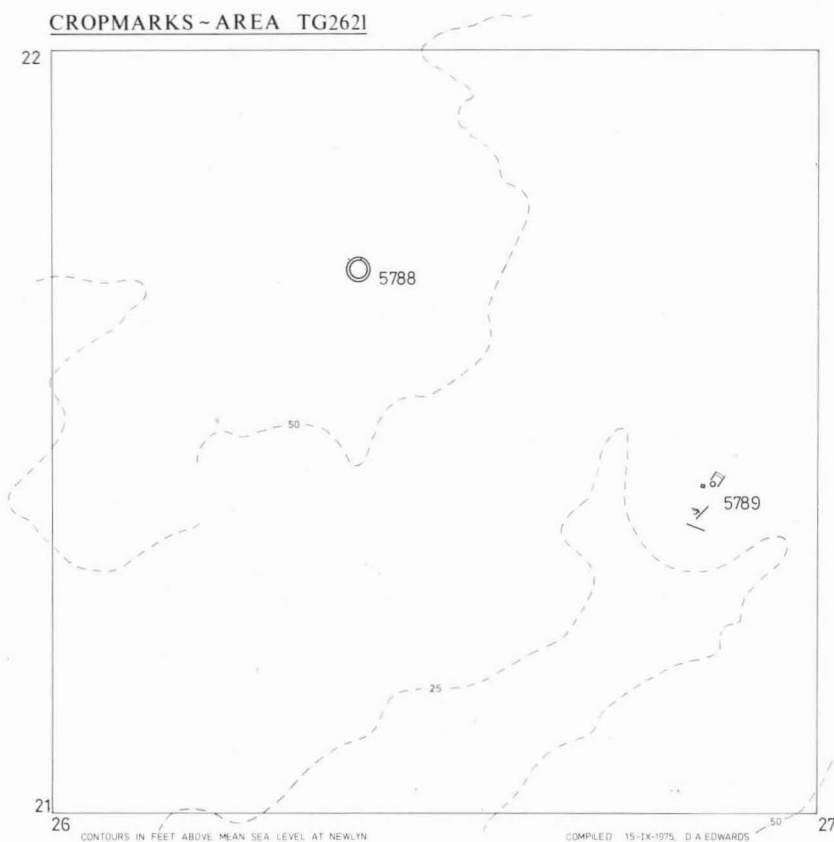


Fig. 70. Coltishall: crop marks in area TG2621.



Photo: Derek Edwards

TG2621/D/ACX4

Plate XXVI. Coltishall; the double concentric ring ditch at Herne's Farm, from the west (7 August 1974).



Photo: Derek Edwards

TF2621/H/ACX8

Plate XXVII. Coltishall: the crop mark complex at Ash Grove,
from the north east (7 August 1974).

Recent Results

THE SITE OF THE ROMAN MARCHING CAMP AT HORSTEAD WITH STANNINGHALL

Aerial reconnaissance in the Bure Valley has also revealed the crop mark site of a Roman marching camp at Horstead with Stanninghall, site 4379, nine kilometres north of Norwich.

The site is strategically situated on the 50ft. gravel terrace south of the River Bure. From this point there is a commanding view over the nearby river crossing. South east of the site the land rises to over 75ft. above Ordnance Datum.

The crop marks, first recorded on 17 June 1974, indicate the south and west sides of a rectangular, ditched enclosure (Plate XXVIII, Fig. 71). The north west, south west and south east corners of the camp are rounded and its long axis is orientated twenty four degrees east of Grid North. The area of the camp is 9.6 hectares. There is no positive evidence as to the location or number of gateways into the enclosed area. The apparent breaks in the line of the ditch correspond with the headlands of modern fields. The resultant build-up of soil in these areas, which would inhibit crop mark formation, may explain these breaks.

Little more than half the area of the camp is defined, the remainder being under permanent pasture and a small estate of Council houses. It is likely therefore, that the entrance(s) are on the north or east sides which are unrecorded.

Located within the area of the camp is a sub-rectangular enclosure, of 0.25 hectare. This has entrances on the east and west sides and has the appearance of being a pre-Roman native settlement. Between it and a ring ditch, 175 m. to the north west, are traces of trackways and field boundaries. One of these adjoins the enclosure and one track is aligned towards its west entrance.

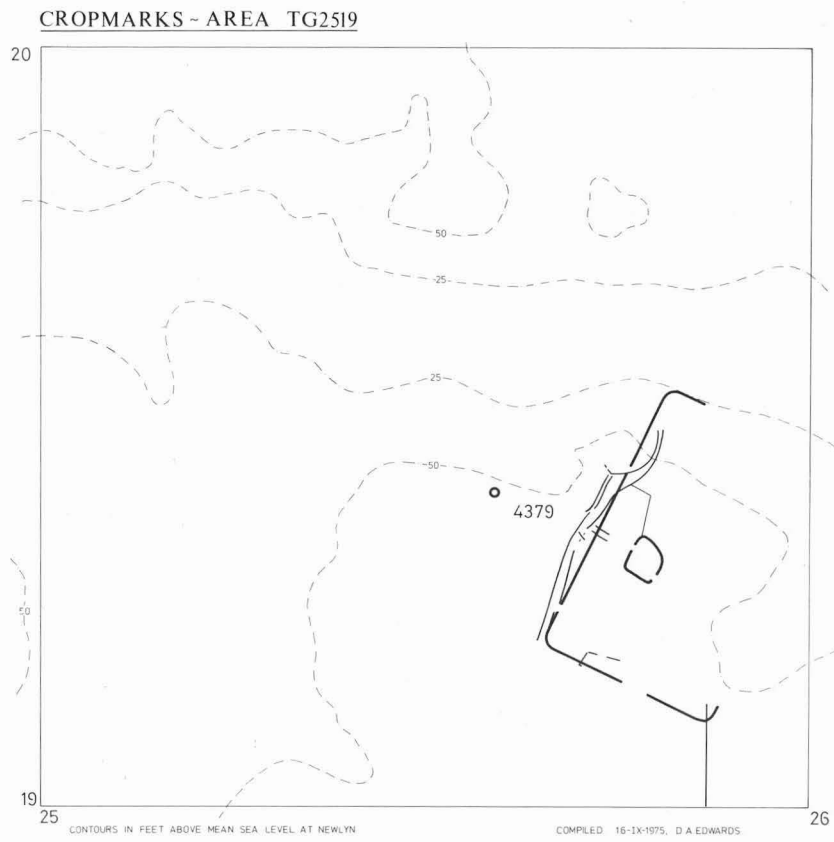


Fig. 71. Horstead with Stanninghall: crop marks in area TG2519.

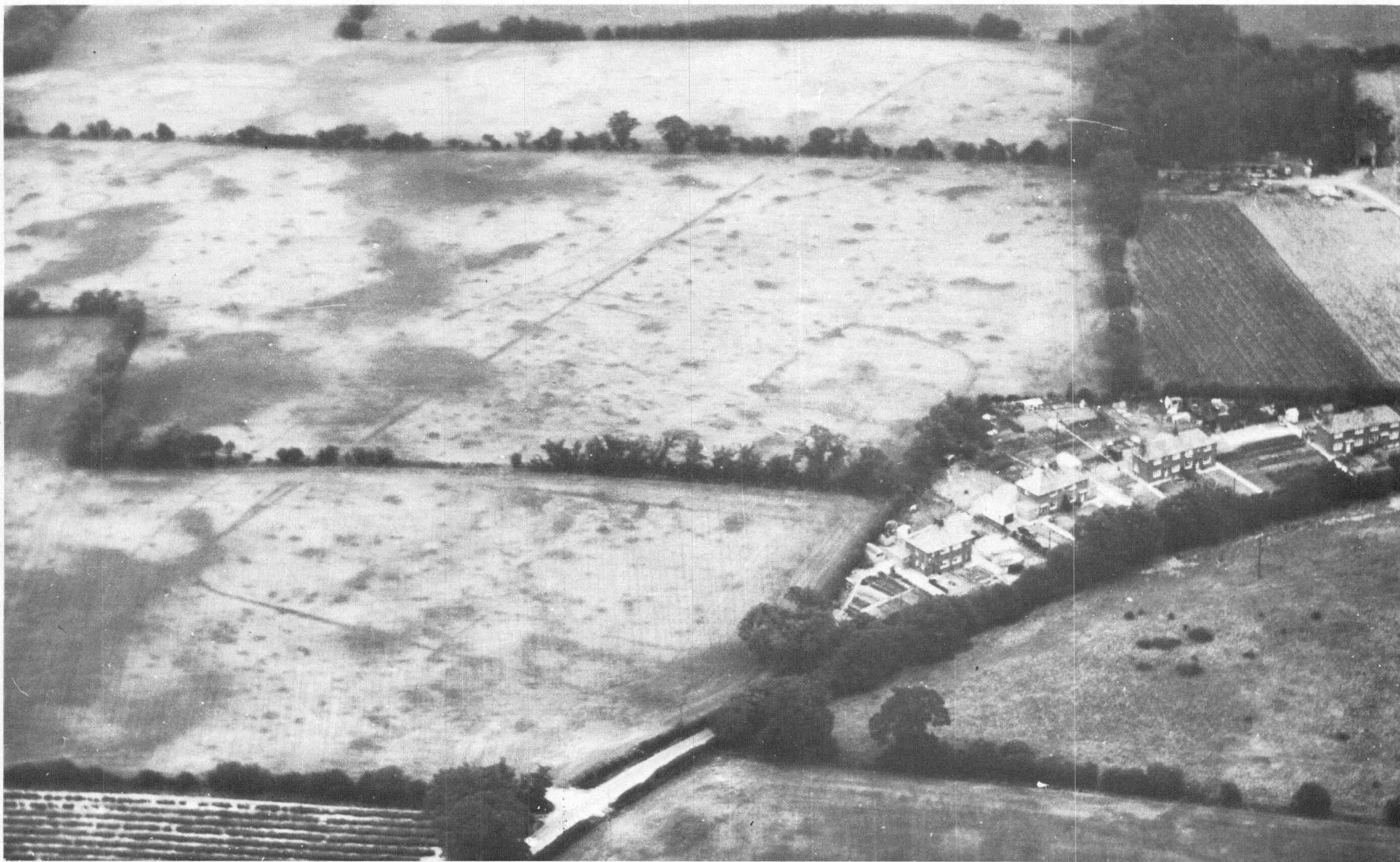


Photo: Derek Edwards

TG2519/W/AAZ43

Plate XXVIII. Horstead with Stanninghall: the crop mark site of the Roman marching camp (17 June 1974)



Photo: Derek Edwards

TF9529/P/AAW59

Plate XXIX. Kettlestone: ring ditches from the north west (14 June 1974).

THE CROP MARK COMPLEX AT KETTLESTONE

Aerial reconnaissance in the Wensum Valley has revealed the crop marks of two enclosures and a further three ring ditches within a recorded barrow group three kilometres east of Fakenham.

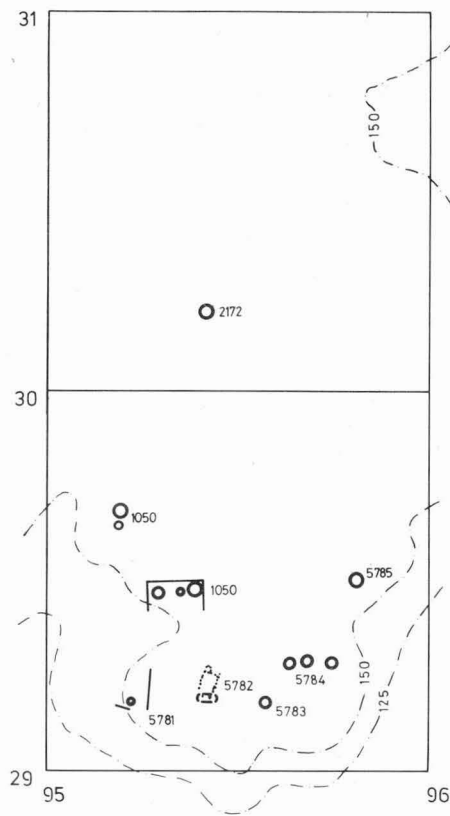
The site is situated upon the 150ft. terrace to the north of the River Wensum (Fig. 72) and is now known to be composed of twelve ring ditches grouped around two enclosures. Nine of the ring ditches were recorded in July 1959¹³ and the recent discoveries were made in June 1974¹⁴.

The methods of photography employed in recent aerial survey are illustrated by Plate XXXI(a) and XXXI(b), which record part of site number 1050. These methods involve the use of multispectral techniques of photography (the simultaneous exposure of two or more photographic emulsions of differing characteristics¹⁵) which allows far more information to be recorded than is possible by conventional methods.

The aerial photographs taken by J. K. St. Joseph record three individual ring ditches (site numbers 2172¹⁶, 5781¹⁷ and 5785¹⁸) and two groups of three ring ditches (site numbers 1050¹⁹ and 5784²⁰). One of these groups (site number 1050) is located within a rectangular enclosure of 1.3 hectares.

Recent aerial photographs record two ring ditches, one to the north of the main group (site number 1050, Plate XXIX) and another to the south (site number 5783, Plate XXX). Within the centre of the complex and on the alignment of the two groups of three ring ditches (site numbers 1050 and 5784) is a ditched, ovoid enclosure of some 0.14 hectares having four entrances, two to the north and two to the south. Located to the north of this and adjacent to it is a second enclosure, of 0.24 hectare, delineated by alignments of pits.

CROPMARKS~AREAS TF9529, TF9530



CONTOURS IN FEET ABOVE MEAN SEA LEVEL AT NEWLYN
COMPILED 10-X-1975, D.A. EDWARDS

Fig. 72. Kettlestone: crop marks in areas TF9529 and TF9530.

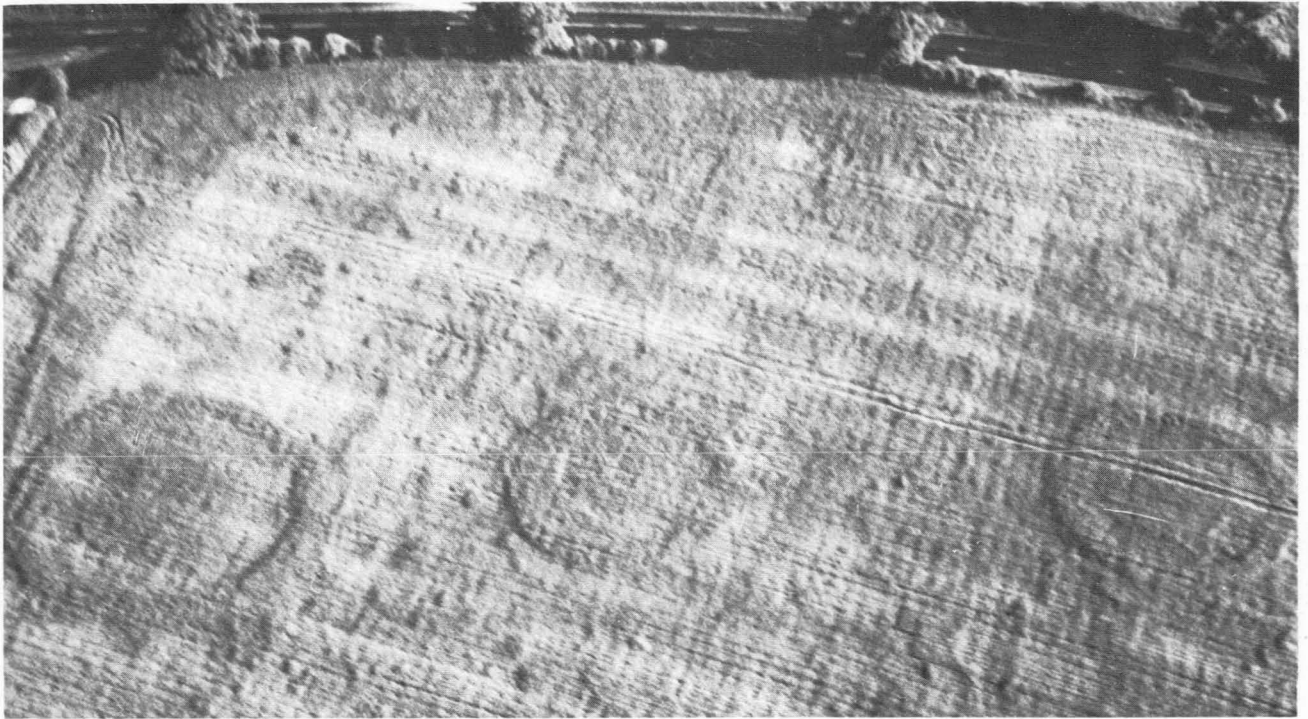


Photo: Derek Edwards

(a)

TF9529/AG/HC4



Photo: Derek Edwards

(b)

TF9529/AF/HC6

Plate XXXI. Kettlestone: crop marks of ring ditches and enclosure, from the north. Prints from simultaneous exposures of (a) infrared colour reversal film and (b) conventional colour reversal film. (14 June 1974)



Photo: Derek Edwards

TF9529/T/AAW62

Plate XXX. Kettlestone: crop marks of ring ditches and enclosures, from the north east (14 June 1974).

THE CROP MARK AND EARTHWORK SITES AT SOUTH CREAKE

Aerial reconnaissance in the Burn Valley has revealed the presence of two ring ditches, one of which is within the enclosed area of the Iron Age hill fort, and an earthwork site to the east of the parish church.

The hill fort was surveyed in August 1973 ²¹ (Fig. 74) and the internal ring ditch was first noted as a soil mark in November of that year. The ring ditch to the south of the village is located on the west side of the river between the 100ft. and 125ft. contours and was discovered in July 1975 and the village earthworks to the east of the parish church in December 1973.

The Iron Age hill fort, site number 1910 (Plate XXXII, Fig. 74), situated upon the summit of Bloodgate Hill to the west of the River Burn, is ploughed out and may be seen under favourable conditions as a crop mark or soil mark. The earliest documentary reference to the site was made during the late sixteenth century ²² and the site is described upon an early map as 'Burrows Dyke' ²³.

The hill fort was defended by a single ditch and rampart enclosing an area some 240 m. in diameter. Air photographs record two entrances, one of which is to the east and the other to the west. Located within the fort, and almost centrally to it, is a ring ditch approximately 30 m. in diameter.

The second ring ditch, site number 5787, is located one half kilometre south of the village (Plate XXXIII, Fig. 74). It is some 30 m. in diameter and adjacent to it are crop marks of a trackway the position of which is recorded upon the Ordnance Survey maps.

The village earthworks, site number 1017, indicate the course of the River Burn before it was diverted and to either side of it are grouped a number of fish ponds (Plate XXXIV, Fig. 74). To the west of these are three enclosures. The largest of these is some 1500 square metres in area and at least one exhibits evidence of buildings.

November 1975.

CROPMARKS - AREAS TF8435, TF8535
EARTHWORKS - AREA TF8537

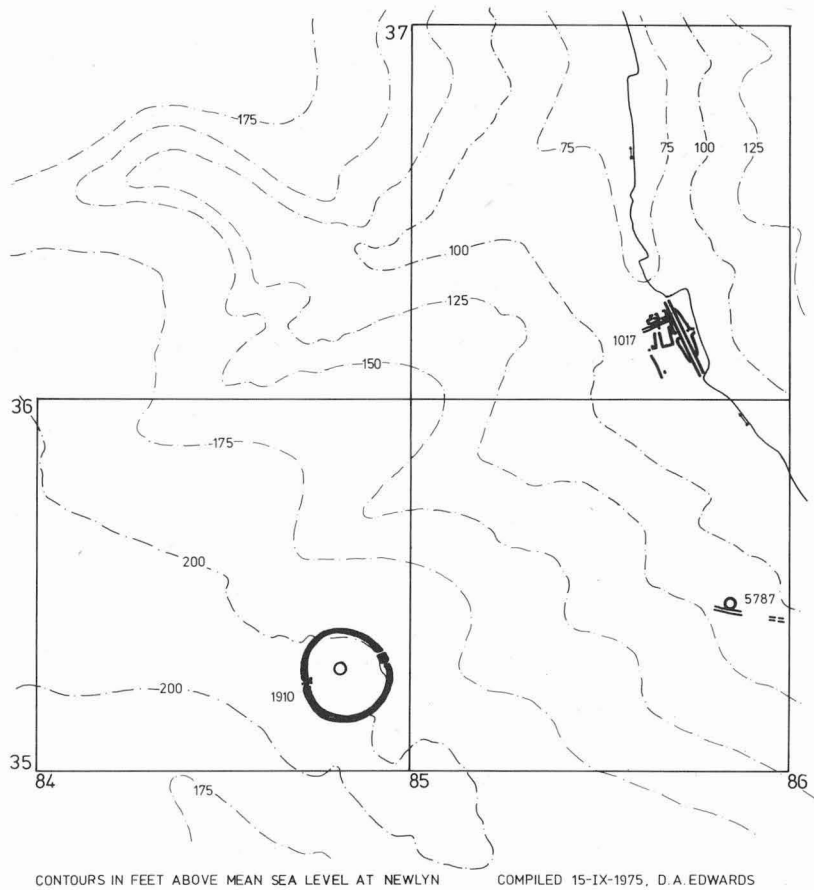


Fig. 73. South Creake: crop marks in areas TF8435 and TF8535 and earthworks in area TF8537.



Photo: Derek Edwards

TF8435/AD/ADR6

Plate XXXII. South Creake: hill fort and internal ring ditch, from the south (21 July 1975).

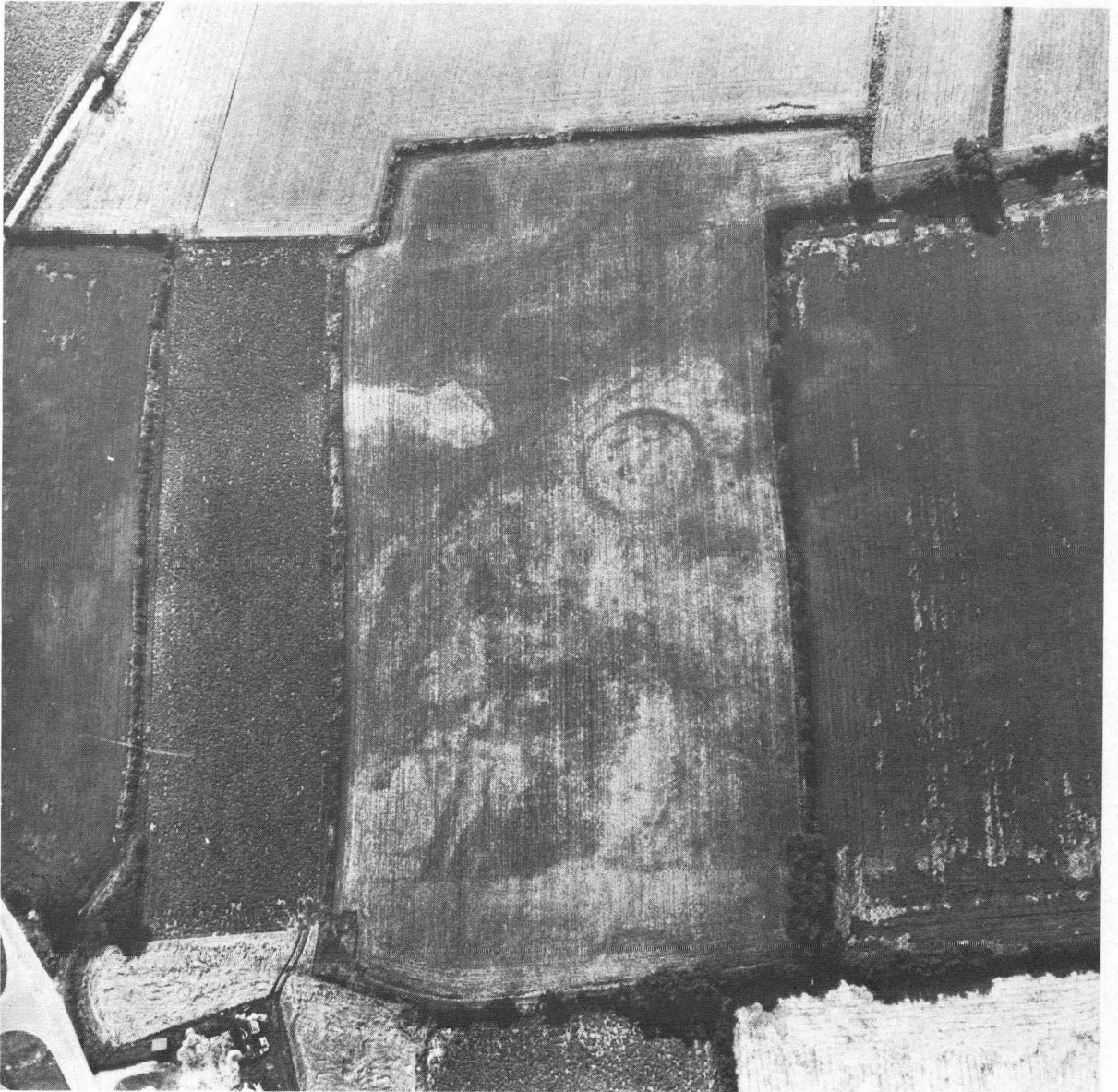


Photo: Derek Edwards

TF8535/C/ADR9

Plate XXXIII. South Creake: ring ditch and trackway from the north east (21 July 1975).



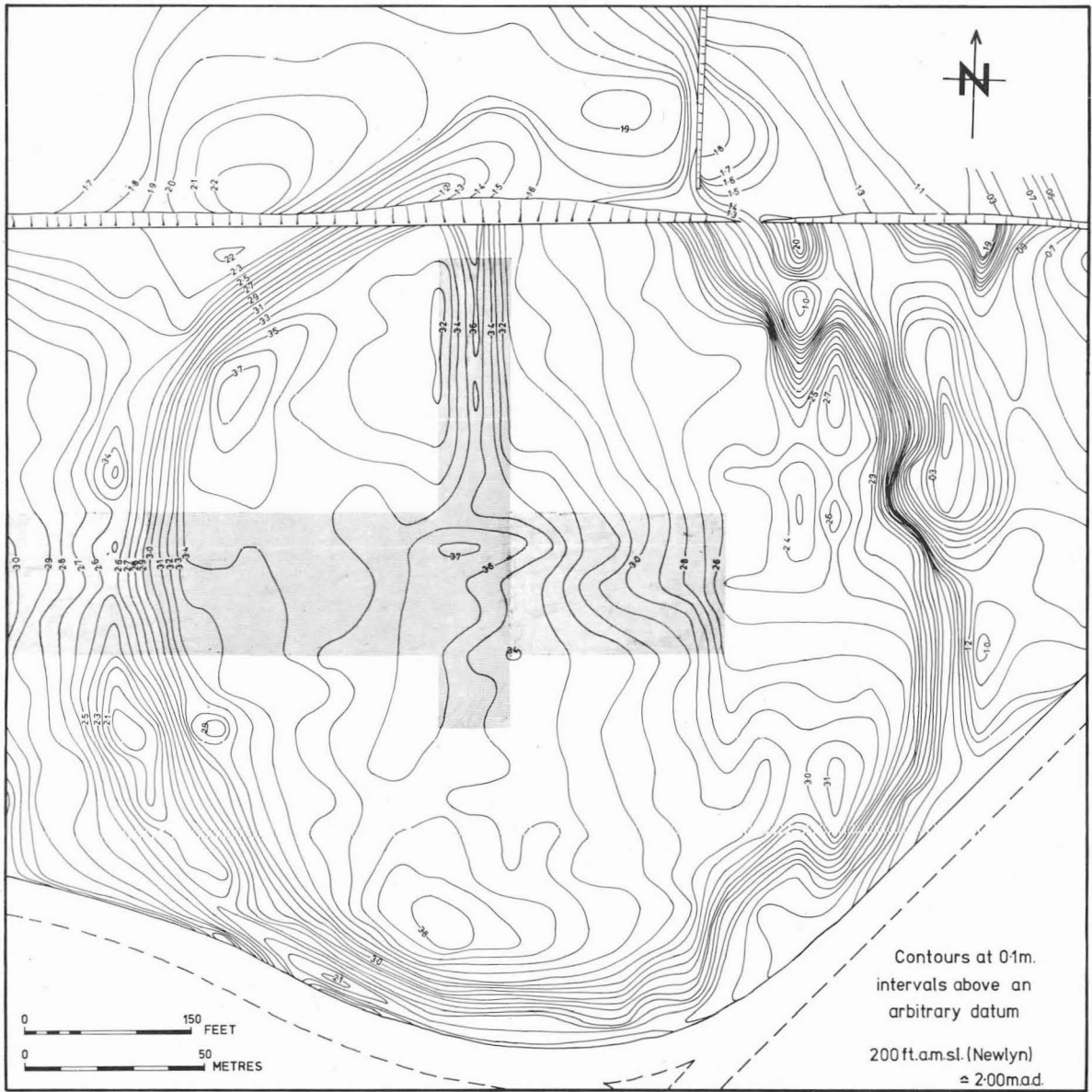
Photo: Derek Edwards

TF8536/B/AAN5

Plate XXXIV. South Creake: a near vertical view of the village earthworks (18 December 1973).

SOUTH CREAKE

SITE No. 1910



■ Area of geophysical survey

Fig. 74. South Creake: a survey of the hill fort by Andrew Lawson.

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- Report No. 1, 1975. Suffolk; published by the Suffolk County Council Planning Department.
- Report No. 2, 1976. Norfolk; published by the Norfolk Archaeological Unit.

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