

EAST ANGLIAN ARCHAEOLOGY

this volume is dedicated to Anna Slowikowski

# **Hedingham Ware: a medieval pottery industry in north Essex; its production and distribution**

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**Cover illustration:**  
Hedingham Ware early rounded jug (Fig. 14.1)

# Contents

List of Plates	vi	Fineware glazes	46
List of Figures	vii	Early medieval vessel forms produced by the	
List of Tables	ix	Hedingham industry	46
Contributors	x	Hole Farm	47
Acknowledgements	x	Crows Cross	47
Summary	x	Holy Trinity	47
		Starlings Hill	47
<b>Chapter 1. Introduction</b>		The coarsewares	47
Background	1	Introduction and methodology	47
Research aims and objectives	1	Socketed dishes/bowls	49
Methodology	1	Large slightly flared bowls often with holes in	
Definition of terms	1	the sides	49
Archive and publication	3	Vertical-sided bowls	51
		Carinated bowls	53
		Handled bowls	53
<b>Chapter 2. Gazetteer of production sites and</b>		Small thick-walled jars	53
<b>the geographical setting of the Hedingham</b>		Cooking-pots	53
<b>industry</b>		Jars with combed decoration	66
Introduction	5	Small jars with perforated everted rims	66
Acacia House	5	Pipkins/small cooking-pots/jars	66
Attwoods	6	Jar rim with an internal lid-seating	67
Blackmore End	7	Large Thetford-style storage jars	67
Broak's Wood	7	Cooking-pot-shaped storage jars	68
Clare Cottage	8	Spouted pitchers and handled storage jars	71
Crows Cross	10	Spouted jugs	71
Foxborough Hill	11	Rounded jugs and jug fragments	71
Hawkwood Manor	12	Chimney pots	75
Hole Farm	12	Curfews	78
Holy Trinity	20	Component parts	78
Kemp's Wood	20	Catalogue of drawings	79
Lamb Lane	21		
Shalford Road	21	<b>Chapter 5. Methods of manufacture and</b>	
Starlings Hill	23	<b>production</b>	
Other finds of kiln pottery from the Starlings Hill area	24	Non-pottery finds connected with manufacture	83
Roman pottery production	25	Methods of pottery manufacture	84
Pottery production in the 19th century	25	Manufacture of the coarsewares	84
Factors that influenced the siting of production centres	27	Manufacture of the finewares	86
Raw materials and communications	27	Manufacturing faults	86
Sources of fuel	29	Evidence for stacking vessels inside the kiln	90
The medieval climate	30	Firing conditions	90
Kiln orientation	30	Comparison of Hedingham kiln sites and evidence of	
Seasonality	30	production and organisation	91
Other local medieval industries	30	The dating of the kilns	91
Influence of religious houses	31	Comparison of the kilns	92
		Comparison of assemblages	92
<b>Chapter 3. The fabrics</b>		Quality control	93
The fineware/glazed ware fabrics	32	Level of organisation	93
The early medieval fabrics	33		
The coarseware fabrics	33	<b>Chapter 6. Origins and affinities of Hedingham</b>	
Hole Farm: distribution of fabrics within the kilns	34	<b>Ware</b>	
Recommendations for the recording of Hedingham		Comparison with other Essex coarsewares	94
Ware	35	Comparison with South Hertfordshire Greyware	94
		Comparison to Suffolk grey wares	95
<b>Chapter 4. Typology of vessel forms,</b>		Comparison with Thetford-type ware	95
<b>sub-forms and decoration</b>		The fineware origins and affinities	98
The finewares	37	Comparison with other kilns in the region	98
Jugs (and jug lid)	37		
Vessel forms other than jugs	46		

Chapter 7. The distribution of Hedingham Ware products		Gazetteer of find-spots of Hedingham Coarseware in East Anglia	126
Introduction	100	Gazetteer of medieval markets and fairs in Suffolk and Essex, by county in order of earliest date	129
Methodology	100		
Quantification	100	Chapter 8. The demise of the industry	
Date banding	100	Decline	133
Negative evidence	100	Survival	133
Site type	101		
The transport system	101	Chapter 9. Conclusions	135
Distribution within Norfolk	101		
Distribution within Cambridgeshire	105	Appendix 1: Petrographic analysis, by Patrick Quinn	137
Distribution within Suffolk	105	Appendix 2: ICP-AES (ICPS) analysis, by Mike Hughes	149
Distribution within Essex	109	Appendix 3: XRF analysis of glazes, by Mike Hughes and Duncan Hook	160
Distribution within Bedfordshire	113	Appendix 4: The documentary evidence, by Pat Ryan	164
Distribution within Hertfordshire	114		
Distribution within London	114	Bibliography	170
Changes in distribution patterns over time	114	Index, by Sue Vaughan	176
Discussion of distribution	115		
Mechanisms of distribution	115		
Gazetteer of find-spots of Hedingham Fineware in East Anglia	118		

## List of Plates

Plate 1	Photograph of the Musty type 1b kiln at Crows Cross/Attwoods, from side	6	Plate 15	Fragment from stamped strip jug (Fig. 15.26)	43
Plate 2	Photograph of the Musty type 1b kiln at Crows Cross/Attwoods, looking towards the back of the kiln	7	Plate 16	Rim of stamped strip jug (Fig. 15.30)	44
Plate 3	Photograph of Hole Farm showing kiln 2 in the foreground and kiln 1, with its divided pedestal, in the background. The slot between the two kilns can also be seen	13	Plate 17	Fragment from stamped strip jug (Fig. 15.36)	44
Plate 4	Hole Farm: fragment of fired clay superstructure showing void left by ?wattle; diameter of void 25mm	19	Plate 18	Fragment from white slip-painted jug (Fig. 15.41)	45
Plate 5	Hole Farm top view of perforated fired-clay superstructure fragment; diameter of perforations c. 12mm	19	Plate 19	Fragment from jug (Fig. 16.44) showing dark applied strips	45
Plate 6	Hole Farm top view of perforated fired-clay superstructure fragment; diameter of perforations c. 12mm	19	Plate 20	Early medieval cooking-pot (Fig. 16.49)	47
Plate 7	Hole Farm, section view of perforated fired-clay superstructure fragment; depth of perforations is around 15–17mm	19	Plate 21	Holed bowl (Fig. 16.54)	49
Plate 8	London-style early rounded jug (Fig. 14.1)	38	Plate 22	External view of holed bowl (Fig. 16.55)	51
Plate 9	Base of London-style early rounded jug (Fig. 14.6)	38	Plate 23	Internal view of holed bowl (Fig. 16.55)	51
Plate 10	Fragment from the neck of a Scarborough-style early rounded jug showing applied red pellets and a trace of red slip (photographed but not drawn; dimensions as Fig. 14.15)	39	Plate 24	Cooking-pot (Fig. 20.87)	57
Plate 11	Fragment of Scarborough-type jug (Fig. 14.15)	39	Plate 25	Warped cooking-pot (photographed but not drawn; ht 172mm, estimated rim diameter 200mm)	57
Plate 12	Early rounded-style jug handle (Fig. 15.22)	42	Plate 26	Decorated cooking-pot (Fig. 21.99)	59
Plate 13	Fragment from Rouen-style jug (Fig. 15.23)	42	Plate 27	Cooking-pot (Fig. 22.103)	59
Plate 14	Fragment from stamped strip jug (Fig. 15.26)	43	Plate 28	Cooking-pot showing a row of oval dimpling (photographed but not drawn; dimples measure 12 x 9mm)	64
			Plate 29	Internal view of cooking-pot showing squidge marks (Fig. 21.99)	64
			Plate 30	Internal view of cooking-pot showing squidge marks, same vessel as Pl. 28	65
			Plate 31	Row of dimpling showing fingernail marks (photographed but not drawn; dimples measure 8 x 8mm)	65
			Plate 32	Large storage jar (Fig. 28.141)	68
			Plate 33	Large storage jar detail of rim and decoration (Fig. 28.141)	68
			Plate 34	Fired clay from Hole Farm showing a grid imprint, the grid squares measure around 10 x 10mm	83

Plate 35	Fired clay showing a ribbon-like pattern, from the structure of kiln 2, measuring 60 x 35mm, thickness 35mm	83	Plate 45	Thin-section photomicrographs of medieval fineware ceramics from the Hedingham industry with hand-specimen fabric classification. All images taken in XP. Image width = 1.25 cm	140
Plate 36	A dowel-shaped hone from Hole Farm, perhaps used as a decorating or puncturing tool, and its impression in plasticine (left). The hone measures 11mm in diameter	84	Plate 46	Thin-section photomicrographs of medieval coarseware ceramics from the Hedingham industry with hand-specimen fabric classification. All images taken in XP. Image width = 1.25 cm	143
Plate 37	Vessel fragment showing a row of circular dimples, possibly made with the dowel-shaped hone photographed in Plate 36, as the size and shape of the dimples match the dimensions of the hone	86	Plate 47	Thin-section photomicrographs of medieval ceramics from the Hedingham industry. A. Coarseware fabric hcwstor. B. Rounded sand temper, C. Rounded sand temper, parallel elongate voids and high optical activity, D. Clay rich textural feature which may be unmixed base clay, E. Foliated, metamorphic polycrystalline quartz, F. Small rounded orange amorphous weathered inclusion. All images taken in XP, except F-PPL. Image width A = 1.25cm, B-D = 3.8mm, E = 2.4mm, F = 1.0mm	146
Plate 38	Internal view of the lower part of a London-style early rounded jug in Fabric 2 (Fig. 14.6) showing finger-marks and a complete absence of throwing lines	86	Plate 48	Thin-section photomicrographs of medieval ceramics from the Hedingham industry. A. Fine grey chert/flint inclusions, B. Fine elongate muscovite mica inclusions, C. Oxidised margin and reduced core, D. Elongate voids parallel to vessel margin. All images taken in PPL, except B-XP. Image width A = 1.0mm, B = 2.4mm, C-D = 3.8mm	147
Plate 39	Internal view of jug (Fig. 15.26) showing internal rilling and striations	87			
Plate 40	Internal view of jug (Fig. 15.26) showing internal rilling and striations	87			
Plate 41	Jug handle (Fig. 15.22) showing glaze on the broken edge	88			
Plate 42	The stack of cooking-pots from the oven of Hole Farm kiln 2 under excavation (excavator's trowel gives scale)	90			
Plate 43	Cooking-pot showing partially reduced and partially oxidised external surfaces; ht from rim to basal angle 140mm, rim diameter 180mm	91			
Plate 44	Internal view of the same cooking-pot photographed in Plate 43 showing light and dark banding; ht from rim to basal angle 140mm, rim diameter 180mm	91			

## List of Figures

Fig. 1	The location of the Hedingham industry within East Anglia: the main focus of production being in the area of Sible Hedingham, Halstead and Gosfield. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	2	Fig. 11	Location of production sites showing geology and modern geographical features, reproduced by permission of British Geological Survey. Licence No. 2003/113 British Geological Survey © NERC. All rights reserved	26
Fig. 2	Outline plan of Attwoods kiln redrawn from Lindsay (1958, 140)	6	Fig. 12	The location of the Hedingham kilns also showing the roads, rivers, parish boundaries and areas of ancient woodland. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	28
Fig. 3	Location of Hole Farm kilns and overall site plan showing orientation of kilns and east-west ditch in relation to extant features	14	Fig. 13	Pie charts showing the proportions of coarseware fabric colours by vessel form at Hole Farm, the percentages are calculated by weight (charts do not include the bulk recorded fabric (heddef) or the Thetford-style storage jars as these occur in their own storage jar fabric)	36
Fig. 4	Simplified plan of Hole Farm kilns 4 and 5	15	Fig. 14	The fineware typology: London-style early rounded, Nos 1-9; Scarborough-style early rounded jugs, Nos 10-20	40
Fig. 5	Profile of Hole Farm kilns 2 and 4/5 where they cut the ditch	15	Fig. 15	The fineware typology: Early rounded-style — general, Nos 21-2; Rouen-style, Nos 23-5; stamped strip, Nos 26-36;	
Fig. 6	Simplified plan of Hole Farm kiln 2	17			
Fig. 7	Simplified plan of Hole Farm kiln 3	17			
Fig. 8	Simplified plan of Hole Farm kiln 1	18			
Fig. 9	Plans and sections of the Shalford Road kiln (reproduced by kind permission of the Colchester Archaeological Trust)	22			
Fig. 10	Plan and section of a kiln at Starlings Hill based on E. Sellers' sketches	24			

	combed or reeded style, Nos 37–39;				
	white-slipped, Nos 40–41	41			
Fig. 16	The fineware typology: jugs not assigned a decorative style, Nos 42–45; vessel forms other than jugs, No. 46; Early Medieval Ware vessel forms, Nos 47–49; The coarseware typology: socketed dishes/bowls, Nos 50–53; large slightly flared bowls, Nos 54–55	48			
Fig. 17	The coarseware typology: large slightly flared bowls, Nos 56–62	50			
Fig. 18	The coarseware typology: large slightly flared bowls, Nos 63–65; vertical sided bowls, Nos 66–67; carinated bowls, Nos 68–69; handled bowls, No. 70	52			
Fig. 19	The coarseware typology: small thick-walled jars, Nos 71–74; cooking-pots with upright squared rims sub-form H4A, Nos 75–78; cooking-pots; with B4B rims, No. 79; with B2 rims, Nos 80–83	54			
Fig. 20	The coarseware typology: cooking-pots with H1 rims, Nos 84–90	56			
Fig. 21	The coarseware typology: cooking-pots with H1 rims, Nos 91–95 plain, Nos 96–100, decorated	58			
Fig. 22	The coarseware typology: cooking-pots with H2 rims, Nos 101–110	60			
Fig. 23	The coarseware typology: cooking-pots with H2 rims, Nos 111–119, all showing decoration	61			
Fig. 24	The coarseware typology: cooking-pots with H2 rims, Nos 120–122, all showing decoration; with H1/H3 rims, No. 123; with H3 (and H3A) rims, Nos 124–126; with E5 rims, No. 127; jars with combed decoration, Nos 128–129, small jars with perforated flanged rims, No. 130	62			
Fig. 25	Frequency of cooking-pot size ranges by rim type at Hole Farm, by percentage EVES	63			
Fig. 26	Frequency of cooking-pot size ranges by rim type at Clare Cottage, by percentage EVES	63			
Fig. 27	The coarseware typology: pipkins/small cooking-pots/jars, Nos 131–139	67			
Fig. 28	The coarseware typology: jars with an internal lid-seated rim, No. 140; large Thetford-style storage jar, No. 141	69			
Fig. 29	The coarseware typology: large Thetford-style storage jars, Nos 142–5; cooking-pot-shaped storage jars and undifferentiated storage jars, Nos 146–150	70			
Fig. 30	The coarseware typology: spouted pitchers and handled storage jars, Nos 151–152; spouted jugs No. 153; rounded jugs and jug fragments, Nos 154–163	72			
Fig. 31	The coarseware typology: jug handles, Nos 164–170; jug bodies and bases, Nos 171–172; jugs with combed decoration, Nos 173–178	72			
Fig. 32	The coarseware typology: jugs from Clare Cottage, Nos 179–182	76			
Fig. 33	The coarseware typology, jugs from Clare Cottage, Nos 183–188; jugs from other production sites, Nos 189–191; chimney				
	pots, Nos 192–193; curfews, Nos 194–198; skillet/pipkin handles, Nos 199–200; cylindrical base, No. 201	76			
Fig. 34	Overview map of fineware distribution in East Anglia by graduated symbols, showing county boundaries, old roads and routeways, and major rivers. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	102			
Fig. 35	Fineware distribution in Norfolk by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	103			
Fig. 36	Fineware distribution in East Anglia by site type. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	104			
Fig. 37	Fineware distribution in Cambridgeshire by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	106			
Fig. 38	Fineware distribution in Suffolk by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	107			
Fig. 39	Fineware distribution by graduated symbols plotted against medieval markets in Suffolk and Essex, also showing old roads; see gazetteer for names of markets. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	108			
Fig. 40	Coarseware distribution by graduated symbols showing county boundaries and routeways (all sites). Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	110			
Fig. 41	Fineware distribution in Essex by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	112			
Fig. 42	Fineware distribution in Bedfordshire and Hertfordshire by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	113			
Fig. 43	Fineware distribution in London by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602	115			



Fig. 44	Plot of the first two principal components arising from all the samples analysed in this project, showing separation into two broad groups, most probably representing different clay types (lower right: London Clay; upper left: Lambeth Formation). The first principal component had pottery richer in the rare earth elements, rubidium, and aluminium but lower in sodium, iron, manganese and magnesium towards the right of the figure (elements listed in descending degree of contribution to the principal component). Principal component two had pottery which was richer in the trace elements chromium, vanadium, scandium, and zinc and the major elements magnesium and iron towards the top of the figure	151	Fig. 47	Plot of the second and third principal components arising from all the fineware samples in Fabrics 1, 2, 3 and 5 analysed (Samples 1–21). Fabric 5 seems very consistent in its chemistry of all the examples, falling on the left, but other fabric groups are spread along the second (vertical) component. The second (vertical) component is correlated with some of the main clay-building elements such as aluminium, titanium and potassium and trace elements chromium, vanadium and rubidium. The third component is correlated positively with manganese, chromium and vanadium and negatively with strontium and sodium	155
Fig. 45	Boxplot showing the average and standard deviation of concentrations for aluminium for all the pottery groups analysed. Single sherds which deviate significantly from the rest of their group are shown as individual numbered points	154	Fig. 48	Plot of the second and third principal components arising from all the coarseware samples and the sandy orange finewares analysed (Samples 22–50). The orange sandy finewares form a group in the lower left, and the Halstead samples (hewcor) are in the upper left. The second (vertical) component is correlated with scandium, magnesium, vanadium and chromium. The third component is correlated positively with sodium and magnesium and negatively with lithium, iron and aluminium	156
Fig. 46	Boxplot showing the average and standard deviation of concentrations for magnesium for all the pottery groups analysed. Single sherds which deviate significantly from the rest of their group are shown as individual numbered points	154			

## List of Tables

Table 1	Overview of production sites	4	Table 10	Fineware ceramics from the Hedingham pottery industry submitted for thin-section analysis, with hand-specimen fabric classification and other information	139
Table 2	Clare Cottage summary of stratigraphic levels	9	Table 11	Coarseware ceramics from the Hedingham pottery industry submitted for thin-section analysis, with hand-specimen fabric classification and other information	142
Table 3	Hole Farm fabric variants by kiln quantified by weight in grams (and showing sherd totals in brackets)	35	Table 12	List of samples and full set of ICPS analyses obtained in this project	152
Table 4	Concordance of fabric codes and suggested terms for future recording of Hedingham Ware fabrics	36	Table 13	ICPS analysis: comparison of the average and standard deviation of fineware Fabrics 1, 2, 3 and 5; comparative whiteware clays; coarseware fabrics; some significant fabric groups; and earlier analyses by neutron activation of 15th century Colchester-type wares from Great Horkesley	157
Table 5	Fineware decorative style by fabric quantified by weight (in grams) and sherd count from all quantified production sites	45	Table 14	List of sherds of glazed pottery analysed by XRF	161
Table 6	Hole Farm cooking-pot rim frequencies in chronological order by kiln, calculated from sherd count, weight and EVES	55	Table 15	Semi-quantitative XRF analyses of the glazes on Hedingham pottery	162
Table 7	Clare Cottage cooking-pot rim frequencies in chronological order, calculated from sherd count, weight and EVES	55	Table 16	Documentary evidence of potters	164
Table 8	Coarseware and fineware faults by production site/kiln quantified by number of examples	89	Table 17	Documentary evidence of tilers	166
Table 9	Comparison of Hedingham Coarseware products to those of Mile End, near Colchester, South Hertfordshire Greyware and Hollesley-type ware from Suffolk	96	Table 18	Documentary evidence of brickmakers	167

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## Summary

This is a study of the Hedingham pottery industry based in north-central Essex. Its main products were decorated and glazed finewares, mainly jugs, and, typically, grey-firing coarsewares, produced between the 12th and 14th centuries. The study comprises two main components, a synthesis of Hedingham Ware production, and the distribution of Hedingham Ware within greater East Anglia. The industry comprises some fourteen known production sites, most of which are clustered around the triangle formed by the settlements of Sible Hedingham, Gosfield and Halstead, with evidence for two production

sites further west. Each site is published in a gazetteer, giving the geographical background, a description of the site, and a brief summary of the types of pottery found. The most important production site is Hole Farm, where two nests of superimposed kilns were excavated, revealing a very large assemblage of coarseware pottery and modest amounts of fineware. The evidence of production at some of the other sites is less than comprehensive as many were excavated in the early to mid 20th century, leaving only scant records, but together these sites form a pattern showing what factors affect the siting of a kiln. Other

evidence is brought together to place the pottery industry in its geographical setting.

The pottery from Hole Farm and the other production sites has been used to create a typology of fabrics, vessel forms, sub-forms and decoration, for both fine and coarsewares. The fabrics have been defined visually and by thin-section and ICPS analyses. The glazes have been subjected to XRF analysis. The origins and affinities of the industry are examined and, for the finewares, largely corroborate the influences already outlined by Cotter and others. The study of distribution, which also builds on Cotter's earlier work (Cotter 2000, 88–90) shows the northern half of Essex, south-west Suffolk and south Cambridgeshire to be main areas of distribution, and it is widely but sparsely distributed around the Fens. Coastal distribution is also significant. Smaller quantities reached

Norfolk, Hertfordshire, Bedfordshire, the London area and parts of south Essex. The routes used and the possible mechanisms of distribution are also discussed.

The industry appears to have evolved from the early medieval tradition, although it has similarities with Late Saxon Thetford-type ware. The coarsewares are most similar to those produced near Colchester and show some similarities to coarsewares produced in Suffolk. The Hedingham industry did not die out in the 14th century but became subsumed into the sandy orange ware tradition and lost its identity as Hedingham Ware. Much documentary evidence was uncovered relating to pottery and other clay-working industries in the late medieval and post-medieval periods, but unfortunately there is little documentary evidence for the main period of Hedingham production.

## Résumé

Cette étude porte sur l'industrie de la poterie Hedingham qui était implantée dans le centre-nord de l'Essex. Cette industrie produisait surtout des terres cuites fines qui étaient décorées et glaçurées; il s'agissait pour l'essentiel de cruches et généralement de pièces de terre cuite grossières qui donnaient une couleur grise après la cuisson. Ces poteries furent fabriquées entre le 12<sup>ème</sup> et le 14<sup>ème</sup> siècle. Cette étude comprend deux grandes parties. La première est une synthèse de la production de Hedingham Ware et la seconde traite de la diffusion de Hedingham Ware dans la région de l'East Anglia prise dans son sens large. L'industrie comprend quatorze sites de production connus, la plupart étant regroupés autour du triangle formé par les implantations de Sible Hedingham, Gosfield et Halstead. Il existe également des preuves de deux autres sites de production plus à l'ouest. Chaque site est référencé dans un répertoire toponymique qui indique le contexte géographique et fournit une description du site ainsi qu'un bref résumé des types de poterie découverts. Hole Farm représente le site de production le plus important. Il contenait deux ensembles de fours superposés dont la fouille a révélé une très grande quantité de poteries en terre grossière et un nombre limité de pièces en terre fine. En ce qui concerne plusieurs autres sites de production, les preuves rassemblées sont loin d'être complètes car beaucoup ont été fouillées entre le début et le milieu du 20<sup>ème</sup> siècle et n'ont laissé qu'une quantité limitée de données. Toutefois, ces sites constituent une référence indiquant les facteurs qui déterminent l'emplacement d'un four. D'autres preuves ont été réunies pour placer l'industrie de la poterie dans son environnement géographique.

La poterie de Hole Farm et des autres sites de production a permis de dégager une typologie de la matière, de la décoration, des formes de vaisselle avec ses variantes, qui s'applique aussi bien aux pièces en terre fine

qu'aux pièces en terre grossière. Les différentes matières ont été définies visuellement. De fines sections ont été examinées et elles ont également été soumises à des analyses ICPS (Induced Coupled Plasma Spectrometry). Les origines et les affinités de l'industrie de la poterie ont été examinées et dans le cas des terres cuites fines; les résultats obtenus confirment largement les influences déjà exposées par Cotter et par d'autres chercheurs. Un ouvrage précédent de Cotter (Cotter 2000, 88–90) sert de base à l'étude sur la diffusion de la poterie. Celle-ci montre que la poterie s'est principalement diffusée dans la moitié nord de l'Essex, le sud-ouest du Suffolk et le sud du Cambridgeshire. Elle est également présente dans la région des Fens mais en quantité réduite. De petites quantités de poteries ont atteint le Norfolk, le Hertfordshire, le Bedfordshire, la région de Londres et certaines parties du sud de l'Essex. Les itinéraires suivis et les mécanismes possibles de diffusion ont fait l'objet d'analyses.

Il semble que l'industrie de la poterie a connu une évolution depuis les débuts de la tradition médiévale, même si elle présente des similitudes avec la production de Thetford Ware de la période saxonne tardive. Les poteries en terre grossière sont très proches de celles qui ont été produites près de Colchester et elles présentent des similarités avec celles qui proviennent du Suffolk. L'industrie de Hedingham n'a pas disparu au 14<sup>ème</sup> siècle mais elle s'est intégrée dans la tradition de la poterie sableuse de couleur orange et elle a cessé d'être identifiée comme poterie de type Hedingham Ware. Nous disposons d'un grand nombre de preuves documentaires concernant la poterie et les autres industries de l'argile datant de la fin du Moyen Âge et de la période post-médiévale, mais malheureusement il existe peu de données documentaires sur la période principale de la production de Hedingham. (Traduction: Didier Don)

# Zusammenfassung

Der Bericht untersucht die in Hedingham in der Mitte von Nord-Essex ansässige Keramikindustrie. Ihre wichtigsten Erzeugnisse waren verzierte und glasierte Feinkeramiken, überwiegend Krüge, sowie die typischere graue Grobkeramik, die beide zwischen dem 12. und 14. Jahrhundert angefertigt wurden. Die Studie besteht aus zwei Hauptteilen: einer Zusammenfassung der Herstellung von «Hedingham Ware» und einer Schilderung ihrer räumlichen Verteilung im Großraum East Anglia. Der Industrie werden rund vierzehn bekannte Produktionsstätten zugeordnet, die meisten rund um das Siedlungsdreieck Sible Hedingham, Gosfield und Halstead. Darüber hinaus fanden sich Hinweise auf zwei weiter westlich gelegene Herstellungsorte. Der Bericht beschreibt den geografischen Hintergrund sowie die einzelnen Produktionsstätten und gibt einen Überblick über die Art der gefundenen Keramik. Die wichtigste Stätte ist Hole Farm, wo zwei Gruppen ineinanderliegender Brennöfen ausgegraben wurden, die enorme Mengen an Grobkeramik und eine überschaubare Zahl an Feinkeramik aufwies. Die Produktionsspuren an einigen der anderen Orte sind weit weniger umfangreich, da viele anfangs bis Mitte des 20. Jahrhunderts ausgegraben wurden und nur dürftige Aufzeichnungen dazu existieren. Zusammen bilden diese Orte jedoch ein Muster, das zeigt, welche Faktoren die Standortwahl für einen Brennofen bestimmten. Die Zusammenfassung weiterer Befunde dient dazu, die Keramikindustrie geografisch einzuordnen.

Anhand der Keramikfunde von Hole Farm und der anderen Herstellungsorte wurde eine Typologie erstellt, die die Strukturen, Gefäßformen, Unterformen und Verzierungen der Fein- und Grobkeramiken erfasst. Die Strukturen wurden optisch sowie durch Dünnschliff- und ICP-Analysen (induktiv gekoppelte Plasmaspektroskopie)

bestimmt, während die Glasuren mittels XRF-Analysen (Röntgenfluoreszenz) untersucht wurden. Der Bericht befasst sich mit den Ursprüngen und Affinitäten der Industrie und bestätigt in Bezug auf die Feinkeramik überwiegend die bereits von Cotter und anderen Autoren beschriebenen Einflüsse. Die Untersuchung der räumlichen Verteilung, die ebenfalls auf den frühen Arbeiten von Cotter fußt (Cotter 2000, 88–90), zeigt, dass die Keramik vornehmlich in der Nordhälfte von Essex, im Südwesten von Suffolk und im Süden von Cambridgeshire auftritt. Zudem gibt es spärliche Funde in einem weitläufigen Gebiet der Fens. Auch an der Küste ist die Verbreitung nennenswert. Kleinere Mengen gelangten nach Norfolk, Hertfordshire, Bedfordshire, in den Londoner Raum und in Teile des südlichen Essex. Der Bericht erörtert die benutzten Routen und möglichen Verbreitungsmechanismen.

Die Industrie ging augenscheinlich auf eine frühmittelalterliche Tradition zurück, obwohl auch Ähnlichkeiten mit der spätangelsächsischen «Thetford-type ware» festzustellen sind. Die Grobkeramik kommt den bei Colchester hergestellten Erzeugnissen am nächsten und weist gewisse Ähnlichkeiten mit grobkeramischen Waren aus Suffolk auf. Die Fertigung in Hedingham wurde im 14. Jahrhundert nicht eingestellt, ging jedoch in der Tradition der «sandy orange ware» auf, wodurch ihre Identität als «Hedingham Ware» verloren ging. Obwohl zahlreiche Schriftquellen zur Keramikindustrie und zu anderen tonverarbeitenden Gewerbezweigen im Spätmittelalter und der frühen Neuzeit gefunden wurden, gibt es nur sehr wenig Quellenmaterial für die Hauptperiode der Produktion in Hedingham.

(Übersetzung: Gerlinde Krug)

# Chapter 1. Introduction

## Background

The nucleus of the project comprises a large assemblage of pottery and paper archive from a production site at Hole Farm to the south of Sible Hedingham. This was excavated by John and Elizabeth Sellers between 1971 and 1973 and much of this material was already in the possession of Essex County Field Archaeology Unit. The Sellers' archive also included small amounts of pottery and records from other production sites in the Sible Hedingham area discovered in the 1930s and the 1950s. In addition to this material, Braintree Museum housed a considerable group of production waste from a site at Potter Street, Sible Hedingham, and there is a newly discovered kiln excavated by Colchester Archaeological Trust. Accounts of the excavation of three of the kiln sites were published in 1958 by local archaeologist Jack Lindsay in his book *Discovery of Britain* (which despite the title is actually about the archaeology of the Hedingham area).

Not all the archive is of high quality however, with some of the earliest excavations having little in the way of archive at all, and two sites having no surviving pottery assemblage available for study. In addition, of the sites with substantial pottery assemblages, most comprise coarseware with little of the more important fineware pottery. However, the existing archive constitutes a large body of evidence on the Hedingham industry and it was decided to bring all this material together and write a synthesis of the Hedingham industry including a study of the distribution of its products. Some work on the distribution of Hedingham Fineware has already been undertaken by Cotter (2000, 88–90) and this study builds on Cotter's work. The project was funded by English Heritage. The location of Sible Hedingham, Gosfield and Halstead, which form the focus of pottery production, is shown on Fig. 1.

## Research aims and objectives

The main aim of the study was to characterise this industry and its output so that Hedingham products can be more readily identified at consumer sites, and to increase our knowledge of medieval pottery in Essex and East Anglia. The aim was also to place the industry in its geographical setting both in terms of the siting of the kilns and in the distribution and marketing of its products. It was also felt important to examine the origins and affinities of this ware and shed light on its demise.

The main objectives to achieve these aims were:

- to create a typology of fabrics, vessel forms, sub-forms and decoration. This was largely based on the assemblage from Hole Farm, with additional material from other sites, especially Clare Cottage, and for the fineware, Starlings Hill
- to examine the vessels for evidence of methods of manufacture and manufacturing faults as this would

give clues as to how the industry was organised and the levels of technology

- to examine the origins and affinities of Hedingham Ware, both the finewares and the coarsewares, and to determine how practical it is to differentiate Hedingham Coarseware from coarsewares produced by other industries, as unlike the fineware, coarsewares tend not to be readily distinguishable from one another. This also has implications for examining their distribution
- to look at the extent of the industry and the geographical factors that determine the siting of a production centre (made possible by the large number of production sites) and examine how pottery manufacture may have related to other local industries
- to study the distribution of Hedingham Ware across East Anglia, producing updated distribution maps and a gazetteer of find-spots based on Cotter's original work and from this to work out the mechanisms of distribution, i.e. which routes were used, how it was distributed and possible relationships with other traded goods

## Methodology

The pottery has been recorded using Cunningham's typology for post-Roman pottery in Essex (Cunningham 1985, 1–16) and some of Cunningham's vessel form and rim form codes are quoted in this report. Vessels are also categorised according to the Medieval Pottery Research Group's classification (MPRG 1998). The cooking-pot rims follow a chronology outlined by Drury (*et. al.* 1993, 81–4). All but the least significant pottery has been recorded onto Essex County Council's EFASYS database. Occasionally the database record number is quoted in the text, always prefixed 'r.', the record number is also quoted in the catalogue of illustrated material. The methods of quantification used are sherd count, weight in grams and estimated vessel equivalent (EVES) obtained by adding together the percentage of vessel rim present. Other methodologies used are described in more detail in the relevant chapters. The fineware typology is based on that devised by John Cotter in his study of Hedingham Ware from consumer sites at Colchester (Cotter 2000, 75–91).

## Definition of terms

Most terms are defined in the relevant chapters, but some basic terms are described here at the outset. As noted above, most vessel forms are described following the MPRG classification. However, in this report, the term cooking-pot rather than jar, as preferred by the MPRG, is used. This is because cooking-pots are a specific shape, being squat, with a wide mouth and sagging base and when found at consumer sites often show fire-blackening consistent with use as a cooking vessel.



Figure 1 The location of the Hedingham industry within East Anglia, the main focus of production being in the area of Sible Hedingham, Halstead and Gosfield. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

The pottery is divided into three main types; Hedingham Fineware/glazed ware, Hedingham Coarseware and Early Medieval Ware. Within the Hedingham Ware industry (unlike many other medieval pottery industries) there are distinct differences between the fineware and the coarseware. The classic Hedingham Fineware, Fabric 5, is made from a fine fabric with no added sand-temper. It is not merely a distinction between glazed and decorated wares and utilitarian kitchen wares. However some of the glazed and decorated wares, especially at the Hole Farm and Starlings Hill production

sites, are in sandy fabrics, hence the classification Hedingham Fineware/glazed ware.

Early Medieval Ware is a rough, semi-handmade ware, often fired in clamp kilns that appeared c.1000. It was contemporary with the better quality, wheel-thrown Late Saxon wares, and eventually replaced them in the mid 12th century (Hurst 1976, 342). It normally has a coarse sandy fabric which fires to a red-brown with a grey core. Early Medieval Ware was excavated from several production sites, some of which appears to represent

earlier occupation of the site and some represents early Hedingham production.

Hedingham Coarseware forms part of the medieval coarseware tradition (described by Drury *et al.* 1993, 81), which evolved out of the early medieval ware tradition c.1200. It is less coarse and thinner-walled than Early Medieval Ware, and when found at consumer sites is typically grey-firing, but at the Hedingham production sites, a large variation in colour was encountered.

### **Archive and publication**

All the pottery and associated archive is deposited at Braintree Museum, apart from a small amount of pottery and archive from Crows Cross and Holy Trinity production sites, and Hole Farm cooking-pot Nos 88 and 89, which are housed at Colchester Museum. The digital archive has been deposited with the Archaeological Data Service (ADS). A popular booklet based on this publication has been published by Braintree Museum (Walker 2011).

<i>Site</i>	<i>Site type</i>	<i>Parish</i>	<i>Diagnostic fineware</i>	<i>Diagnostic coarseware</i>	<i>Suggested date range</i>
Acacia House	kiln	Gosfield	London-style early rounded jug	Cooking-pots with H1 rims	Mid 12th to 14th C
Attwoods	Kiln	Greenstead Green	Pottery assemblage not located		See gazetteer entry
Blackmore End	Kiln	Wethersfield	No fineware	Cooking-pots with H3 rims	Late 13th or 14th C
Broak's Wood	Find spot	Halstead	Stamped strip jug	Coarseware jug	Early 13th to 14th C
Clare Cottage	Waster dump	Sible Hedingham	Sherds with Rouen-style decoration	Complete rounded jugs; cooking-pots with H2, H1 and the later H3 and E5 rims, also thin-walled jar forms and bowl fragments	Late 13th to 14th C, plus evidence of earlier production
Crows Cross	Kiln	Sible Hedingham	No fineware	Thetford-style storage jar, cooking-pots with B2, H2, and H3 rims, thin-walled jars	c. 1200–late 13th to 14th C
Foxborough Hill	Kiln	Sible Hedingham	Rim of stamped strip jug and ribbed handle ?from pear-shaped/biconical jug,	Fragments from storage jars, a chimney pot, a thumbled rim dish, curfews, a spouted pitcher, jugs, cooking-pots with H2 and H1 rims, and a rounded jar	12th to 14th C
Hawkwood manor	Waster dump	Sible Hedingham	Pottery assemblage not located		-
Hole farm	Kiln complex	Sible Hedingham	An early type of fineware is present along with classic smooth Hedingham Fineware, early rounded, Rouen-style and stamped strip jugs present, plus examples of flat wares	Coarsewares comprise a single mainly grey-firing, or sometimes oxidised or partially oxidised fabric, although a finer version also occurs; vessel forms include socketed bowls, large bowls with sometimes a single hole below the rim, small thick-walled jars, cooking-pots with upright, B2, H2 and H1 rims, storage jars including Thetford-style jars, and jugs; an early medieval fabric was also produced	Mainly mid 13th C, plus earlier production
Holy Trinity	Kiln	Halstead	Single glazed and decorated sherd but in a coarseware fabric	A very coarse version of the coarseware fabric was manufactured here, vessel forms comprise mainly bowls, cooking-pots with H1 rims, jug fragments	12th to earlier 13th C
Kemp's Wood	Ploughed out kiln	Gosfield	No fineware	Cooking-pot fragments with H3 rims, ribbed jug handles	Late 13th to 14th C
Lamb Lane	?kiln	Sible Hedingham	Pottery assemblage not located	The archive notes the presence of storage jars	-
Shalford Road	Kiln	Great Bardfield	Fragments of stamped strip jugs	Large bowls, jug fragments, cooking-pots mainly with H1 rims, also examples with H3 rims	Later 12th to 14th C with most evidence for production in the 13th C
Starlings Hill	Kilns	Sible Hedingham	Standard fineware fabric, with occasional examples of early glazed fabric and an example of Hedingham Sandy Orange Ware; early rounded, stamped strip, combed and reeded style and white slip jugs, plus examples of flatwares	Coarseware fabrics similar to Hole Farm, vessel forms as Hole Farm with the addition of later H3 and E5 rims	Later 12th to 14th C, with most pottery datable to 13th C
Starlings Hill Ditch	Find spot	Sible Hedingham	Mainly Hedingham Sandy Orange Ware, with some classic Hedingham Fineware; vessel forms: jugs as found at Starlings Hill kiln	H2 cooking-pot in finer version of coarseware fabric	Latest pottery is late 13th to 14th C

Table 1 Overview of production sites



# Chapter 2. Gazetteer of production sites and the geographical setting of the Hedingham industry

## Introduction

The gazetteer lists the production sites in alphabetical order, and describes the location, the excavation, including types of kiln present and the local geology. It also summarises the types of pottery found and the likely date of the site. The Essex Historic Environment Record (EHER) number is also quoted. The gazetteer is followed by a section on the geographical setting which explores the natural history of the Hedingham pottery industry and how it interacted with the medieval landscape.

There appears to be some confusion in the original archive over three of the sites that were excavated in the 1930s, at Crows Cross, Attwoods and Lamb Lane, and this has only been partially resolved. The evidence for Roman and 19th century pottery manufacture is also included as this provides background information on potting in the area over a long period of time. The kiln types are classified according to Musty's typology of medieval pottery kilns (Musty 1974, 43–49). There are two basic types of kiln; an oven with a single stokehole at one end, or an oven with two opposed stokeholes. All types have a pedestal, or support, inside the oven. The vessel types, rim form codes and fabric codes are explained in the relevant chapters (Chapters 3 and 4). A location map of the production sites and underlying geology is shown on Fig. 11. The sites are also plotted onto an OS map on Fig. 12. The description of the geology is based on the British Geological Survey Map of the Braintree area (BGS Sheet 223). Some original descriptions of excavated kilns and pottery give measurements in feet and inches; these have been converted to metric in the gazetteer. An overview of the production sites has been shown as a table (Table 1).

## Acacia House

**Site type:** Kiln of unknown type

### Location and background

NGR TL 7849 3022

EHER 6919

Parish: Gosfield

The EHER records a pottery kiln in the garden of Acacia House, Gosfield, owned by Mr W. Hewitt. The map on the EHER shows the house to be on the north side of a minor road that leads eastwards from Gosfield Corner to Halstead. The map also shows the house to be very close to a stream that drains into Bourne Brook, which in turn drains into the River Colne at Earls Colne.

### Geology

The site lies on the border between outcrops of boulder clay (described as the Lowestoft Formation on Fig. 11) and Kesgrave Sands and Gravels, with a narrow seam of London Clay about 250m distant.

## Site description

The site was found in 1955. Otherwise there is very little information; Lindsay notes that a kiln was found when a water supply was being laid to the house (Lindsay 1958, 135–6). He writes that the kiln was dug up in the garage drive, 0.6–1m down and that only part of it was accessible, which implies that some of the kiln may still be there. There is no mention of the structure of the kiln or its products. Lindsay does note however, that production concentrated on the 'globular' cooking-pot, which varied in size, but hardly in shape, and that tall, glazed jugs about 380mm high with a globular body and rilled neck were made there (Lindsay 1958, 151). The site code is ACH55.

## The pottery

Judging from Lindsay's description, only a small amount of the pottery excavated is present in the archive.

### Finewares

The most important find is a complete but restored London-style early rounded jug (Fig. 14.1; Pl. 8) (comprising forty-five sherds weighing 3028g). This is almost certainly the one mentioned by Lindsay and sketched in his book (Lindsay 1958, 114, 151). The remaining finewares comprise only two sherds (wt 30g), one from the neck, and one from the shoulder of a jug. Both sherds have a greenish pitted glaze and the neck sherd shows incised horizontal lines.

### Coarsewares

Most of the coarsewares are in oxidised or partially oxidised fabrics and are comparable to those from Hole Farm. They total sixteen sherds, weighing 674g. Vessel forms comprise a fragment of flared bowl, cooking-pots with H1 rims, one intermediate between the H1 and E5 rim, and one decorated with a vertical thumb applied strip originating at the neck. There are also jugs with squared rims (Fig. 33.189). One of the cooking-pot rims shows accidental glaze, with clay adhesions on the underside of the rim indicating it is a waster, otherwise there is no evidence that the pottery is from a production site.

## Dating

The London-style early rounded jug can be dated according to Cotter's typology, to c. 1140/50 to 1200. The H1 cooking-pot rims are comparable to those at Hole Farm and are 13th century types, with the one intermediate rim dating from the late 13th to 14th centuries. The surviving assemblage obviously does not form a homogeneous group, and may represent several periods of production.

## Attwoods

**Site type:** Single kiln with pear-shaped oven and surviving stokehole, Musty's type 1b

### Location and background

NGR TL 8027 2966 EHER No.8602  
Parish: Greenstead Green and Halstead rural

This kiln was located to the west of Halstead, just to the south side of the Halstead to Braintree road (A131) and close to the junction with Russell's Road. Unlike other sites, it is not located in a valley, but is between the valleys of Bourne Brook and the River Colne. It was excavated by J. Pudney in 1934 and came to light when a trench for a water-pipe was dug, destroying a section of the kiln.

### Geology

The site is situated on boulder clay (the Lowestoft Formation). Deposits of Kesgrave Sands and Gravels, London Clay, alluvium and river terrace deposits are located in the adjacent valleys, lying between 500m and 1.25km distant. There is also a head deposit (hillwash consisting mainly of sandy or silty clays) 1km to the south-east.

### Site description

An account of the excavation is published by Lindsay (1958, 136–7, 140), and is summarised here along with the drawing he made of the kiln (Fig. 2). He describes the kiln as elliptical, 2.1m long, 1.35m wide, and 0.75m deep and dug directly into the clay, a yellowish-brown pug, almost free from stone and chalk. There was one stokehole, which was dug almost to the depth of the kiln floor and was sited to the west, as Lindsay remarks, perhaps to catch the prevailing wind. He also comments that the stokehole was big enough for a man to stand in.

No superstructure survived, only the lower part of the kiln was intact, about 15cm (6 inches) in height. It was pear-shaped with a firing area of about 1.8m x 1.5m and lined with a mixture of chalk and clay, burnt hard from



Plate 1 Photograph of the Musty type 1b kiln at Crows Cross/Attwoods, from side

repeated firings, and which had been applied by hand to a depth of 25mm (presumably here Lindsay is talking about the oven). The tongue or septum (presumably the pedestal) was 1.2m long and 15cm high. As this was also lined it must have survived intact, although the end was destroyed by the cutting for the water-pipe trench. According to Lindsay, the pedestal showed no signs of being used to support a permanent floor but may have held a temporary clay-coated hurdle that was renewed after each firing. Plates 1 and 2 are purported to be from the Crows Cross kiln, but the fact that there is a drainage pipe running across at exactly the same point as Lindsay's sketch map of the Attwoods kiln suggests the two sites may have become confused.

A salvage excavation in 1993, by A.C. Towle, at the junction of Russell's Road and the A131, did not reveal earlier kilns, but evidence of medieval occupation perhaps contemporary with the kilns (EHER 8602).

### The pottery

No pottery from this site is present in the archive and none could be found at any of the museums in the Hedingham

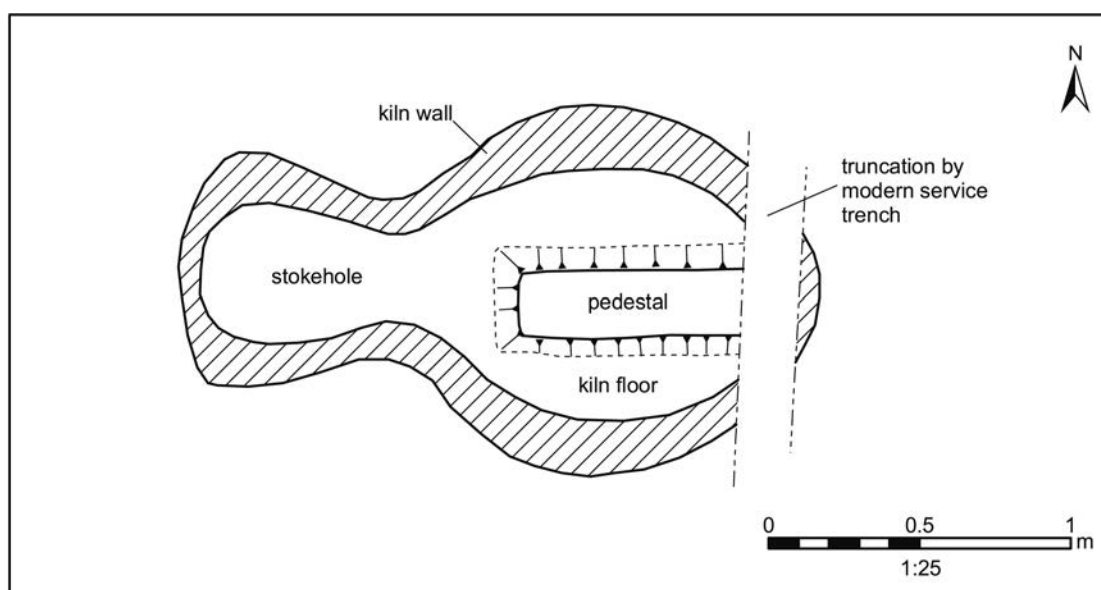


Figure 2 Outline plan of Attwoods kiln redrawn from Lindsay (1958, 140)



Plate 2 Photograph of the Musty type 1b kiln at Crows Cross/Attwoods, looking towards the back of the kiln

area, although both Lindsay (1958, 137) and the EHER entry state that about 2cwt (100kg) of pottery was excavated (although again there may have been some confusion with Crows Cross). According to Lindsay (1958, 137) bowls, jugs, lard-pots (perhaps storage jars) and coarsely glazed jugs, similar to those at Acacia House were produced.

#### Dating

If the glazed jugs really are like the Acacia House jug, then this would give a second half of 12th to early 13th century date for production. There is no other dating evidence.

### Blackmore End

**Site type:** Late medieval kiln of unknown type with possible earlier production

#### Location and background

North kiln NGR TL 7354 3147

South kiln NGR TL 7345 3144

Parish: Wethersfield

EHER 689

Two kilns were discovered at Blackmore End in 1967 when they were disturbed by deep ploughing. This is all the information about the site that could be found. It is an outlying site to the west of Sible Hedingham and lies between the Sible Hedingham sites and the most outlying production site at Shalford Road. The site is close to a stream which joins Bourne Brook, a tributary of the River Colne. It is also close to the River Pant. Unlike the main group of kilns, the site is not located on a main road. Pottery was also found during fieldwalking in this area in 2005, at Bull Field (NGR TL 7350 3147) and Millennium

Circle Field (NGR TL 7310 3170), at Lower Green Farm, Blackmore End.

#### Geology

The kiln sites are located on boulder clay (the Lowestoft Formation), but are at the head of a stream valley containing Kesgrave Sands and Gravels, head deposits and alluvium.

#### The pottery

This kiln site was identified as a Hedingham Ware production site at the assessment stage, but on receiving the pottery from Colchester Museum (Museum Accession number OS.11.1968/1), the pottery (about 2kg in total), was found not to be Hedingham Ware, but a type of late medieval sandy orange ware similar to Colchester Ware (as described by Cunningham 1982a and Cotter 2000, 107–180). Small amounts of similar pottery (less than 1kg in total) were found during the fieldwalking in 2005. This assemblage is briefly described under Chapter 8 ‘The demise of the industry’ below. However, amongst the late medieval pottery was the occasional Hedingham Coarseware sherd including examples of H3 cooking-pot rims.

#### Dating

The presence of H3 cooking-pot rims indicates production in the late 13th to 14th centuries. This is corroborated by documentary evidence which notes potters in Wethersfield in 1327 and 1351 (see Ryan, Appendix 4, p.164–5).

### Broak’s Wood

**Site type:** Find-spots

#### Location and background

Parish: Halstead (bordering on Gosfield and Sible Hedingham)

Broak’s Wood lies to the north of the village of Gosfield and is enclosed by the triangle formed by the Hedingham road (A1017), the Halstead road (A1124) and a minor road that joins the Gosfield to the Halstead road (on which the Acacia House kiln site is located) (see Fig. 12). The Foxborough Hill and Crows Cross sites are to the north and also enclosed within this triangle. Several find-spots are listed in the EHER (below) however a magnetometer survey carried out in 1969 failed to find a kiln. EHER Nos 6923–4 and 18791 have the same six figure grid reference but three separate locations are shown on the location plan on the EHER, two lie along a ditch/stream which drains into the River Colne and a third is in a field just to the south-east of these find-spots. Elizabeth Sellers’ archive gives a more accurate eight figure grid reference for the main find-spot of 7955 3145 and clearly shows the two find-spots along the ditch. These find-spots are shown as a single location on Fig. 11. The second location (EHER 6920 is slightly to the south-west (and is shown separately on Fig. 11). Clay-pits of indeterminate age exist near the pottery scatters (Simon Leatherdale pers. comm.)

### Geology

The main find-spot lies on a junction between boulder clay and Kesgrave Sands and Gravels. EHER 6920 is on boulder clay (the Lowestoft Formation).

### The pottery

NGR TL 791 312 EHER No. 6920  
13th century pottery found during ditching in 1964

NGR TL 795 314 EHER No. 6923  
medieval sherds found in 1969

NGR TL 795 314 EHER No. 6924  
green-glazed 13th century sherds

NGR TL 795 314 EHER No. 18791  
casual finds by C. Bird including fineware jugs and kiln wasters

Various find-spots are recorded on the EHER and are listed above; none of the entries describe the pottery in any detail. A small amount of pottery collected by Simon Leatherdale of the Forestry Commission has been briefly described by Walker (1992a, 94), none is illustrated. Unfortunately the grid references for this collection are not given, but may be the same site as EHER 18791 (the pottery description is the same, but the name of the finder is different). The pottery comprises thirty-four sherds weighing 488g, nearly all of which is Hedingham Ware including some wasters. Faults comprise clay adhesions, blistered or matt, powdery glazes, accidental glaze on coarsewares, and glaze on breaks. More fineware than coarseware was collected.

### Finewares

Finewares comprise mainly examples of stamped strip jugs, with one example of a pinched applied strip.

### Coarsewares

The only coarseware vessel form noted was a decorated jug, which unusually has a mottled green glaze, possibly not accidental.

### Dating

The stamped strip jug is a long-lived form indicating an early 13th to 14th century date.

## Clare Cottage

**Site type:** Waster dump

### Location and background

NGR TL 7839 3356 EHER No. 6858  
Parish: Sible Hedingham

The site, located in the back garden of Clare Cottage, 5 Potter Street, Sible Hedingham, was excavated in 1973 by J. Tildesley of the erstwhile Passmore Edwards Museum. Potter Street is part of the main road through Sible Hedingham, and the site is situated at the southern end of the village, close to the junction with Lamb Lane. In the present-day the bulk of the settlement lies to the north, but prior to the 20th century, Potter Street was part of the main settlement of Sible Hedingham (Corder-Birch 1988, 19). The site (along with the rest of Sible Hedingham) is on the western side of the Colne valley. The River Colne flows

into Colchester, but is not navigable at this point (Cotter 2000, 90).

### Geology

The site lies on the junction of outcrops of boulder clay, London Clay, and Kesgrave Sands and Gravels. River terrace deposits and alluvium lie about 250m to the east. This site is the closest to a mapped outcrop of Lower London Tertiaries (these comprise the Thanet Sand Formation and the Lambeth Group) at the North of Sible Hedingham, at TL 7806 3477 (Marks 1981, 4) around 1250m north.

### Site description

No kiln was found and the material is thought to represent production waste. The site was recorded by Tildesley as a series of levels (L). No plans, context lists, or matrices were found amongst the archive. The levels, quantity of pottery and other finds are recorded in Table 2.

Most pottery came from L7, where there are several complete or semi-complete vessels and very little contamination by non-pottery finds, suggesting this is the least disturbed level. However, there are some vessels in L7 that are represented only by fragments, and that may therefore be residual or intrusive. L6 produced the second largest assemblage but had a high proportion of non-pottery finds suggesting contamination from later levels. Sherd linkages between L6 and 7, and the similarity of vessel forms indicate that L6 and L7 were deposited at the same time.

The assemblage from L8 comprises a single complete (but restored) coarseware jug Fig. 32.179 and finds from L9 comprise part of jug Fig. 32.181. In comparison with L6 and 7, levels 1–5 contained smaller amounts of kiln material, with a smaller sherd size, and a higher ratio of non-pottery/post-medieval/modern finds to kiln pottery (especially L2), suggesting the kiln material is residual and these levels represent later occupation, perhaps associated with the extant 17th to 18th century timber-framed house on this site (EHER No. 29167).

As there were no remains of kiln structures, it is possible that the pottery is from a consumer site and not a production site. Evidence that it is from a production site comes from the fact that only a very small amount of other artefact types are present and that some sherds show manufacturing faults, consistent with kiln waste.

### The pottery

The pottery has been entered onto the EFASYS database under its original site code of SH73. All the finewares from all levels (see below) have been recorded on the database but not the coarsewares from the upper levels (1–5) as some of this pottery may represent use, not manufacture. However, a basic quantification of sherd numbers and weight of coarseware was carried out for the upper layers (shown on Table 2). Clare Cottage produced the second largest assemblage (excluding the missing assemblages) and is therefore the most important group after Hole Farm. A total of 88kg of pottery was excavated, nearly all of which is Hedingham Coarseware, the fineware accounting for only 0.4% of the total.

### Finewares

Most of the fineware has the typical smooth, micaceous, creamy orange fabric, although there are a few sherds

<i>Level</i>	<i>Description (from label)</i>	<i>Wt of fineware (g)</i>	<i>Wt of coarseware (g)</i>	<i>Other finds</i>	<i>Sherd links</i>
L?/topsoil	-	17	1681	not quantified	-
L1	disturbed topsoil	0	148	not quantified	-
L2	dark intrusions	2	1340	medieval sandy orange ware (3g); sandy orange ware (34g); post-medieval pottery (900g); modern pottery (post-1750) (332g); ceramic water-pipe (8g); brick and tile (5969g); clay-pipe (26g); glass (post-med and modern) (708g); metalwork (mainly iron) (146g); slag (760g); flint (25g); shell (59g); bone (234g); Total 9204g	-
L3	clay	0	65	no other finds	-
L4	below cobbles	12	5124	medieval sandy orange ware (2g); sandy orange ware (61g); post-medieval pottery (15g); modern pottery (5g); ceramic water-pipe (196g); tile (33g); clay-pipe (4g); lava quern or millstone frag (165g); ironwork (18g); bone (32g); shell (16g); Total 547g	-
L5	-	10	6065	medieval coarseware fire-blackened basket handled bowl (232g); medieval sandy orange ware (164g); sandy orange ware (144g); Cheam Whiteware (3g); post-medieval pottery (40g); modern pottery (23g); tile (172g); daub (19g); clay pipe (6g); modern glass (7g); ironwork (5g); bone (146g); Total 961g	L6
L6	sandy loam	241	26858	medieval sandy orange ware (81g); sandy orange ware (59g); Raeren Stoneware (15g); post-medieval pottery (63g); modern pottery (10g); ceramic water-pipe (61g); brick and tile (519g); daub (33g); glass (2g); ironwork (8g); shell (41g); bone (94g); large pebble (275g); Total 1261g	L5, L7
L7	-	68	43061	post-medieval pottery (14g); modern pottery (3g); tile (147g); daub (34g); glass (4g); ironwork (20g); Total 222g	L6, L9
L8	-	0	2334	no other finds	-
L9	section east wall	0	849	no other finds	L7
	<b>Total</b>	<b>350</b>	<b>87525</b>		

Table 2 Clare Cottage: summary of stratigraphic levels

possessing a buff-coloured fabric, which is similar, albeit slightly finer than the usual fineware fabric. The buff-coloured variant can indicate an earlier date (Cotter 2000, 76). The small collection of fineware (a total of 350g) is very fragmented and could be residual. It is most abundant in L6. All identifiable sherds are from jugs, featured sherds comprising: a strap handle decorated with an incised zigzag under a greenish glaze, as found on early rounded jugs; sherds with Rouen-style decoration, showing vertical applied white stripes interspersed with white slip pellets over a red slip background and the lower handle attachment of a jug showing dimpled decoration that could not be assigned a decorative style (Fig. 16.42). In addition to these there is a fragment of thumbled base and a flat-topped B3 jug rim as found on several styles of jug. Some levels produced small quantities of a medieval sandy orange ware fabric, some with distinctive buff surfaces, and it is possible that this is also a Hedingham product, as sandy orange ware fabrics were manufactured at Starlings Hill (see below). However, given the large number of non-kiln dump finds (see Table 2), this material was thought to represent later occupation of the site and not analysed further.

#### *Coarsewares*

The large coarseware assemblage includes the remains of several complete and semi-complete rounded jugs and rounded cooking-pots. Vessels appear to be partially wheel-thrown. The fabric is visually indistinguishable from the coarseware produced at Hole Farm. Some differences in the coarseness of the fabric were noted within the Clare Cottage assemblage, but this appears to be a continuum rather than distinct fabric types, therefore all the coarseware has been assigned the standard

coarseware fabric code (hedcw, see below). Buff and grey sherds are commonest, although reddish and creamy orange examples also occur. On the complete vessels two-tone colours were noted, for example jug Fig. 32.179 is grey on the upper half and buff on the lower half, while another jug (Fig. 32.180) is grey with a large patch of buff, suggesting these vessels are partially under-fired (see Chapter 3 ‘The Fabrics’). The following vessel forms/examples of decoration are present: small fragments of bowls including flared and carinated bowls (Fig. 18.69); complete and semi-complete rounded jugs sometimes with stabbed decoration on the handles and vertical thumbled applied strips on the body; plus more fragmented examples of jugs (Fig. 32.179–182; Fig. 33. 183–188); cooking-pots including several complete or near complete profiles, with H2 rims the most frequent, followed by H1 rims and smaller numbers of the more developed H3 and E5 rims. There are also a number of rim sub-variants (Fig. 21.94–5, Fig. 22.109–10, Fig. 24.123, 125–127). Decoration is rare and confined to vessels with the earlier rim types. Other vessel forms comprise thin-walled jars with hollowed everted rims that might be from pipkins (Fig. 27.131–3); a single possible storage jar rim (not illustrated); fragments from possible curfews (Fig. 33.198) and a few body sherds showing wavy or straight line combing (not illustrated).

#### **Dating**

The only dating evidence is from the pottery itself. The largely complete jugs fit into Cotter’s ‘group A’ vessel forms, ‘rounded and squat jugs with ribbed cylindrical necks and everted or flat-topped rims’, datable to the period c.1175–1250/1275’ (Cotter 2000, 106–7, fig. 68). Of the cooking-pot rims that fit into Drury’s typology, the

earliest type are those with H2 rims datable to the early to mid-13th century. However, as all are fragmented they may be residual. The more complete cooking-pots, are the least likely to be residual (Fig. 21.94, 95; Fig. 24.123, 125, 126). These include the 13th century H1 rims, and an H3 variant. H3 cooking-pot rims are dated by Drury to the late 13th to 14th centuries, and fit into Cotter's 'Group B' vessel forms, dated *c.* 1250/1275–1350 (Cotter 2000, fig. 68). The cooking-pots with H3 rims are therefore typologically later than the jugs. The E5A rims (Fig. 24.127) are also datable to the late 13th to 14th centuries but are represented only by fragments. Other later types that fit into Cotter's group B are inturned jug rims (Fig. 33.184–5) and bowls with flanged rims (Fig. 18.69), but these are again represented only by fragments and may be later than the main group.

The datable finewares comprise fragments of London-style early rounded jugs and Rouen-style jugs together spanning the mid 12th to mid 13th centuries, this is earlier than the bulk of the coarsewares indicating the finewares may be residual.

If the semi-complete jugs and cooking-pots represent the same phase of pottery manufacture, then production would have spanned overlap between Cotter's group A and group B, i.e. the period *c.* 1250 to *c.* 1275. The more fragmented pieces of earlier and later date could indicate manufacture in the vicinity between the later 12th to 14th centuries, so manufacture at this site may have been very long-lived.

## Crows Cross

**Site type:** Single kiln — Musty type 1b

### Location and background

NGR TL 7874 3273

EHER No. 6842

Parish: Sible Hedingham

The site is situated at Braintree Corner between the intersection of the A1017 and A1124, to the south of Sible Hedingham. Crows Cross is a house name and the house is closest to the road junction. It fronts on to the A1124. Like the Sible Hedingham production sites, it is on the western side of the Colne valley. The EHER reference notes that the kiln was found beside the house of Mr W.O. Ripper (i.e. Crows Cross) in 1937 when foundations for a house were being dug (although various documents give 1936 or 1938 as the date (?for excavation)).

### Geology

The site is situated on Kesgrave Sands and Gravels, with boulder clay (the Lowestoft Formation) and head deposits less than 250m away. London Clay outcrops on the other side of the valley some 800m distant with seams of London Clay also to the west. There are river terrace deposits and alluvium at the bottom of the valley, 500–700m away.

### Site description

The kiln, which was cut into gravel, was found at around 1m below ground level. Workmen apparently also found pottery a few metres east of the kiln. There are several photographs of the kiln and a sketch plan by E. Sellers that appears to have been copied from the photographs, but the fact that there is a modern drainage pipe cutting across the

oven at exactly the same place as the Attwoods kiln suggests the sites may have been confused. Nevertheless, as they must be of one kiln or the other, two views are published (Pls 1–2). From the description given below, the Crows Cross kiln is another example of a Musty type 1b kiln, with a single stokehole and a central support joined at one end to the kiln wall. The excavation was presumably undertaken by Jack Lindsay, who gives the following description in his book (Lindsay 1958, 135). The description that follows also includes notes made by Elizabeth Sellers:-

The kiln was oval, measuring 1.87m x 1.35m with a central support (presumably the pedestal) 1.25m long x 0.25–0.30m high. The floor was more or less flat, of burnt clay and earth, the sides of clay burnt hard to less than 25mm thick. The walls were best preserved on the south side, where they reached a height of 0.35m, elsewhere they stood 0.23m high.

The pedestal was of big clay balls, partly burnt in position and then luted together and burnt again; the latest luting, unlike the walls, was hardly burnt at all (E. Sellers considers that this may be evidence of alteration and repairs to the kiln). The inner end of the pedestal (the east end) was luted to the back of the kiln and was 0.21m high and 0.25m wide. Chamfering of the top, which was up to 0.15m high may have been accidental. At this inner end, the puddled yellow boulder clay was scarcely fired. The support was 0.23m high at the centre, well-fired and sloping to a height of 0.16m. The west end of the central support was a well-fired clay ball 0.23m high.

The floor was covered with charcoal and ash, in part at least, the remains comprised fairly large lumps of wood to a thickness of some 50mm. On this, in very black sooty earth, lay lots of broken pottery. The entry was nearly blocked by a heap of clay thrown in on top. The stokehole of the flue was approached by a shallow shelving hole for fuelling; on each side of the opening the clay sides curved away and ended. The final point being scarcely fired at all, as the fire did not reach it.

There is evidence for medieval tile production just to the north of Crows Cross on the east side of the A1017 at TL 7868 3285 (see Appendix 4, Table 17).

### The pottery

According to the EHER entry about 2 cwt (100kg) of pottery was found during the excavation. This is the same amount noted for Attwoods (see above) so that it is possible that there has been some confusion between the two sites. The pottery available for study (on loan from Colchester Museum or previously in the possession of Elizabeth Sellers) amounts to 26.5kg, with the addition of a virtually complete but reconstructed storage jar (Fig. 28.141; Pls 32–33), which was so large it was not practicable to weigh it. The sherd material, excluding the storage jar, comprises mainly pottery in early medieval fabrics (786 sherds, weighing 21942g, average sherd weight 28g). Only a small proportion is Hedingham Coarseware (171 sherds, weighing 4533g, average sherd weight 27g). No fineware exists in the collection. There is no paper archive relating to the pottery and no context numbers were assigned, therefore the pottery has been treated as an unstratified assemblage. Some of the pottery is marked RPP for Ripper's House, but the site is referred to as Crows Cross as this gives the location rather than the name of the owner.

The Early Medieval Ware does not show any resemblance to Hedingham Ware (unlike that from Hole Farm, below) and has not been reported on or entered onto the database as it is outside the scope of this project, although its possible significance is discussed in Chapter 4. These early medieval fabrics and vessel forms are however described in the archive along with illustrations done by the former Department of the Environment. Worth noting here however, is that some of the pottery from Crows Cross is in a fabric transitional between Early Medieval Ware and medieval coarseware. This has red-brown surfaces and paler cores and corresponds to Fabric 13t found at Stansted Airport (Walker 2004a, 408, fig. 271.83–91), where the possibility of a Hedingham origin was noted. This is fabric hewoxcor described in Chapter 3.

The Hedingham Coarseware is recorded in the database under site code RPP. The average sherd weight is little different from that of the Early Medieval Ware and apart from the storage jar, no complete vessels or complete profiles are present, but there are a number of large rim and shoulder fragments. As there are no glazed wares it is difficult to detect wasters. Vessel Fig. 27.138 has a warped rim and Fig. 27.135 has a horizontal stress tear with either side of the tear out of alignment (not shown on drawing). A few of the body sherds show spalling, although this could be from use or a manufacturing fault. In addition, many are under-fired and are not fully reduced, for instance several have grey surfaces but orange cores, which would indicate they are production waste. However, a very few sherds show fire-blackening as if they had been used. Sherd size is quite large and there are several joining sherds, but many sherds are abraded. This is likely to be the result of under-firing and weathering rather than because the pottery is residual. The fabric corresponds to the standard coarseware fabric, although perhaps a little on the fine side. The under-fired sherds have been assigned the fabric code hcwredo (see Chapter 3 for explanation).

The most interesting find is the virtually complete Thetford-style storage jar (Fig. 28.141; Pls 32–33). Otherwise, the repertoire is limited to jars and cooking-pots, with no component parts amongst the sherd material to suggest other forms are present. There are a few, sometimes single, examples of cooking-pots with B2, H2, H1 and H3 rims (none illustrated) and more interestingly a number of thin-walled jars with a range of unusual rim types, which appear to be a speciality of this site (Fig. 27.135–8). The general appearance is of finely made wheel-thrown vessels. A number of the illustrated sherds show faint rilling on the interiors, although Fig. 27.136 shows quite a pronounced horizontal break line around the girth, which would suggest it has been made in sections perhaps using the coil-and-throw technique (see below).

### Dating

The Thetford-style storage jar is unlikely to be later than c.1200, the H2 cooking-pot rims could be contemporary with this date, but the single H3 belongs to the late 13th to 14th century. The thin-walled jars could also have a late 13th to 14th century date.

## Foxborough Hill

**Site type:** Remains of kilns, one perhaps of Musty type 2d

### Location, background and site description

NGR TL 7915 3237	EHER No. 6933
NGR TL 795 323	Wilson and Hurst 1965, 216–7
NGR TL 793 321	EHER No. 6857
NGR TL 792 320	EHER No. 6932
Parish: Sible Hedingham	

EHER site No. 6933 excavated in 1960, is listed as a 13th century pottery kiln comprising scattered remains only. An entry in 'Medieval Britain 1964' (Wilson and Hurst 1965, 216–7), lists a kiln site as 'Southey Green' (an alternative name for Starlings Hill, see below), but the NGR quoted of TL 795 323, is actually in the area of Foxborough Hill. Wilson and Hurst describe the location as 'above a disused sand quarry (with scattered Roman remains)', 'where bulldozing of a field revealed abundant sherds'. The site was excavated by Jack Lindsay who revealed 'the remains of several kilns, one complete with two tongues', tongues presumably meaning pedestals, suggesting this could be a Musty type 2d kiln, as found at Hole Farm (see below). Wilson and Hurst's grid reference is located about 250m to the south-east of the location given in EHER 6933, so that there has either been confusion over the exact location, or two separate production sites were found. Lindsay noted pottery scatters in the area of Foxborough Hill (Lindsay 1958, 144, 146) but the discovery of the kilns post-dates the publication of his book, so no information can be gleaned from this source.

There are two other location sites listed in the EHER to the south of Foxborough Hill Farm (sites 6857, 6932) where medieval sherds were found, but there is no mention of a kiln, (not surprising as this is now made-ground, i.e. re-landscaped when quarrying had ceased) and neither grid reference corresponds to that quoted in Wilson and Hurst 1965, 216–7.

The Foxborough sites lie between Crows Cross and Broak's Wood and are on the west side of the Colne valley and the Halstead road (A1124). In the present-day, the kiln sites and pottery scatters are located either side of a spring-fed stream or channel, but the geological map shows the area immediately to the south of the stream/channel to be made-ground, and therefore the topography must have changed somewhat since the medieval period. The made-ground is probably the result of the sand quarrying mentioned by Wilson and Hurst.

### Geology

The kilns are located on Kesgrave Sands and Gravels and it is these that were no doubt exploited by the later quarrying. Boulder clay (the Lowestoft Formation), head deposits, river terrace deposits and alluvium are also within easy access (no more than 700m away) and London Clay, not quite so readily available, outcrops on the other side of the river (800m away) with outcrops also to the north-west.

### The pottery

The pottery comprises part of a chimney pot from E. Sellers' archive and pottery excavated by Jack Lindsay donated to Essex County Council Field Archaeology Unit

(FAU) by Keith Cullum. The boxes of Lindsay's pottery are labelled as follows:

- 'Foxborough Hill July–August 1960 above sandpits'
- 'Foxborough Hill' followed by something illegible
- 'Foxborough Hill Aug 3 62 final excavation'
- 'Foxborough Hill Aug 4 62 final excavation'

There is another box of pottery which unfortunately has two labels 'School Foxborough Hill' and 'Colne Alm, Hepworth Hall' (a consumer site), because of this conflation, the pottery from this box has not been included. The school may refer to a riding school. No other information was given. A recent excavation at Foxborough in advance of a new riding arena revealed no archaeological features or deposits (EHER No. 46661).

It is likely that the pottery labelled '1960 above sandpits' is from the kiln described in Wilson and Hurst 1965, 216–7. The pottery labelled '1962 final excavation' is either from this kiln, or is of another kiln in the Foxborough area. The pottery from the box with the partially illegible label was very similar to that from the box labelled '1962 final excavation', with sherds that could well belong to the same vessel, although unfortunately they did not join. Pottery from these two boxes has therefore been catalogued together. For purposes of recording onto the database, the site has been assigned the code FOX62 (for both years of excavation).

Coarsewares outnumber the finewares and much is oxidised to a brown-orange colour, often with darker surfaces, although it is not possible to tell whether this was the intended result. Indicating that the pottery is indeed from a production site, are a small number of wasters comprising coarseware sherds with accidental splashes of matt glaze, and a fineware fragment which is over-fired.

The pottery from the August 1960 excavation has been assigned context number 3 for the purposes of entering the data onto the database. Only a small amount of pottery, ten sherds, weighing 657g, is present with a large average sherd weight of 66g. There is only one example of fineware, a ribbed strap handle (in Fabric 4) as found on found on pear-shaped and biconical jugs, which shows traces of a yellowish glaze. Coarsewares include a part of a thumbled-rim dish, H1 cooking-pot rims and fragments from storage jars, all similar to those from Hole Farm. More unusual is a small rounded jar (Fig. 27.139) and the spout from a spouted pitcher (Fig. 30.151).

The pottery from the July/August 1962 excavation has been assigned context 1, and rather more pottery was found, totalling thirty-eight sherds weighing 2648g, giving an average sherd size of 70g, a little larger than that for the 1960 excavation. Finewares comprise the rim of a stamped strip jug and a continuously thumbled base. Coarsewares comprise, a bowl rim, cooking-pots mainly with H2 rims, some with H1 rims, and fragments from storage jars, curfews and jugs, most of which are similar to those from Hole Farm. Two inturned/collared jug rims show a matt splash glaze, although they are in a coarseware fabric, albeit oxidised.

There is also chimney pot from E. Sellers' archive whose year of excavation is unknown (Fig. 33. 193). For the purposes of the database it has been assigned context 2.

Both the 1960 and 1962 excavations produced cooking-pot rims and storage jar fragments that are

similar to those at Hole Farm. The presence of a chimney pot, curfew fragments and a relative preponderance of storage jars, may indicate that this production site specialised in large vessels.

### Dating

The pottery from the 1960 excavation represents a mixed bag in terms of dates. The spouted pitcher fragment and the thumbled-rim dish are early forms, for which a 12th century date would be expected. At the other extreme, the rounded wheel-thrown jar and fineware ribbed strap handle could easily be 14th century.

## Hawkwood Manor

**Site type:** Waster dump

### Location, background and pottery

NGR TL 784 334

EHER No. 6859

Parish: Sible Hedingham

Hawkwood Manor is located at 10–12 Potter Street, Sible Hedingham, close to the junction with Lamb Lane and on the other side of the road to the Clare Cottage waster dump. Like Clare Cottage, it is situated on the western side of the Colne valley. There are no details, but the EHER entry (which appears to have been written by the owner of Clare Cottage, Mrs A.P. Baines), suggests the pottery may represent wasters from the adjacent kiln, she also says that the pottery is unlike that excavated from Clare Cottage, which would suggest that the 'adjacent kiln' is not Clare Cottage. No pottery from this site is located at FAU, neither was it located at neighbouring museums and the finds may still be in the possession of the owner. No date is given for the year of excavation but it cannot be earlier than 1973, the year Clare Cottage was excavated. According to the EHER, the pottery includes rims, handles with incised decoration and sherds with wavy line decoration, in grey, fawn and light red. The description suggests these are coarsewares. There is no other information.

### Geology

The site is situated on Kesgrave Sands and Gravels, with outcrops of boulder clay (the Lowestoft Formation), London Clay, river terrace deposits and alluvium all within 500m. Like Clare Cottage, it is reasonably close to the outcrop of Lower London Tertiaries.

## Hole Farm

**Site type:** kiln site comprising two adjacent stacks of superimposed kilns of Musty types 1b, 2c, 2d

### Location and background

NGR TL 7835 3222

EHER No. 6845

Parish: Sible Hedingham

Hole Farm lies to the south of Sible Hedingham and just to the west of the A1017 and is situated next to a lane that connects the farm at Hole Farm to this road. According to the EHER this is a modern lane constructed c.1800. Before this time access to the site was from Starlings Hill, 350m to the south, where there was another





Plate 3 Photograph of Hole Farm showing kiln 2 in the foreground and kiln 1 with its divided pedestal in the background. The slot between the two kilns can also be seen

production site (see below). A minor track intersects the lane, and the site lies in the corner produced by the intersecting lane and track (see Fig. 3). The excavated area is presently beneath a concrete hard-standing used by the farmer. The site is slightly up slope from a dip in the topography where a stream crosses the main track. This is the same stream that runs past the Starlings Hill production site and feeds into the River Colne. There is, in the present day, a large stream-fed pond at the bottom of the hollow. The kiln site is on the eastern side of the stream valley. Today Starlings Hill and Hole Farm site are connected by a footpath across the fields.

### Geology

The site is located on Kesgrave Sands and Gravels, boulder clay (the Lowestoft Formation) and tongues of London Clay and head deposits are no more than 500m away. River terrace deposits and alluvium however only occur in the bottom of the Colne valley, but are still only 600m to the north.

### Site description

Five pottery kilns and other features were excavated by John and Elizabeth Sellers and their team between 1971 and 1973. No definite evidence for ancillary buildings such as workshops or drying sheds was found. The excavations are summarised here using information from site plans and sections and from E. Sellers' notes, although the excavation was never written-up. The site comprised two stacks of superimposed kilns (Fig. 3 and Pl. 3); the south stack comprising kiln 1 built over kiln 3 which had a south-west to north-east orientation, and the north stack

comprising kiln 2 above kilns 4 and 5, which had a similar, but slightly more north-south, orientation. Kilns 2, 4 and possibly 5 cut a large east-west ditch. The construction of the uppermost kilns partially destroyed the earlier kilns, so that interpretation of the earlier structures is somewhat tentative. The major features are summarised below in stratigraphic order. For full context information refer to the archive.

### *The east-west ditch* (Fig. 3)

This was a large ditch about 15m across and 0.8 m deep, which lay at the northernmost part of the site, just to the south of the present-day lane. It is referred to throughout the report as The Ditch and was cut by kilns 2, 4 and possibly 5. The Ditch contained a very large amount of pottery, 110kg, which may derive from kilns 2, 4 and 5 or from undiscovered kilns adjacent to The Ditch. Only around 4kg of pottery was excavated from the lower fills of The Ditch and most is fairly fragmented. Early types do indeed occur, but so do later types such as developed H1 cooking-pot rims, probably representing contamination from where the kilns have cut The Ditch. In general The Ditch contained a mixture of pottery, some of early medieval fabric, some possibly representing earlier Heddingham Ware production and some similar to that from the kilns, including kiln wasters. It was also evident that some of the early medieval pottery and the Heddingham Ware pottery is fire-blackened and has been used. Therefore at least some of the pottery represents earlier occupation of the site. As the pottery is a mixture it

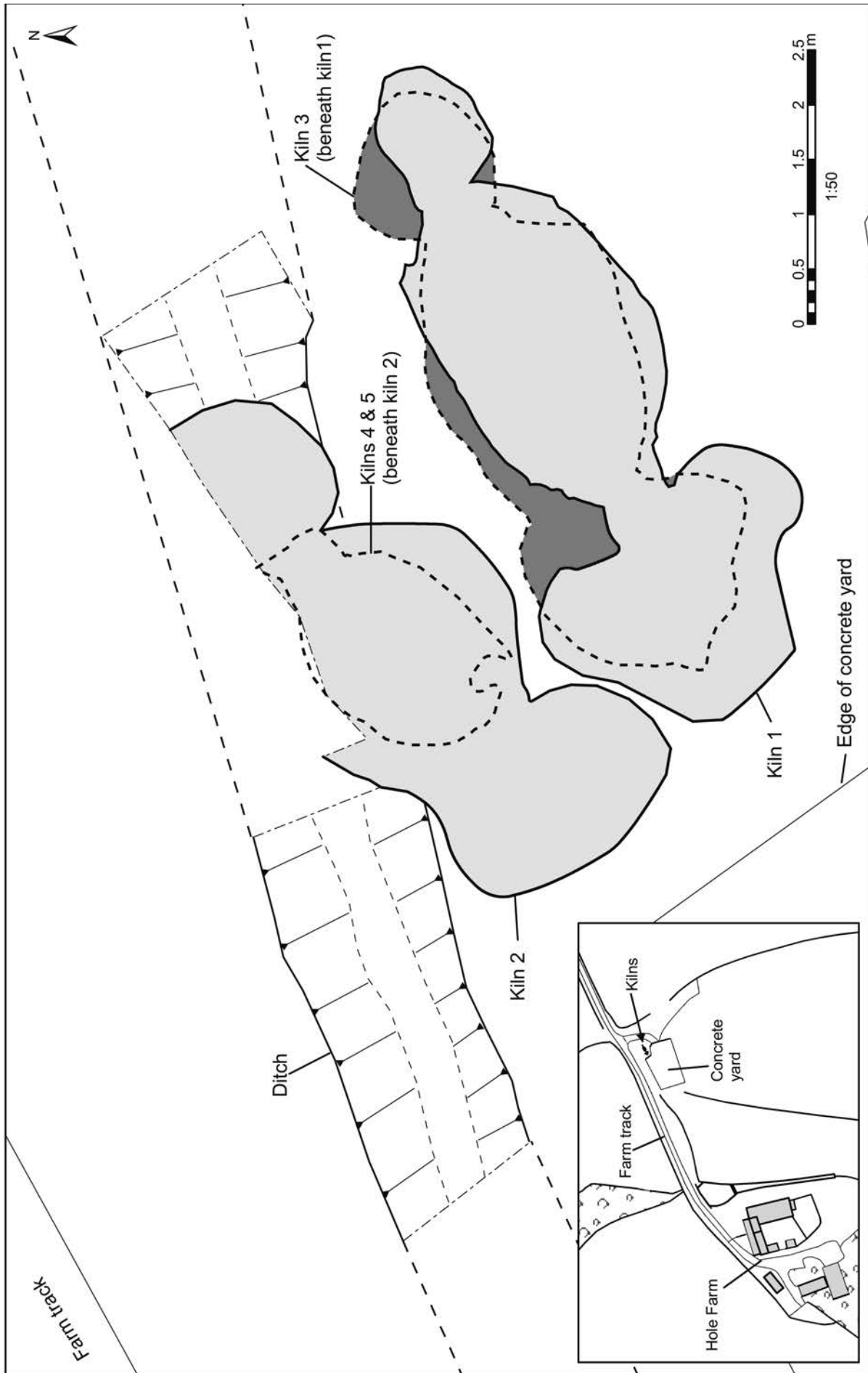


Figure 3 Location of Hole Farm kilns and overall site plan showing orientation of kilns and the east-west ditch in relation to extant features

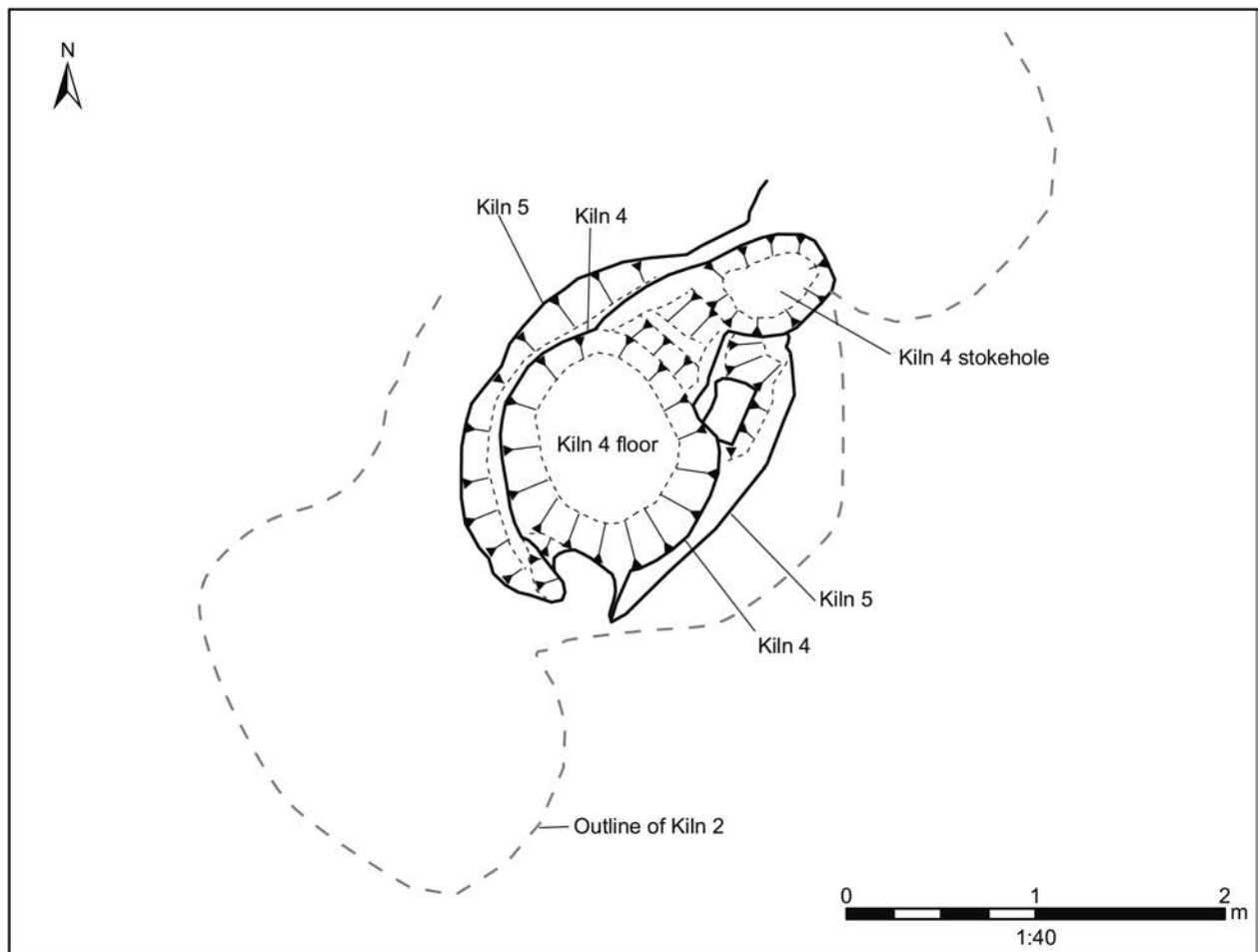


Figure 4 Simplified plan of Hole Farm kilns 4 and 5

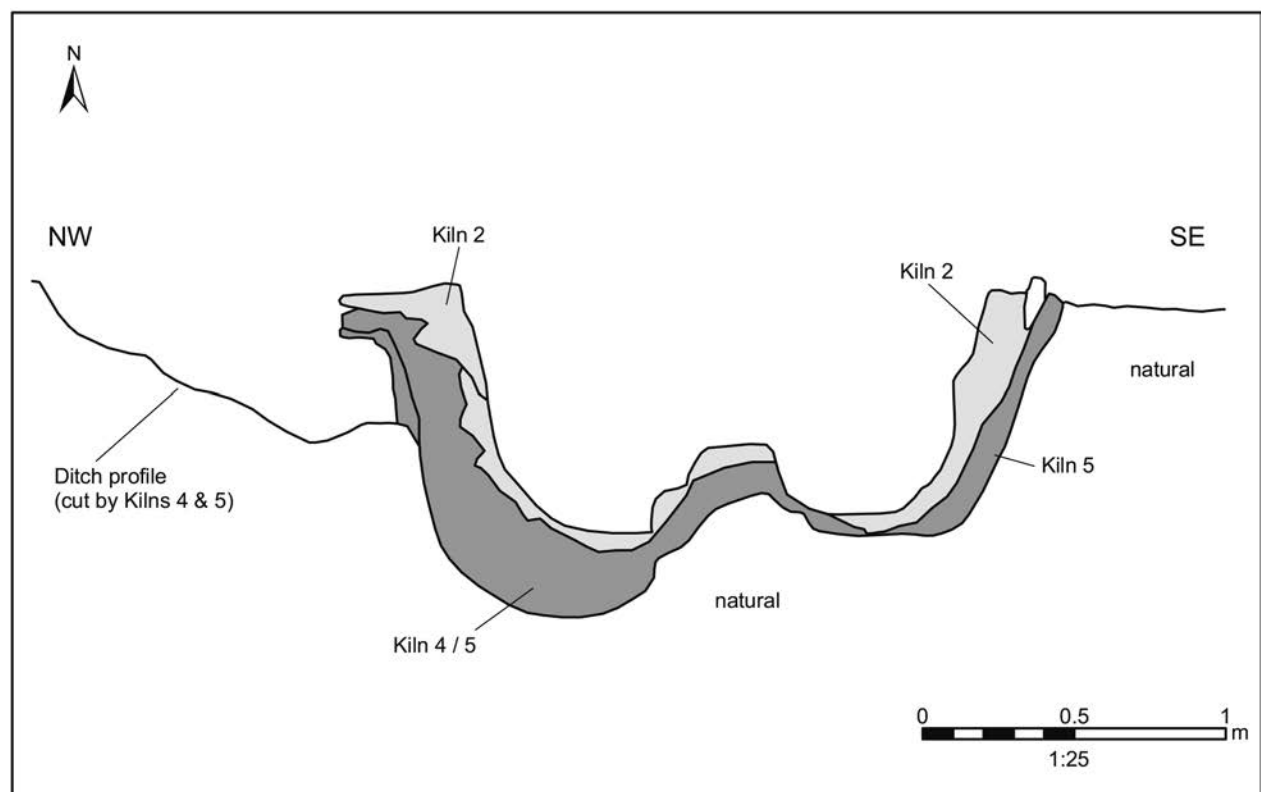


Figure 5 Profile of Hole Farm kilns 2, 4/5 where they cut the ditch

was not catalogued onto the database, apart from sherds of intrinsic interest that appear in the typology (see below).

#### *North stack, kilns 2, 4 and 5*

##### **Kiln 5**

(Figs 4 and 5)

Kiln 5 at the base of this stack survived only as an oval of burnt natural. There was probably a single east stokehole at floor level 0.25m above the oven floor, which would mean this was a Musty type 1b kiln.

##### **Kiln 4**

(Figs 4 and 5)

Kiln 4 was above kiln 5. The oven was oval with fragments of a central pedestal and the plans show a surviving east stokehole, so this would appear to be a Musty-type 1b kiln unless the second stokehole was obliterated by the construction of kiln 2. There was clay plastering on the north edge, on the pedestal and in the east flue where there were traces of glaze on the wall. The construction and use of kilns 4 and 5 cannot have been a continuous process as the hollows left by kilns 4 and 5 were each filled on two different occasions. All the pottery from kiln 4 was found in layers of sand filling kiln 4, which were cut through by the construction of kiln 2. It was not obvious whether this pottery came from kiln 4 or 5, and so the finds have been classified as coming from kiln 4/5.

##### **Kiln 2**

(Fig. 6)

Kiln 2, built of yellow sandy pot clay, had a sub-rectangular oven 1.6 x 1.6m by 0.95m deep. It had a central pedestal 1.1m long x 0.3m high. The floor of the west flue ran through an arch 0.45m wide and 0.25m high, into a stokehole measuring 1.1 x 1.65m. There was a similar arch and stokehole on the opposite side of the kiln. This corresponds to Musty's kiln type 2c. The oven walls had been much patched and both flue arches had been rebuilt several times, the western flue arch remade four times. It was found that the south side of Kiln 2 had been relined twice.

#### *South stack, kilns 1 and 3*

##### **Kiln 3**

(Fig. 7)

Kiln 3 is of Musty type 2c and is stratified below the oven of kiln 1. It probably began as a long oval pit 2.7m x 1.5m and at least 0.9m deep. Later, clay lining and a long central pedestal were added. After much relining and patching, the kiln went out of use and was filled with pottery sherds and debris from the kiln walls. Layers of large flints were laid on top as a foundation for Kiln 1. Pottery came from fills of the oven and from the eastern flue arch. No pottery was collected from the stokeholes, perhaps because they were obliterated by those of kiln 1 (see below).

##### **Kiln 1**

(Fig. 8)

Kiln 1, built of chalky boulder clay, had two opposing stokeholes and a long oval oven measuring 2.2 x 1.5m by 0.3m deep, and was divided longitudinally by two clay walls measuring 1.5 x 0.35m, i.e. the central pedestal was split into two. This is an unusual type and is of Musty type

2d (Musty 1972, 46). The west flue, 0.4m by 0.5m, sloped down to a west stokehole, 1.3m x 2.2m. The east stokehole was not excavated, (although pottery was recovered from its fills). The clay floor of the flue had been cut away for some reason. Other alterations included lengthening of the dividing walls and flue walls. Kiln 1 was constructed directly over the oven of kiln 3 and their stokeholes were superimposed. The excavator considers that Kiln 1 is later than kiln 2, although the stratigraphic relationship between the two kilns was unclear; the west stokehole for kilns 1/3 may have cut the west stokehole of kiln 2 but this is uncertain as kiln 2 was not discovered until after kiln 1 was excavated. At the nearby kiln site at Takeley (Ennis 2006, 43–9) replacement kilns were built next to each other, not on top of each other, which could mean that space was restricted at Hole Farm, although superimposed kilns occur elsewhere, for example at Laverstock in Wiltshire (Musty *et al.* 1969, 88).

#### *Non-kiln features*

There are a number of non-kiln features, the largest of which is a slot (feature 8) which lay between kilns 1 and 2 (shown on Pl. 3). Its function is unknown but it may have been the foundation for some kind of structure that covered the kilns to protect them from the elements, as postulated by Newell (2005). There are also a number of small features in the area north-east of the kilns. Most of these contained kiln material. None of these features are shown on plan and their function is unknown. It is possible they represent the remains of workshops or drying sheds. The area immediately to the west of the kilns was under concrete and therefore not excavated.

#### **Cross-fits**

Because kiln pottery is so similar, it is difficult to find sherd links, however a small number were noted and cross-fits between the two kilns stacks and between ovens and stokeholes were plotted to show how the pottery had moved around. Within the kiln stacks there were cross-fits between:

- the east and west stokeholes and the oven of kiln 1
- kiln 3 and the west stokehole of kiln 1
- the oven and east stokehole of kiln 1

There was one cross-fit noted between the two kiln stacks, between kiln 3 and the west stokehole of kiln 2, evidence that the kilns did indeed cut each other.

#### **Kiln superstructure**

A total of 20kg of fired clay, presumably forming the kiln superstructure was collected from the kilns, with fragments also from The Ditch and the non-kiln features. The superstructure, or above-ground part of the kiln, would probably have comprised a dome, inside which the pottery was stacked, and flue arches, which conducted the heat from the fire(s) in the stokehole(s) into the bottom of the oven. Most of the fragments are small and amorphous, but the larger fragments provide clues as to the shape and structure of the above ground part of the kiln. In section the fragments are typically brown or dark grey on the outer half and orange in the inner half where the clay was in contact with the heat from the kiln. Occasionally, the inner surface is charcoal flecked. One fresh section shows a succession of distinct banding from brown, to

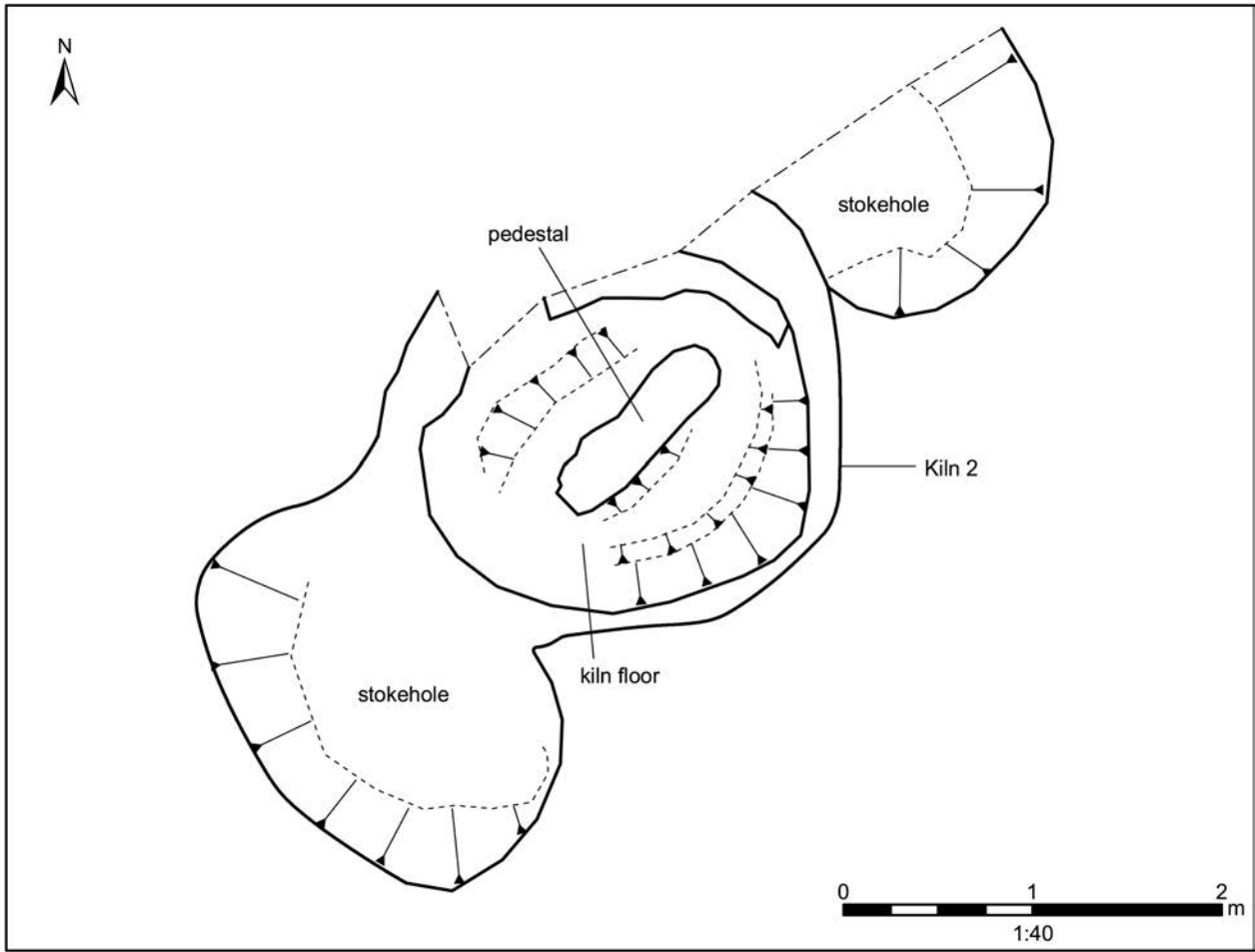


Figure 6 Simplified plan of Hole Farm kiln 2

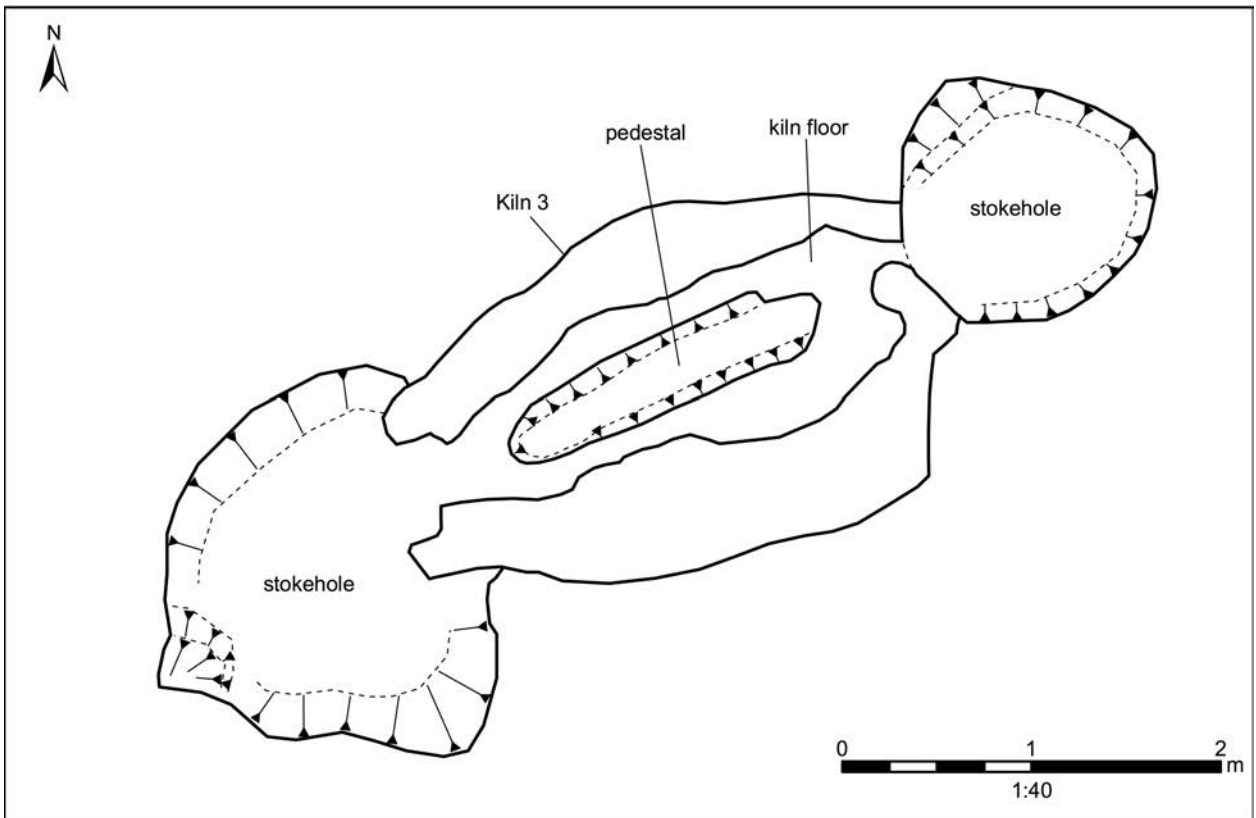


Figure 7 Simplified plan of Hole Farm kiln 3

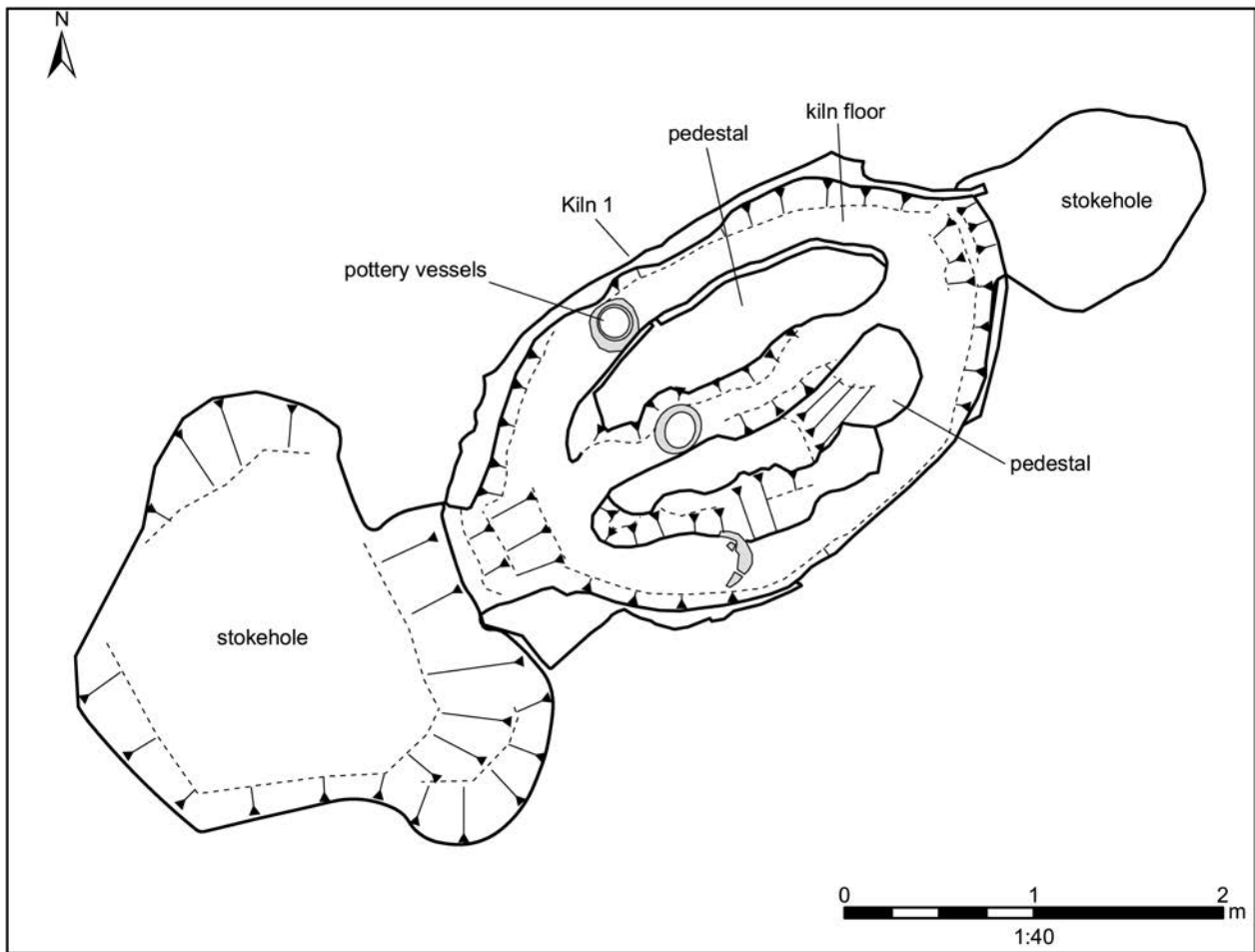


Figure 8 Simplified plan of Hole Farm kiln 1

orange-brown, to bright orange. Shape varies; many fragments show curved surfaces, perhaps forming the dome, while others are more-or-less flat and perhaps came from the sides of the kiln. One flattish example shows finger-marks where the clay was pushed into place. Thickness varies enormously, even on the same fragment, it varied from 28mm to 60mm in thickness. The thickest pieces were curved and measured 100mm in depth. The composition of the fired clay also varies, with a combination of flint, pebbles, and chalk inclusions with the occasional grass mark. Two fragments are extremely sandy.

A number of fragments of fired clay were collected from the east flue arch of kiln 2. The biggest fragments comprise slightly curved or flat slabs with the remains of tubular voids at the edges (Pl. 4). These may have been from wooden poles or wattles that formed the framework over which the clay was applied (as appears to be the case at the Laverstock kilns, Musty *et al.* 1969, 88). Firing of the kiln then burnt out the wood and fired the clay, so forming the structure. Of the four pieces with voids, three had voids measuring around 25mm in diameter and one was slightly larger at 30mm.

In kiln 1, there were a number of curved fragments that had holes poked through the upper surface. Plates 5 and 6 show the upper surfaces and Pl. 7 the section view. The holes are sub-circular, sub-oval or sub-triangular in shape and are mainly in the region of 12mm across. Depth varies, but the holes are typically around 15–17mm deep. None of

the holes penetrate right through to the inside surface. The holes are evidently much narrower than the pole voids and therefore unrelated. The holes may be to ensure even firing and prevent the superstructure cracking in the same way that jug handles are often stabbed. Alternatively these pieces could relate to the internal structure of the kiln as there must have been some kind of platform on which the pots stood (as postulated by Lindsay, see Attwoods gazetteer entry). This can be in the form of ceramic fire-bars radiating out from the pedestal (Renn 1964, 4), but no fire-bars were encountered here or at any of the other production sites. The cooking-pots found *in situ* at the base of kiln 1 may also have played a role in stacking the kiln (see Chapter 5).

Pieces of pottery found within the clay superstructure indicate that newly built kilns were not pre-fired, i.e. they did not have an initial firing without the pottery. Other extraneous material was found within the superstructure fabric, including a piece of pudding stone and pieces of fire-cracked flint. It is not known if this is incidental or they served to strengthen the superstructure.

#### The pottery

The pottery has been recorded onto the database using the site code HF72 (for all years of excavation).

#### Finewares

Around 14kg of finewares/glazed wares were excavated, but this is only a fraction of the coarseware assemblage



Plate 4 Hole Farm: fragment of fired clay superstructure showing void left by ?wattle; diameter of void is 25mm

and the excavator considers that the finewares were not fired in the kilns excavated (see Chapter 4). Jug fragments and, very occasionally, sherds from internally glazed flat wares are the only forms present. Jug types comprise early rounded-style jugs, which could be as early as mid 12th century, Rouen-style jugs, dating to the early to mid 13th century, mainly from kiln 3, and the stamped strip jugs from kilns 1 and 3, which span the early 13th to early 14th centuries. The flat ware sherds could be as late as 14th century, but none of the coarseware forms are of this date. Many of the vessels are in early, sandy versions of the fineware fabric.

#### *Coarsewares*

Upwards of 308kg of coarseware was excavated, with a total of 290kg of stratified coarseware from the kilns entered onto the EFASYS database. This is by far the largest assemblage out of all the production sites, and they form the basis of the typology. There is evidence for an early medieval version of Hedingham Ware here, but most is classified as Hedingham Coarseware. The main vessel forms comprise socketed bowls, large ?dairying bowls, often with a hole below the rim, small thick-walled jars, cooking-pots with, upright, B2, H2 and H1 rims, storage jars, including large Thetford-style storage jars, and jugs,



Plates 5 and 6 Hole Farm: top views of perforated fired-clay superstructure fragments; diameter of perforations is around 12mm



Plate 7 Hole Farm, section view of perforated fired-clay superstructure fragment; depth of perforations is around 15–17mm

including spouted jugs. Cooking-pots often show a row of dimpling or other decoration around the shoulder, and combed decoration, sometimes quite complex, features on several vessel types.

#### **Dating**

The only dating evidence is from the pottery itself. The most surprising aspect to the dating is that kiln 2 which is

stratigraphically earlier than kiln 1, produced cooking-pots with a rims of a type later than those from kiln 1. Kiln 2 cooking-pots have flanged rims above an upright neck, corresponding to Drury's type H1, datable throughout the 13th century. Whereas those from kiln 1 are more squared, corresponding to Drury's H2 rim datable to the early to mid 13th century (Drury *et al.* 1993, 81). Assuming that both the rim typology and the interpretation of the stratigraphy of the kilns is correct, then perhaps kilns 1 and 2 were in operation around the mid 13th century when both rim types would have been current. There is considerable overlap in the life-spans of the rim types and they may in part reflect the preferences of individual potters. The pots found *in situ* in kiln 1 (as opposed to sherds that might have been thrown in after the kiln went out of use) have H2 rims, so this conundrum cannot be explained by the pottery in kiln 1 being residual. As early medieval fabrics were produced here, the date range of production at Hole Farm is probably 12th to mid 13th century.

## Holy Trinity

**Site type:** kiln

### Location and background

NGR TL 808 304

EHER No. none

Parish: Halstead

There is no paper archive or record of this kiln, but a small quantity of pottery and two pieces of burnt clay were located at Colchester Museum. The finds are labelled 'Pottery from kiln Sept. '54 Holy Trinity, Halstead, near Attwoods, 1956.172' (the latter number presumably the museum accession number).

No record of such a kiln is to be found on the EHER although it does record of the site of the former Holy Trinity Chapel at Halstead (EHER No.9451), which stood at the junction of the roads between Braintree and Gosfield (Chapel Hill and Trinity Street). It is indeed close to Attwoods. The earliest reference to this chapel dates to 1413 (Medlycott 1998, 7). Like the majority of kilns, it is situated on the western side of the Colne valley.

### Geology

The site is situated on London Clay on the border with Kesgrave Sands and Gravels. River terrace deposits and alluvium lie in the valley floor 250m away.

### The pottery

As there is no stratigraphic information, the pottery is treated as unstratified. For purposes of recording onto the database, it has been assigned the code HTH54. The only evidence that the assemblage is actually from a production site, is that one of the cooking-pot rims is warped.

#### *Fineware/glazed ware*

There is one sherd of glazed ware (wt 11g), which although it is glazed and decorated, cannot be described as a fineware as it is in the Hedingham early medieval fabric (hedcwem) as found at Hole Farm.

#### *Coarseware*

A total of twenty-five sherds of coarseware is present weighing 1090g, with a large average sherd size of 44g,

although no complete or near complete profiles are present. As with the glazed sherd, all the coarseware is very coarse. Some is oxidised and corresponds to the early medieval fabric (hedcwem), but much of the material is grey with the typical fine Hedingham matrix, but with the addition of coarse sub-rounded sands. It is therefore a coarse version of the standard fabric and has been assigned the code hcwcor. A few such examples show buff-coloured lenses. All the vessels in the coarse fabric have walls of uneven thickness and appear to be handmade. A few sherds have the standard Hedingham Coarseware fabric (hedcw).

Vessel forms comprise: fragments from bowls including a carinated bowl and a flared bowl with a hole; cooking-pots mainly with H1 rims and one example of a B2 rim; fragments from jugs and a possible storage jar. As the vessel forms are either paralleled at the major production sites, or are in the very coarse fabric which cannot be considered classic Hedingham Ware, none of the pottery from this site has been illustrated.

### Dating

The presence of the very coarse fabrics implies an early date, however as H1 cooking-pot rims are present, production must have continued into the 13th century. A date range of late 12th to earlier 13th century is suggested.

## Kemp's Wood

**Site type:** ploughed-up kiln

### Location and background

NGR TL 7669 2902

EHER No. 06283

Parish: Gosfield

The site comprises the sparse remains of a ploughed-up kiln, noted by Lindsay (1958, 143) but not investigated until many years later by M. Petchey of Essex County Council Archaeology Section (Petchey 1976, 177–8). The site was situated immediately to the north of Kemp's Wood once part of an ancient wood (Parkhall and Bovingdon Wood) (see Fig. 12), which lies to the south of Gosfield and to the west of the Sible Hedingham to Braintree road. This is the most southerly of the Hedingham kilns discovered so far and is only about 6km north of Braintree. It is also connected to Braintree, in the present-day at least, via a footpath and minor road (Fennes Road). Unlike other sites, this is not in a valley, although is not far from Bourne Brook, a tributary of the River Colne. Petchey notes that there is place name evidence for kilns in the area with 'Pot Field' and 'Kiln Field' 1km to the south-west and 'Shed Ley' and 'Kiln Field' 100m beyond Hogg's Farm.

### Geology

The actual site is situated on boulder clay (the Lowestoft Formation), although deposits of Kesgrave Sands and Gravels, alluvium, and London Clay lie within 500m.

### Site description

Petchey reported that the site of the kiln was marked by fired clay, charcoal and abundant pottery sherds.



### **The pottery**

A small group of pottery has been published by Petchey (1976, fig. 14) but not viewed by the present author as the pottery could not be located. The EHER reports finds from this site at Saffron Walden Museum, but none were found, neither could they be located at Braintree or Colchester Museums.

Petchey identified two main fabrics, a buff to light grey fabric and a hard grey-black fabric, presumably both coarsewares. As they had similar inclusions and texture, he considered that the colour variations were due to differences in firing and that they were essentially the same fabric. There was one example of a third fabric, a jug rim (fig. 14B.12), which is described as a fine, slightly micaceous fabric, grey-black in colour with a pimply surface. Petchey thought the sherd may be a foreign introduction to the site, but as it is from a jug, it may be an example of an unglazed fineware. Petchey notes that similar pottery has been found at excavations at 13–17 Bank Street, Braintree.

Most of the finds comprise examples of the flat-topped neck-less, H3 cooking-pot rim (Petchey 1976, fig. 14B.1–8), which, from the rim diameters, appear to have been made in two sizes, one measuring 210mm and the other 320mm. There are also examples of ribbed jug handles (fig. 14B.9–10) and what looks like an inturned or collared jug rim (fig. 14B.11). Fig. 14B.12 shows the possible non-kiln sherd, a rather squared jug rim.

### **Dating**

As well as being the most southerly of the known production sites, it is also one of the latest, the H3 cooking-pot rims are a late 13th or 14th century type and the ribbed strap handles are of a type found on pear-shaped and biconical jugs of the second half of the 13th to mid 14th centuries (Cotter 2000, 91 and fig. 51.24).

### **Lamb Lane**

**Site type:** possible kiln

#### **Location and background**

NGR TL 7813 3325

EHER No. none

Parish: Sible Hedingham

There is little evidence for production here as there is no pottery or written archive. However, a kiln site here is noted on a sketch map drawn by the pottery specialist John Hurst in 1968 (who then worked for the Ministry of Public Buildings and Works). The map is annotated with the words 'Lamb Lane 1930s storage'. A corresponding grid reference was obtained from a note in E. Sellers' archive. In addition, evidence of medieval pottery manufacture in Lamb Lane is noted by Corder-Birch (2010, 24) in the vicinity of the former Tower Windmill (EHER 6935), the location of which tallies with E. Sellers' grid reference. If there was a kiln here, it would have been close to the production site at Hawkwood Manor, which lies less than 50m to the east.

### **Shalford Road**

**Site type:** Kiln of Musty type 2c

#### **Location and background**

NGR TL 7038 2970

EHER No. 46275

Parish: Great Bardfield

This site was discovered during excavations in advance of a pipeline in 2006 (Orr and Brooks 2009). The site is an outlier and is by far the most westerly of the kilns discovered so far, being about 16km to the west of Gosfield. It lies on the south side of the Pant valley and close to the head of a small stream-less valley at 78m above ordnance datum. The site is about 200m to the south of Mandalay Farm and lies next to a right-angle bend on a minor road following the Pant valley that leads from Shalford to Waltham's Cross. There is also a minor road past Mandalay Farm that becomes a footpath, crossing the River Pant (little more than a stream at this point) and continues northwards up the other side of the valley to Wethersfield. The comparatively major town of Braintree and Bocking lies about 8km to the south-east and connects directly to Shalford along an old road which follows the Pant valley.

#### **Geology**

The site lies on the junction of the boulder clay (the Lowestoft Formation) to the south and Kesgrave Sands and Gravels to the north. Deposits of London Clay and alluvium are exposed at the bottom of the Pant valley 600m away.

#### **Site description**

Only one kiln was revealed, and there were no ancillary buildings, but as the excavation was only 9m wide, further structures may await discovery. The following description of the kiln and plan of the kiln (Fig. 9) is reproduced with the kind permission of Colchester Archaeological Trust. From the plan of the kiln there appears to be an oven with a central pedestal and two opposing stokeholes, so that it is of Musty's type 2c. The top of the kiln had been ploughed away, thus removing the superstructure and firing chamber floor. The surviving structure consisted of the central pedestal and the burnt clay of the oven.

The oven was packed with broken pottery and charcoal in a fill of dark brown silty clay. At the base of the oven and east stokehole were large pieces of flat unburnt flint. A curious feature of this kiln was that it had a narrow straight-sided gully running underneath one stokehole, which looked like a drain running off into a pit (a sump?). It is tempting to dismiss this as an earlier feature, but it must have been open at the same time as the stokehole because it had the same fill of charcoal and potsherds. A recently-published kiln at Frogs Hall, Takeley, had a similar gully or drain (Ennis 2006, 44–45, kiln 970) (see Chapter 6, 'Comparison with other kilns in the region').

#### **The pottery**

The pottery described by Orr and Brooks (2009) is summarised here. None of the pottery illustrations are reproduced for the typology, but the drawing numbers in Orr and Brooks are cited. As with the other production sites, most of the assemblage comprises coarseware with only a small amount of fineware. A total of 3927 sherds

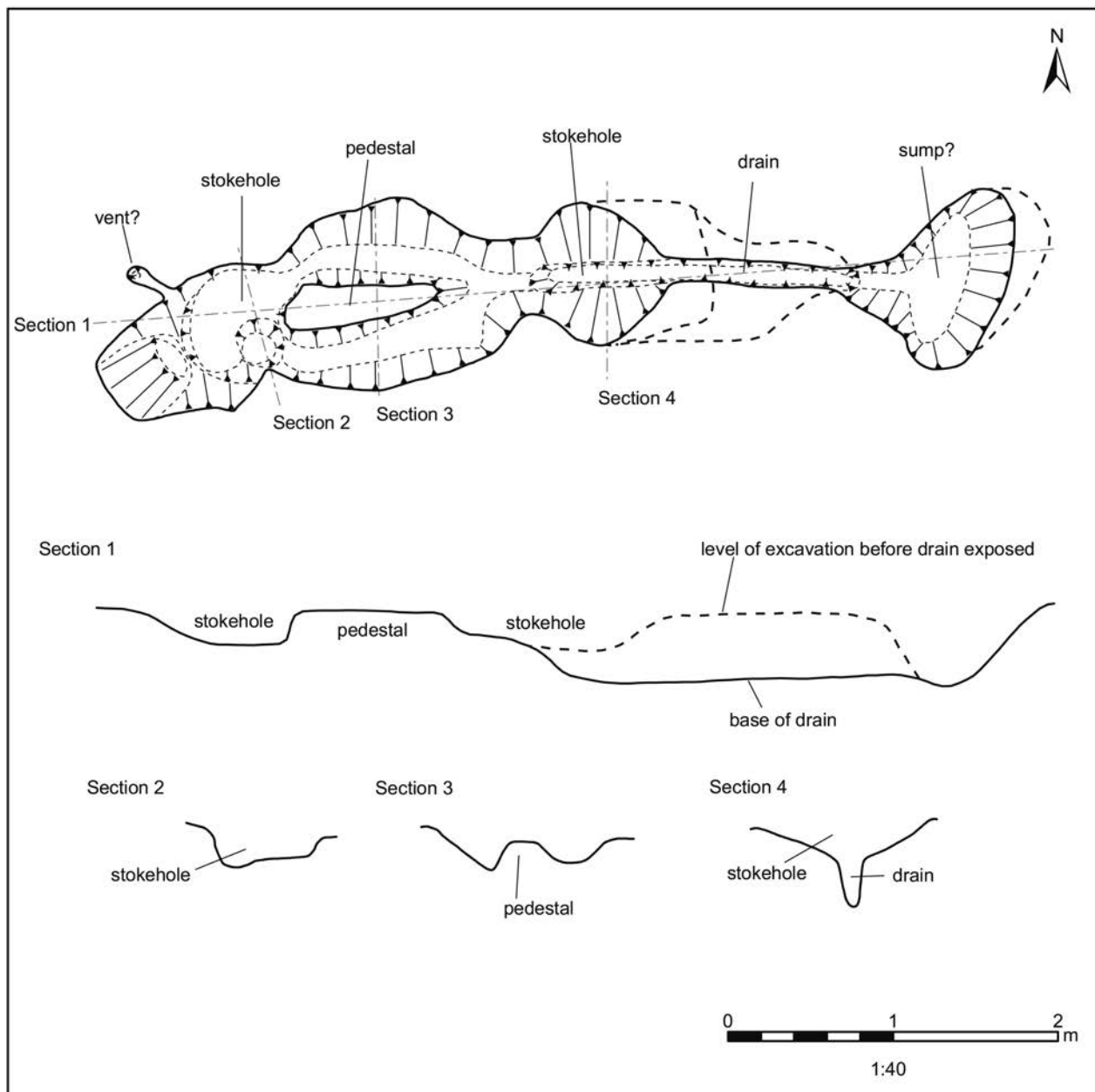


Figure 9 Plans and sections of the Shalford Road kiln, reproduced by kind permission of Colchester Archaeological Trust

weighing 28.22kg was excavated, giving a small average sherd size of 7g. The small sherd size and the fact that many sherds are abraded indicate the pottery was dumped in the kiln after it went out of use, rather than left *in situ*.

#### Finewares

A total of fifty-five sherds of fineware were identified. Most are reported as having a grey fabric, indicating that they are misfired wasters. A number also show a degraded glaze, this could be a firing fault or due to weathering. Jugs were the only fineware vessel form identified and a number of fragments from stamped strip jugs are present (Orr and Brooks 2009, fig. 3.1, 2 and 4). The illustrated jug fragments show the typical flat-topped thickened rims (rim type B3). The cartwheel stamps on the neck of fig. 3.1 show a slight variation in that the centre is crescent-shaped (fig. 3.1a). The stamps are pressed directly into the body of the pot and not into an applied pad. Other featured examples comprise a sherd showing broad horizontal and

diagonal applied strips (fig. 3.3) and there are sherds with widely spaced vertical applied strips 15mm apart (not illustrated).

#### Coarsewares

The fabric description is consistent with that of the typical Hedingham Coarseware fabric showing occasional large quartz inclusions at the surface, with sometimes the addition of sparse flint as well as sand-tempering. Instead of the usual grey-firing pottery, colour varies from orange-brown to greyish brown, sometimes the more oxidised sherds show bright orange cores and paler, duller surfaces.

Cooking-pots form the main component of the assemblage. H1 rims are the most frequent (72% of rim fragments) (Orr and Brooks 2009, fig. 4.12–15) followed by H2 rims (11%). The early type thickened everted rims and B2 rims, and the later H3 rims account for only 4% of the total (the remaining 13% were unidentifiable).

Decoration and surface treatment are rare but there are three examples with thumbled rims, six show thumbled applied cordons below the neck, the illustrated examples having quite large diameters (fig. 3.9–10 and fig. 4.11). One rim shows rilling around the shoulder (fig. 4.15) and some sherds show wavy line combing.

Bowls account for 7% of featured sherds, these comprise large flared bowls, sometimes with rounded sides and flanged rims (Orr and Brooks 2009, fig. 4.16–19). Measurable rims range from 400 to 480mm in diameter, with a cluster around 440mm. Orr and Brook's fig. 4.19 appears to have a thumbled rim.

Jug fragments, comprising rims and handles, account for 5% of the total, a B2 rim with a pouring lip and rilled neck is illustrated (Orr and Brooks 2009, fig. 3.5). All the illustrated handles are strap handles (fig. 3.6–8), and those complete enough, show that the handle attaches at the rim. There are handles thumbled at the edges, or with cat's claw decoration (fig. 3.6), while fig. 3.7 and 8 show what looks like skewered decoration.

### Dating

The preponderance of H1 rims and stamped strip jugs indicate most of the pottery was manufactured during the 13th century. The smaller number of typologically later and earlier rims, suggest manufacture could have spanned the later 12th to 14th centuries.

## Starlings Hill

**Site type:** two kilns of Musty type 2

### Location and background

NGR TL 7814 3179

EHER No. 6879

Parish: Sible Hedingham

The site is located at Starlings Hill, which is to the south of Sible Hedingham on a minor road to Southey Green. The road is to the west of, and leading to, the Braintree to Hedingham road (A1017). The site is situated on the south side of the road, inside a slight bend and at the point where a north–south stream crosses the road. The EHER entry states that there were 'two medieval kiln sites', but only one is described in the archive, which like other production sites was situated on the west side of the valley, but this time, a stream valley rather than the valley of the River Colne, although the stream does feed into the Colne. However, a sketch map in the archive and the context information indicate there was also pottery production on the other side of the stream (but the same side of the road). In the present-day, the site is connected to Hole Farm by a footpath leading from the Southey Green road at Chandlers. The parish boundary with Gosfield parish lies 0.5km to the south.

### Geology

The site is situated on Kesgrave Sands and Gravels and close to boulder clay (the Lowestoft Formation), no more than 100m distant. London Clay and head deposits are further afield at between 500m and 1km to the north. River terrace and alluvium deposits occur at the bottom of the Colne valley 1.5 km to the north.

### Site description

The site was excavated by Jack Lindsay in 1958. Most of the EHER entry comprises notes made by M.R. Hull on information from Jack Lindsay. There are also notes and sketch plans in the archive copied by E. Sellers (Fig. 10). Hull notes that there were dumps of medieval wares in the area and gives the following description: one of the kilns was found on the first bank examined. Above the topmost floor of burnt clay was grass. Above that, the ground had been sliced off by the local authorities in widening the corner and removing trees. The road widening and removal of trees (see Fig. 10) had broken the sides and the upper levels had gone, but the general shape was clear, rather bulbous than oval.

The section indicates a laid floor of flints in white clay, above this were walls and three floors of red burnt clay, two whitish clay floors separating the red floors. There is no mention in Hull's notes of pedestals or stokeholes, however the entry for 'Medieval Britain in 1958,' notes that the kiln was of double stokehole type (Wilson and Hurst 1959, 325) i.e. Musty's type 2.

E. Sellers notes that kiln 1 was largely destroyed by road works and that there was only a small amount of material inside it, so this is likely to be the one described by Hull in the EHER. The context information notes a kiln 2, and kilns on the other side of the stream, which implies that kiln 2 was on the same side of the stream as kiln 1 and that there may have been multiple kilns here. The contexts according to E. Sellers' notes, and as they appear on the database, are as follows:

SYG K1 = kiln 1

SYG K2 = kiln 2

SYG US = unstratified

SYG US 3 = glazed sherds probably intrusive from kilns across the stream (there are find-spots of pottery on the other side stream listed as EHER No. 6880, NGR TL 782 317, so perhaps this is what is being referred to.)

SYG K2 US = sherds, ?all from one pot, from near kiln 2

### The pottery

A modest amount of pottery, 347 sherds weighing 9813g, was recovered. What is interesting about this site is the relatively high number of finewares, around 40% of the total assemblage by weight. The pottery was excavated from kilns 1 and 2, or found unstratified, the latter forming the largest component, and is presumably from the area of the kilns, rather than inside the structures. No complete vessels were found; there are a couple of vessel profiles otherwise vessels are represented only by fragments. Because such a small amount of pottery was found in kiln 1, it is pointless to compare kiln assemblages so the pottery has been considered as a single group.

### Finewares

There are one or two examples of the early glazed fabrics as found at Hole Farm, but most are of the typical smooth fabric. While most examples of the latter have the typical creamy orange fabric, many have darker skins, perhaps due to accidental late stage reduction in the kiln. There are also sherds with a thick grey core, orange outer margin and brown inner margin, the 'liquorice allsorts' effect often seen on Mill Green Ware. There is one example of Hedingham Sandy Orange Ware fabric from kiln 2, see below.

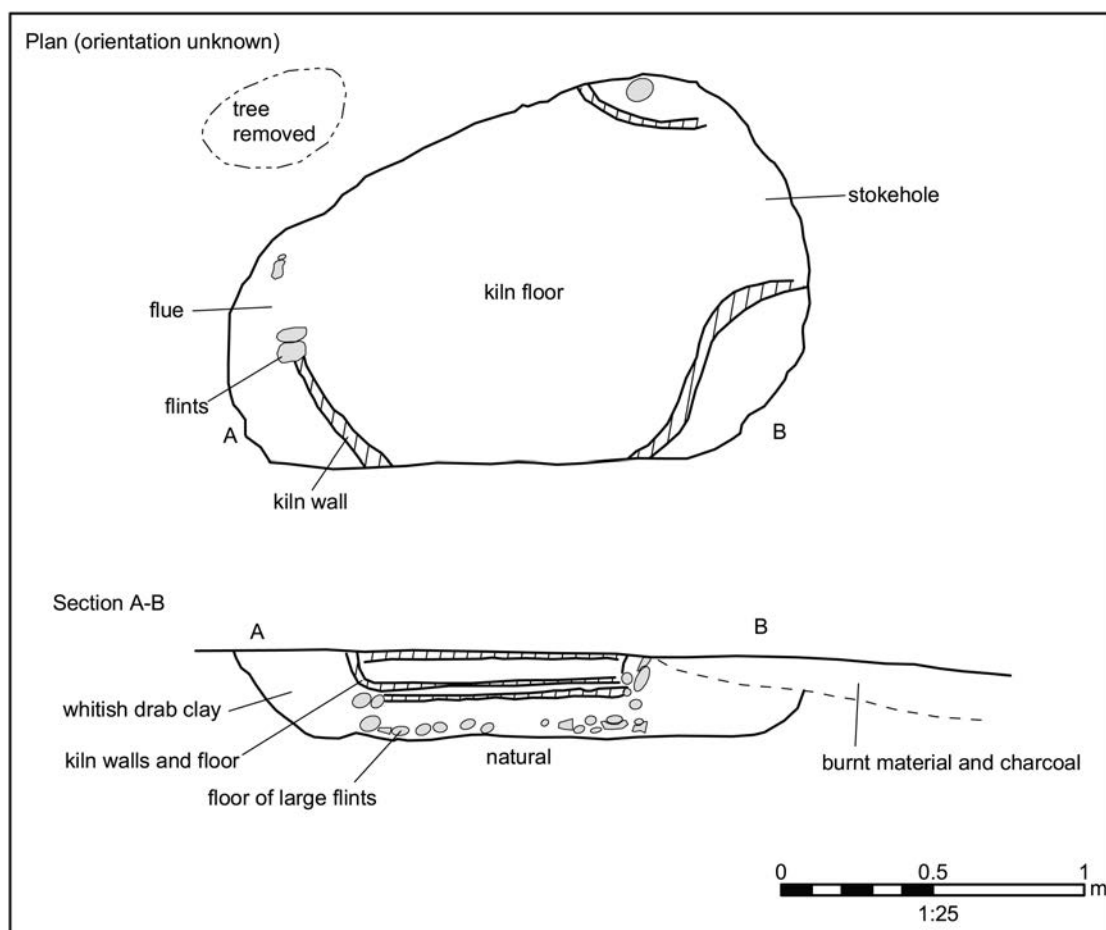


Figure 10 Plan and section of a kiln at Starlings Hill based on E. Sellers' sketches

Jugs comprise the major vessel class. There are examples of London and Scarborough-style early rounded jugs including a lid (Fig. 14.19–20) and undifferentiated early rounded jugs (Fig. 15.22). Stamped strip jugs are the commonest form (Fig. 15.28–32). There are also combed/reeded-style jugs (Fig. 15.37–9) and white slip jugs (Fig. 37.40), with the addition of jugs that could not be assigned a decorative style (Fig. 16.43–4). No examples with Rouen-style decoration were found. As well as jugs, there are single examples of flat wares (Fig. 16.46) and a horizontal handle from a bowl or jar, too fragmented to illustrate.

#### *Coarsewares*

The coarseware assemblage is very similar to that at Hole Farm. The standard grey fabric is commonest and there is a single example of the early medieval fabric (*hedcwem*). Some oxidised sherds are present, which are either ochre or dirty buff in colour, and some sherds are partially oxidised. Vessel forms include a single example of a socketed dish or bowl (Fig. 16.53), several fragments from large slightly flared bowls sometimes with holes in the sides, varying in profile (Fig. 18.68) and one small thick-walled jar. Cooking-pots are the most frequent form and include a complete shouldered profile with a B2 rim (Fig. 19.83). There are a number with H2 and H1 rims, the occasional H3 rim (Fig. 24.124) and an E5A rim. Fragments from jugs (Fig. 33.190, 191) and cooking-pot-shaped storage jars are also present. A small number of body sherds show wavy line combing.

#### **Dating**

Production at the Starlings Hill site would seem to be very long-lived with London-style early rounded jugs and B2 cooking-pot rims, which could be later 12th century, to combed/reeded jugs, white slipped jugs and H3 and E5 cooking-pot rims, datable to the 14th century. The earliest and the latest pottery types however, make up a fairly small proportion of the assemblage, the bulk of the finewares comprise stamped strip jugs and H1 and H2 cooking-pot rims, so the bulk of production most likely took place in the 13th century. As for the dating of the individual kilns, datable pottery from kiln 1 comprises a single fragment of a stamped strip jug and H2 and H1 cooking-pot rims, providing a 13th century date. Kiln 2 produced the same cooking-pot rim types, with the only datable fineware sherd, the ?Scarborough-style lid (Fig. 14.19) perhaps datable to the later 12th to mid 13th century.

#### **Other finds of kiln pottery from the Starlings Hill area**

##### **Kiln waste from a ditch 50 metres north-west of the Starlings Hill kiln**

This pottery was collected in 1973 by Elizabeth and John Sellers from a drainage ditch that had cut through a layer of kiln waste some 50m north-west of the kilns at Starlings Hill (Webster and Cherry 1974, 220). This find-spot is not listed in the EHER. It is almost certainly kiln waste as

there are relatively high numbers of sherds with clay adhesions and glaze on the breaks, perhaps the result of an explosion in the kiln. Other faults comprise cracking and accidental reduction of fineware sherds. A number of sherds are abraded internally, although this could be due to weathering rather than manufacturing faults.

### *The pottery*

#### Finewares/glazed wares

As the assemblage contained some interesting pieces, including a glazed sandy orange ware fabric, the pottery has been entered onto the database and been assigned the code SYGDT. Pottery recovered from the surface of the ditch has been assigned context 1, and pottery from within the ditch has been assigned context 2, although as all the pottery is unstratified it has been treated as a single assemblage.

Most of the pottery comprises finewares and/or glazed wares. A total of 142 sherds weighing 3142g were recovered. Of these only 30% (by weight) comprise the classic fine, smooth fabric (Fabric 5), or its slightly coarser variant. The remaining 70% is accounted for by a sandy orange fabric (hedsao). The only vessel-form identified was the jug, decorative styles including Scarborough-style early rounded jugs, stamped strip jugs (Fig. 15.33–6), combed/reeded jugs and white slipped jugs (Fig. 15.41). The stamped strip jugs and the combed/reeded jugs occurred in the fineware fabrics and the sandy orange fabric. The white slipped jugs occur only in the sandy orange ware fabric and the single example of Scarborough-style was in the slightly coarser variant of the fineware fabric.

#### Coarsewares

Hardly any coarsewares were collected, a total of six sherds weighing 129g, the only featured sherd comprising an H2 cooking-pot rim in the fine version of the coarseware (hedcwf1).

#### *Dating*

The combed and reeded style jugs show production into the later 13th to 14th centuries. The slipped decoration and sandy orange ware jugs show a departure from what is typically Hedingham style to the sandy orange ware tradition. However, the slip-painted lattice design found on No. 41 (Fig. 15) is not necessarily later as such decoration occurs on London-type ware and Medieval Harlow Ware jugs of the 13th century (*cf.* Pearce *et al.* 1985, fig. 49.168 and Walker 2000a, fig. 23.4).

#### **Chandlers**

There is another find-spot of pottery discovered in July 1973 at Chandlers (a house name). The grid reference for this site quoted in E. Sellers' archive is actually that of the Starlings Hill kiln, the OS Explorer Map (sheet 195) however, shows that Chandlers is about 250m west of the kilns, further along the Southey Green road. The pottery has been described, but not entered onto the database.

### *The pottery*

#### Finewares

Most of the pottery is fineware/glazed ware (wt 604g). Jugs are the only vessel form identified, occurring in the

fine fabrics and in the sandy orange ware fabric. They include single fragments from London and Scarborough-style early rounded jugs, stamped strip jugs, fragments with combed decoration, and a ribbed handle, perhaps from a pear-shaped or biconical jug. There is also a slip-coated and green-glazed sherd in the sandy orange fabric. Wasters are present, comprising a sherd with clay adhesions and a sherd with glaze on the breaks.

#### Coarsewares

Coarsewares comprise only a few small abraded sherds (wt 28g).

#### *Dating*

The range of decorative styles suggests production from the mid-12th to 14th centuries.

#### **Jack Lindsay's pottery from Southey Green Banks**

A total of 2.4kg of coarseware pottery from Southey Green Banks was collected by Jack Lindsay. No grid reference is given but this is presumably from the site of the Starlings Hill kiln. Finds comprise fragments from cooking-pots, bowls and jugs similar to those found during excavation of the kilns. Some are wasters. As the material is poorly stratified and not of intrinsic interest, it has not been catalogued on to the database. A more detailed list of the pottery present has been placed in the archive.

### **Roman pottery production**

Roman pottery was also made in the area (Rodwell 1982) and the two locations are shown on Fig. 11:

- Greenstead Hall, Halstead (TL 821 294): the remains of a circular kiln was found, with a second kiln close by (with no exact location recorded)
- Bakers Farm (probably Baykers Farm), Sible Hedingham (TL 781 331): a single kiln was found

Both sites produced flanged pie dishes of 4th century date (Rodwell 1982, 64). That from the second kiln at Greenstead Hall is described as grey ware and the pottery may appear similar to Hedingham Coarseware. Like the Hedingham sites both are on the western side of the Colne valley. The Greenstead Hall kiln is on the border of boulder clay and a pocket of glacial sand and gravel (which may not have been exploited by the Hedingham potters as none of the production sites are near outcrops of glacial sands and gravels). They may have preferred Kesgrave Sands and Gravels). An area of head deposits lies about 150m away from Greenstead Hall and the Hedingham production site at Attwoods is about 2km to the west. The Baykers Farm site is on the border of boulder clay and Kesgrave Sands and Gravels and is close to the putative site at Lamb Lane and the Hawkwood Manor site.

### **Pottery production in the 19th century**

There was a pottery works at Southey Green (near the Starlings Hill medieval pottery kilns) from the late 18th to mid 20th centuries, where red earthenware pottery as well as brick and tile were made (TL 778 318) (see Appendix 4, 'Documentary Evidence' p.164–5; Fig. 11; Corder-Birch

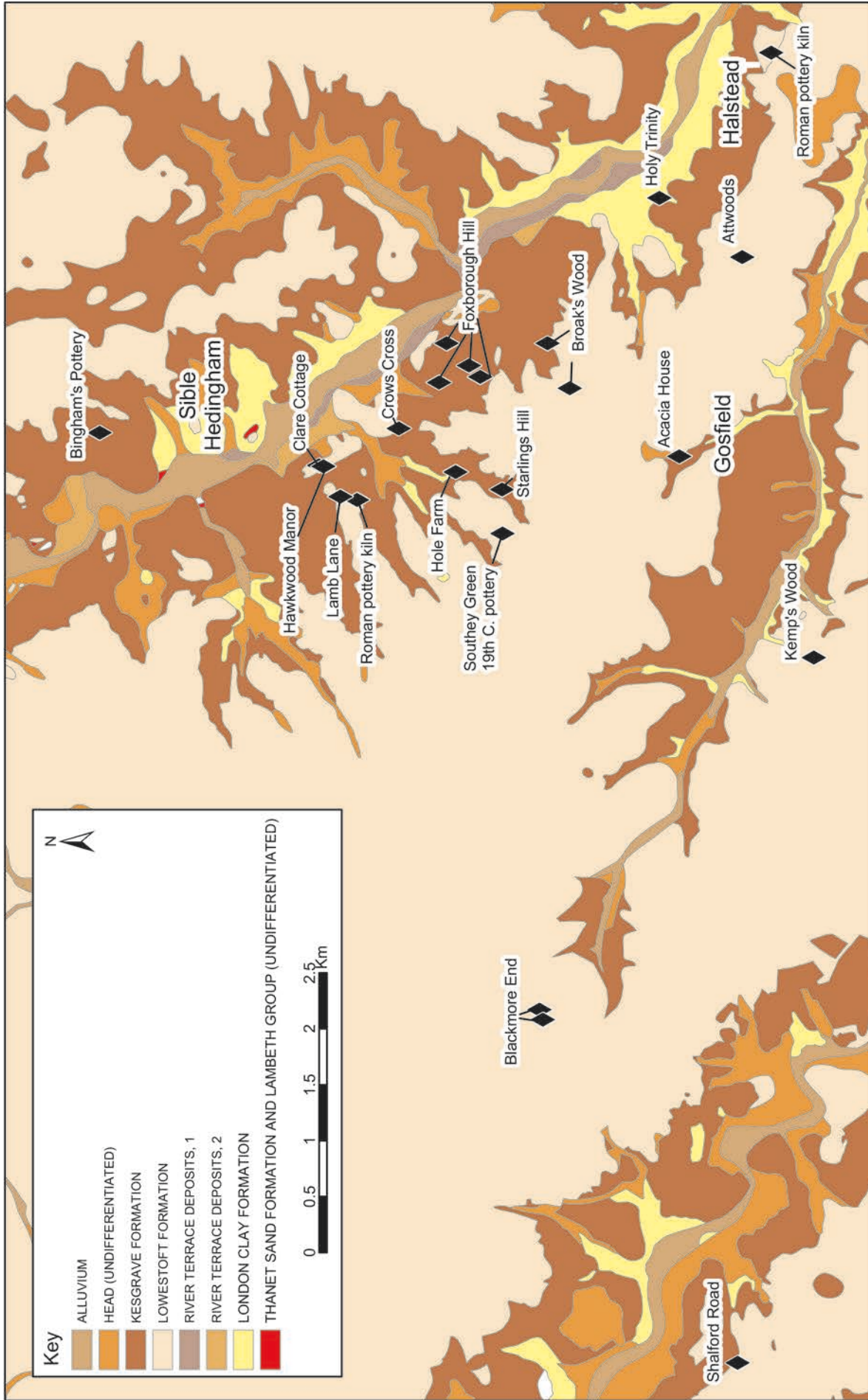


Figure 11 Location of production sites showing underlying geology, reproduced by permission of British Geological Survey Licence No. 2003/113 British Geological Survey © NERC. All rights reserved

2010, 23–52). Rather more interestingly there was Bingham’s pottery works at Castle Hedingham, on the junction of Pottery Lane and the Castle Hedingham to Sudbury road (TL 785 354) (Ryan 1996, 77; see Appendix 4, ‘Documentary Evidence’ p.164–5 and Fig. 11). Edward Bingham started in 1837 making everyday earthenwares, but was succeeded by his son, also called Edward, who made art pottery. The Bingham family moved from nearby Gestingthorpe (also a pottery-making centre) to Castle Hedingham attracted by the deposits of fine clays, although Dorset and Devonshire clays were also brought in for some of the art wares. Bingham’s notebooks have survived and information from them has been published by Bradley, who lists the following local clays exploited by Bingham (Bradley 1968, 17):

- Red Clay from Hoe Lane used for flowerpots, milk pans and drainpipes and took a good ready-brown glaze
- Chalky daubing clay from Sudbury road which made good white terracotta ornaments but would not take a glaze
- Marl clay, containing lime from Duller, on the outskirts of Castle Hedingham, near the old railway bridge, which was used mainly for making bricks.

Hoe Lane is not to be found on any street maps, but according to a resident of Pottery Lane, Hoe Lane is a footpath that runs between Pye Corner and Rosemary Lane, and sure enough along this path there is a bank where a fine red sandy clay is exposed. Bradley (1968, 17) and another account of the Bingham pottery by Lindsay (1958, 179–191) describe the pottery works, which were clearly a ramshackle affair, and perhaps not too dissimilar from their medieval equivalent. The pottery works comprised a show case, and on either side of Bingham’s cottage, outhouses containing completed vessels. The actual potting works was in the garden of Bingham’s cottage, surrounded by fruit trees, and comprised a low shed some 50 feet (15m) long, terminating in a corrugated iron structure containing a kiln. The first part of the shed was the potting shed, which led through to the drying shed and a storeroom for tools and materials. The kiln was of Bingham’s own design which he and his sons had built and the pottery was entirely family-run. It is interesting to note that like the 17th century potters of Harlow, Bingham was a very religious man, being a member of the Plymouth Brethren (Lindsay 1958, 186).

### **Factors that influenced the siting of the production centres**

(Figs 11 and 12)

As there are fourteen known production sites, these have been examined to see what factors they have in common.

#### **Raw materials and communications**

Almost all sites lie within the Colne valley or valleys formed by the tributaries of the River Colne. The exceptions are Kemp’s Wood and Attwoods which are on the boulder clay plateau but within 500m of these valleys, and the Shalford Road kiln which is in the valley of the River Pant. All these valleys cut deeply down through the strata to expose outcrops of Kesgrave Sands and Gravels,

London Clay (used for the coarsewares and sandy orange fabric), and in the Sible Hedingham area, deposits of Lower London Tertiaries are exposed, comprising the Thanet Sand Formation and the Lambeth Group. ICPS analysis has shown that it was the clays of the Lambeth Group that were used for the finewares. There are also head deposits consisting of silty and sandy clays, which may have been used. Presumably, the potters used the sand from the Kesgrave Sands and Gravels as tempering for the coarsewares, although this was not demonstrated by scientific analysis.

As they were exposed in the valley sides, these raw materials could have been easily extracted by the potters. The streams and rivers would have also provided a water supply, and possibly also supplies of peat, for fuel, deposited in the valley bottoms. Positioning the kilns in valleys may have also provided a sheltered spot protecting the kilns from strong winds. All the kilns discovered so far have been on the western side of the Colne valley, but then so are the medieval towns of Sible Hedingham and Halstead. According to the BGS map of the area (sheet 223), Lower London Tertiaries do not outcrop in the Pant valley yet finewares were made there. Either there are unmapped pockets of these clays (modern geological surveys rarely record small outcrops (Moorhouse 1982, 96)), or they were carted across from Sible Hedingham. The presence of Roman pottery kilns at Sible Hedingham and Halstead, both on the western side of the Colne valley (see gazetteer entry), shows that much the same geographical factors were in operation during the Roman period as there were in the medieval period.

Most of the production sites are on, or close to, a north–south Roman road (now the A1107). Southwards this road leads to Braintree where it intersects the east–west route of Stane Street (the A120) and continues to southward to Chelmsford. Northward, the road goes to Haverhill in Suffolk, the road continuing north-westwards to Cambridge. Attwoods and Holy Trinity, on the outskirts of medieval Halstead, are on the present-day A131, which southwards joins the Braintree road and northwards leads to Sudbury in Suffolk. Halstead is also on an east–west road that follows the Colne valley eastwards to Colchester and westwards joins the Sible Hedingham to Haverhill road, just to the south of Sible Hedingham. The Crows Cross kiln is situated at the junction of these two roads, and the Foxborough kilns are close to the A131. Attwoods and Holy Trinity are connected today by minor roads to Gosfield and Sible Hedingham parishes. As these roads feature on the Chapman and André Map, they probably existed in the medieval period (see below).

All the production sites centred on the Halstead, Gosfield and Sible Hedingham triangle have good communications enabling their products to be easily distributed to Suffolk, Cambridgeshire and further south into Essex. The road system would also allow access to any raw materials that may not have been available locally, such as lead and copper for the glazes. XRF analysis of the glazes has shown that scrap brass may have been the source of the copper (because of the zinc content, see Appendix 3) and scrap lead may also have been used, so these metals may not have travelled far. The River Colne is not navigable at this point and was unlikely to have been used for distribution on a large scale in spite of the cheapness of river transport.

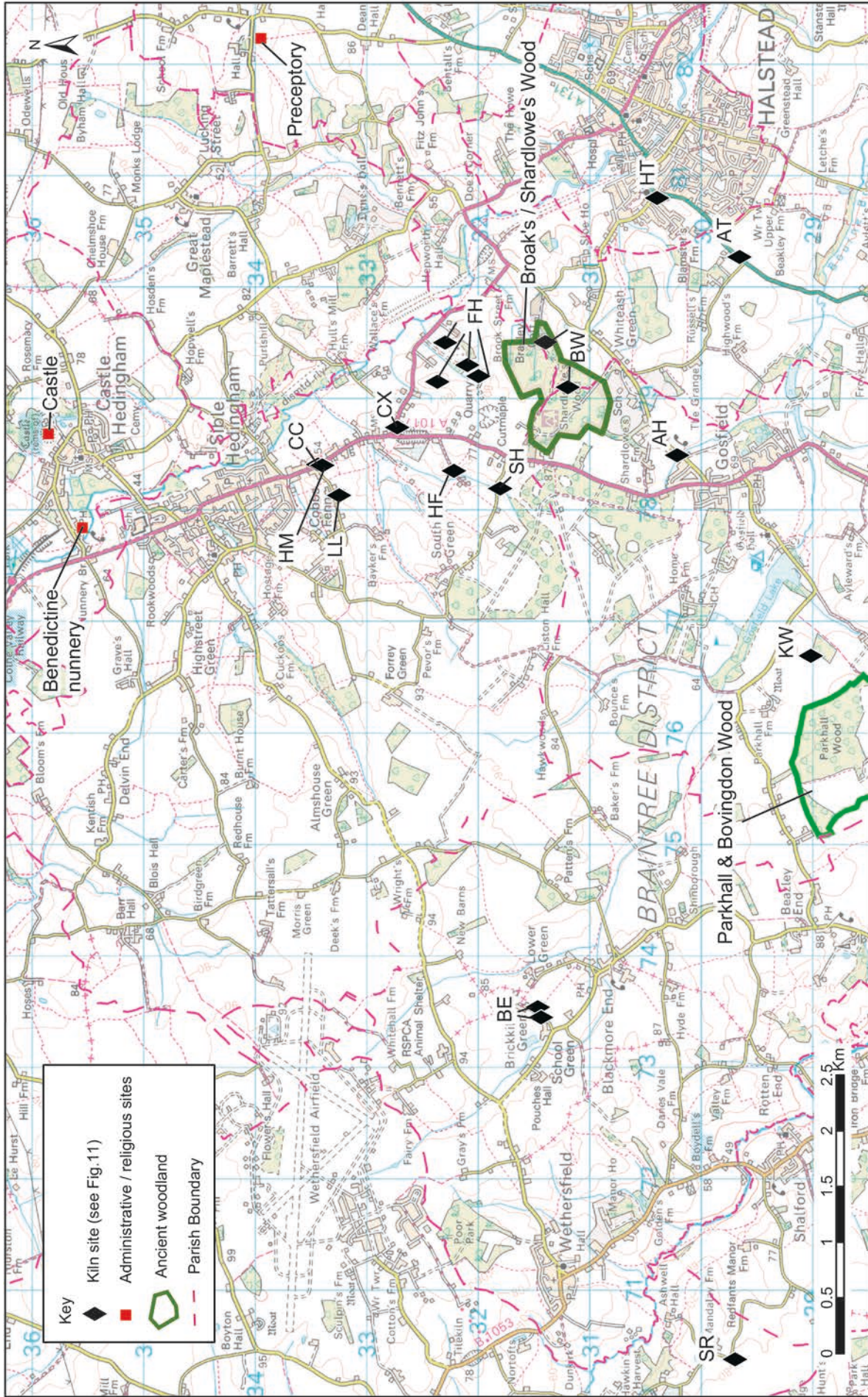


Figure 12 The location of the Hedingham kilns also showing the roads, rivers, parish boundaries and areas of ancient woodland Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602



Neither of the two outlying sites at Blackmore End and Shalford Road is on major roads. The Shalford Road follows the Pant valley south-eastwards to Shalford, and the relatively large town of Bocking and Braintree. North-westwards it leads to Great Bardfield, where there was a market in the medieval period, and to Finchingfield. In the present day the kiln site is connected to Wethersfield by minor road and footpath. Blackmore End is also close to Wethersfield, the latter is on a road that goes eastwards to Sible Hedingham and westwards to Thaxted and Saffron Walden. Therefore these sites had reasonable communications which would have allowed distribution of their products north-westwards into Cambridgeshire and southwards to central Essex. All these roads are present on the Chapman and André, or other 17th century maps. The River Pant is not a navigable river and at its nearest point to the Shalford Road kiln, is little more than a stream.

The Hedingham industry covered quite a large area. Looking first at the main group, the most northerly site is at Clare Cottage at the southern end of Sible Hedingham, and the most southerly is at Kemp's Wood, near Gosfield, some 4.5km distant. The most easterly kiln site is at Holy Trinity, Halstead, 2.6km to the east of the Sible Hedingham road. Kemp's Wood is also the most westerly site, 1.6km to the west of the Sible Hedingham road. When looking at the outlying production centres, Blackmore End is 4.5km west, and the Shalford Road site 7.8km west of the Sible Hedingham road, the latter lying due west of Gosfield. The outlying kilns are significant as it means (as discussed above) that instead of a relative concentration close to the Sible Hedingham and Halstead roads, there could be undiscovered production sites all across this part of north-central Essex. The pottery from the Shalford Road kiln is of the same date as that from the main concentration of production so there has been no shift of production westwards over time (but see Chapter 8 'The demise of the industry').

However, going by the factors described above, production sites would be limited to locations in valleys that are deep enough to expose Kesgrave Sands and Gravels, London Clay, and for the finewares, the even deeper Lower London Tertiaries, containing the Lambeth Group of clays (although suitable clay could have been carted around). They would also be sited close to major, or at least significant, routes into East Anglia and other parts of Essex. When looking at Fig. 11, which shows the kilns in relation to the geology, it can be seen that most of the deposits of London Clay (used for the coarseware and sandy orange fabric) are on the eastern side of the Colne valley yet most of the production sites are to the west. This is probably because the main roads and the main settlements are on the western side of the valley, showing that it may have been more important to be near lines of communication than on clay deposits, as clay could always be carted a short distance.

Most of the sites discovered are rural. Those close to medieval Halstead are sub-urban and those in Potter Street, Sible Hedingham may appear to be sub-urban, as they are at the southern periphery of the village but until the 20th century Potter Street was the main part of the village (Corder-Birch 1988, 19). It is possible that Potter Street was a potting village, consisting of a community of potters, as at Potter Street, Harlow.

### Sources of fuel

Another important factor that would have determined the location of a production centre is a source of wood to fire the kilns. Documentary evidence of post-medieval pottery production at Harlow shows that the potters used coppiced wood, loppings and (presumably waste) wood from the felling of trees as fuel for their kilns (Bartlett 2009, 8) and this may well have been the case for the Hedingham potters. There is also evidence that peat was used as a fuel in south Essex (Le Patourel 1968, 117–9) and as seams of peat occur in the alluvium deposits in the main valley floors of the River Colne (Marks 1981, 7), these may have been exploited by the Hedingham potters. However, peat would not have been a suitable fuel for the pale coloured finewares as the smoke caused discolouration (Francis 1995, 427).

The Domesday Book shows that in the late 11th century, this part of Essex had plenty of woodland but was not as densely wooded as parts of western and central Essex (Hunter 1999, 77). Figure 12 shows two tracts of extant ancient woodland near the Hedingham production sites. One is Broak's Wood/Shardlowe's Wood (there may be a clue in the name) which is roughly equidistant from Sible Hedingham, Halstead, and Gosfield, i.e. in the middle of the main group of production sites. Parkhall and Bovingdon Woods are medieval woods close to the southerly production site at Kemp's Wood.

Most medieval woods were managed by coppicing, that is cutting back the tree to its base and then harvesting the re-growth (Rackham 1980, 104), and this re-growth was used by the potters as fuel, as evidenced at the Harlow potteries (above). Ancient woodlands in north-central Essex comprise mainly lime and elm trees (Rackham 1980, 104). According to Petchey (1976, 177), hornbeam was also present at Parkhall and Bovingdon Woods, which burns fiercely as long as the wood is well seasoned (Hodges 1976, 167). It is suggested (by Simon Leatherdale of the forestry commission) that ash trees would have formed a considerable component of Broak's Wood during the medieval period along with maple and hornbeam. Ash is an excellent firewood and will burn even when damp. Maple is also a suitable firewood. In addition, gorse and bracken grow in Broak's Wood in the present day and so probably also grew there in the medieval period. These were both used as fuel; gorse, also known as furze, was favoured by potters, as it is a clean hot-burning fuel (Brears 1989; Bailey 2007, 96). Likewise, bracken was used to fire brick furnaces (Bailey 2007, 96), so must have also been capable of firing pottery kilns. As gorse and bracken grow in sandy soils, their presence would have also signified to the potters that here was an outcrop of sand (to mix with the clays for coarseware). A sherd from Hole Farm kiln 2 shows a bracken impression (r.12255), this does not prove bracken was used as fuel but shows it was part of the potters' environment.

Timber and underwood (which would have included coppicings and loppings) were an important resource to the Essex economy as these products were traded, especially to London (Rackham 1980, 104). As the potters' wood came from managed woodlands that were an important resource, it is unlikely that the potters' need for fuel led to the depletion of woodland. However, at Mile End and Great Horkesley, near Colchester there is evidence that potters moved into the area after woodland

was cleared (Cotter 2000, 367) and may well have used waste wood as fuel, further helping to clear the area.

Other pottery production sites in the county are close to commons and heaths, such as at Harlow, Tiptree, Stock and Great Horkesley where supplies of clay, sand and fuel were readily available (Ryan 1996, 40). There are few commons in the Hedingham area, yet these supplies were available to the Hedingham potters, showing that availability of raw materials was a very important factor when siting a pottery kiln. It has also been noted that pottery production sites tend to be sited near parish boundaries as this is where the woodland tends to be (Pat Ryan pers. comm.). Examination of parish boundaries shown on Fig. 12, shows no clear pattern at Hedingham, with some sites such as Shalford Road and Starlings Hill being close to parish boundaries and others not. The Broak's Wood sites however, are at the junction of several parish boundaries and within a wood.

### **The medieval climate**

The climate would have had an effect on the pottery industry. Cold winters could have been an advantage in that frosts would help break up the dug clay, perhaps one reason why kilns were sited in valleys. Otherwise warm, dry conditions would have suited pottery manufacture, but not so dry that their water-supply would run short, or to adversely affect the rest of the economy. Warm, dry weather would have been good for drying pots prior to firing. Cold, wet weather would mean drying them indoors by fire, an additional expense, and frosts although good for weathering clay, would have also damaged un-fired and fired pots if left outside. Heavy rainfall could have flooded the kiln, as may have been the case at Hole Farm, and is perhaps the reason why some medieval kilns had drains (see above). Warm, dry conditions would have meant the roads were in better condition making distribution easier and a good climate would mean good crop yields, which would mean a prosperous population with spare income to buy pots.

The Hedingham industry falls into the supposed Medieval Warm Period (MWP) (more scientifically known as the Medieval Climatic Anomaly) which lasted from the 10th to 14th centuries and was characterised by warm dry summers and mild winters, the latter caused by a westerly airflow (Lamb 1965). One source quotes summer temperatures in England as between 1 and 1.4°C higher than the average 20th century summer temperature and an average winter temperature of 6°C, again higher than most of the 20th century ([http://www.eh-resources.org/timeline/timeline\\_me.html](http://www.eh-resources.org/timeline/timeline_me.html)). The MWP has become embroiled in the current manmade climate change debate, although the consensus amongst scientists seems to be that the climate was indeed warmer in Europe, and also in north America, which became very dry (<http://www.ncdc.noaa.gov/paleo/globalwarming/medieval.html>). One theory points to a strongly positive North Atlantic Oscillation blowing warm air over Europe, perhaps caused by increased volcanism between c. AD1100 and 1260 (Schultz 2009; Bradley *et al.* 2003, 405). The presence of vineyards in England during the medieval period is taken as an indicator of warmer temperatures, and indeed, according to Domesday, the de Veres planted a vineyard at Castle Hedingham. MWP doubters maintain that the subsequent decline in vineyards was not due to climatic deterioration, but many other factors such as superior and readily

available French wines and a preference for beer over wine.

Climate deals with trends, but the weather varies from year to year and from season to season. There is some data on the weather in East Anglia for the period 1250 to 1350 (Hallam 1984). This shows the decade of the 1250s to be very wet, perhaps accounting for the water ingress at the Hole Farm kilns and the need for a drain and sump at the Shalford Road kiln (Hallam 1984, table 1). Hallam's table also shows that summer droughts were common from the 1280s to early 14th century, which would have been conducive to potting. This was followed by a deterioration in climate leading to a series of poor harvests, the weather improving again in the years leading up to the Black Death.

### **Kiln orientation**

The two single flue kilns from Attwoods and Crows Cross, and the ?double flue kiln from Shalford Road (Figs 2, 9), are orientated east–west and in the case of the single flue kilns, the stokehole is to the west. The two upper kilns of the Hole Farm stack are orientated south–west to north–east, with the more northerly kiln, kiln 2, being further towards the north–south axis. Presumably, the orientation has something to do with the direction of the prevailing winds. However pottery kilns at neighbouring Frogs Hall, Takeley (Ennis 2006), showed various orientations, north–south, east–west or south–west to north–east, so clearly factors other than wind direction are at play. A brief look at Musty's comparative plans of medieval pottery kilns (Musty 1974, fig. 1) shows that there is no apparent pattern to kiln orientation.

### **Seasonality**

The traditional start of the potting season was Lady Day on 25 March, finishing at Michaelmas on 29 September, although the season varied according to the weather (John Hudson pers. comm.; see also Brears 1989, 7). It is thought pottery-making took place during slack periods in the farming year. Clay digging and preparation probably took place in the winter months (Brears 1989, 7) but potting would only have taken place in the winter if the weather was mild enough, as at this time of year potters may have encountered problems with frost-shattering (see above) and difficulty in drying pots. In addition, the roads would have been worse, hampering distribution of the finished product. This is reflected by the timing of annual fairs which almost always took part in the summer or autumn (Scarfe 1999, 78). Two sherds show what looks like grass striations (cylindrical base Fig. 33.201 and cooking-pot Fig. 19.81) which might indicate the pots were made in the summer months, but as grass is present, if not growing, all year round this is not conclusive.

### **Other local medieval industries**

Pottery manufacture was not the only medieval industry in the area and the potters may have interacted with other industries, such as forestry, already mentioned above. There is evidence of a tannery in Sible Hedingham in the early 14th century and there have been watermills there since the time of Domesday, where corn was milled. In addition, there are references to plantations of alder trees from the early 14th century (Adrian Corder-Birch pers. comm.), a tree that had a large number of uses. The presence of these various industries, whether connected or

not, shows that pottery manufacture was just one component of a wider industrial landscape.

Textiles, made from wool and to a lesser extent flax and hemp, were manufactured on a commercial scale in the Hedingham area during the medieval period (Gervers 1989, 46–8). Production of textiles took place in various parts of the county but there is a marked concentration at Halstead and in rural areas between Halstead and Sudbury, no doubt taking advantage of the main road to transport raw materials and finished goods. There is also evidence of textile production to the west of this corridor, encompassing Gosfield and the Hedinghams (Gervers 1989, fig. 2). Various types of textile manufacturer are recorded by Gervers including, in the area around Halstead, dyers, tailors and fullers (who cleaned and thickened the cloth). (Interestingly, three different dyes can be produced from the alder tree, so there may be a connection here.) Fullers and tailors are recorded in the rural areas to the west of the Halstead/Sudbury road corridor, and weavers are recorded in the area of Gosfield and Sible Hedingham. A single chaloner (maker or dealer in woollen blankets and quilts) is also recorded in the Hedingham area.

Potter and textile manufacturer would therefore have been neighbours, but was there any connection between these two industries or between the potters and any other industries in the area? For example did they use each other's by-products? The only by-products of the pottery industry are pot wasters and ash from the kilns. Pot wasters may have been used as hardcore as was the case at post-medieval Harlow (Davey and Walker 2009, 42). The ash from the kiln — wood ash with perhaps the ashes of gorse and bracken — was an extremely useful commodity as it could be made into potash (potassium carbonate). Potash was an effective fertiliser and was used for making potash glass, also known as forest glass, although there is no evidence of glass manufacture in the Hedingham area. Potash was also a vital raw material for making soap, and for bleaching and dyeing (Jarvis 1993, 78–9). Soap was used extensively in the tanning industry (Francis 1995, 430) so it is possible that the potters' ash was used in the textile industry and at the tannery at Sible Hedingham.

In the post-medieval period, soap works were often sited next to, or even within, tin-glazed earthenware

potteries (Francis 1995, 426–7), and indeed the suggested reason for this is that waste ash from the kilns was used for soap-making. Francis also suggests that there was a reciprocal benefit for the potters, in the form of soaper's waste, a waste product of the soap-making industry that comprised a mixture of potash and glycerine. Glycerine is a sticky substance and may have been used to adhere the glaze to the pot, and the waste potash in the mixture would have provided a frit. The glycerine would have burned off during firing (Francis 1995, 428–9), and thus would not be detected by XRF analysis. Francis considers that this glazing technique would only have been suitable for tin-glazed earthenware that had a single firing, as single firings were the norm for medieval glazed wares, such an arrangement at Hedingham is eminently possible.

Potash was widely made in Essex (Jarvis 1993, 78), from burning waste wood and perhaps other plant material, but a ready-made supply from the potters may have been most welcome. (The term potash comes from the fact that the solution of ash was boiled down in pots and does not relate to the pottery industry.) If not used for textiles or tanning, the ash probably went on the fields as fertiliser. Aubrey de Vere founded a vineyard at Castle Hedingham, and other specialised crops such as hops and osiers were grown in the post-medieval period, so there is a history of specialised agriculture in the area, for which high quality fertiliser may have been needed. A possible connection with the traditional cartwheel-making industry is discussed below under Chapter 6, 'The fineware origins and affinities'.

#### **Influence of religious houses**

Gervers considers that monasteries may have encouraged textile manufacture and trade as textile workers appear in the same places as monastic institutions, although this does not seem to be the case in the Halstead/Sudbury area (Gervers 1989, 46). There was however a preceptory at Little Maplestead on the Halstead to Sudbury road, and a Benedictine nunnery at Castle Hedingham (shown on Fig. 12). It is possible that such institutions also encouraged the pottery industry, but potters would have needed neither investment nor an entrepreneur. The most important things for setting up a pottery were a supply of raw materials, good communications and a market.

## Chapter 3. The fabrics

Most work on fabrics has been done on the pottery from Hole Farm, with the addition of a glazed sandy orange ware fabric from the Starlings Hill group, and a coarse version of the standard coarseware fabric from the Holy Trinity kiln site. This section gives a visual description characterising the wares and includes the main observations from the thin-section and ICPS analyses, but see Appendices 1 and 2 for the entire reports which give comprehensive descriptions of the clays and inclusions, along with discussions on raw materials and technology.

### **The fineware/glazed ware fabrics** (with glaze descriptions)

Fabric 5 is the typical creamy orange fineware fabric and occurs at all sites with a fineware/glazed ware assemblage. Fabric 4 is a general intermediate category. Fabrics 1–3 and 6 do have an added sand-tempering and are not so obviously Hedingham Ware. These are largely confined to Hole Farm, although a few examples of Fabrics 2 and 3 occur at the neighbouring Starlings Hill site. Fabrics 1–3 and 6 appear in hand specimen to be variations of the same fabric, and this was confirmed by thin-section analysis and by ICPS analysis. Vessels in these fabrics look handmade with no throwing lines, and were probably coil-built. This was borne out by thin-section analysis, which detected relic coils or probable relic coils, but conversely also showed voids orientated parallel to the vessel margins as if wheel-thrown, which suggests the vessels were coil-built but finished on a turntable (Quinn, Appendix 1, p.147). The sandy orange ware fabric encountered in the Starlings Hill group was made from a different clay to that of the Hole Farm fabrics. The very fine buff fabric variant described by Cotter (2000, 76) was not found at Hole Farm (although it did occur in small quantities at Clare Cottage) and was not analysed. ICPS analysis suggests that all the fineware fabrics were made from clays of the Lambeth Group, a constituent of the Lower London Tertiaries, which outcrop in the north of Sible Hedingham (see Hughes, Appendix 2, p.151).

#### **Fabric 1**

This fabric is tempered with moderate rounded medium-sized grey, white and occasional pink sands (averaging 0.48mm across) in a fine silty clay matrix. Clay lenses are visible and there are inclusions of iron oxide and mica naturally present in the clay. Thin-section analysis also detected a number of other minerals. Sherds typically have a whitish or grey core (Munsell colour 5YR 8/1, 10YR 6/1) and buff margins (7.5YR 7/4), but often with harder, darker buff surfaces (7.5YR 6/4). Early rounded-style jugs are made in this fabric. There is no evidence of wheel-throwing, not even any incised horizontal lines. Sherds in this fabric tend to have a pitted glaze, sometimes this is a splash glaze, but more often glaze cover is more even. The glaze appears a yellow-orange over the pale fabric. There are occasional examples of a two-tone glaze where there are patches of pale green in the glaze.

#### **Fabric 2**

This fabric has a similar range of inclusions in a similar size and density as Fabric 1, but tends to be reduced to a uniform buff-grey (Munsell colour 10YR 7/2), or occasionally oxidised to a slightly pinky-buff colour (5YR 6/8 to 7/8). Sherds are often biscuity-looking with a square fracture. Early style jugs with red/brown slip-painted stripes occur in this ware. Again, vessels do not appear to be wheel-thrown. Plate 38 gives an internal view of a jug fragment (Fig. 14.6) in Fabric 2, showing uneven surfaces and the absence of throwing lines. This was corroborated by thin-section analysis which showed evidence of coil-building (Quinn, Appendix 1, p.138). As with Fabric 1, examples have a pitted glaze, although there were more examples of an obvious splash glaze. Glaze colour typically appears as a pale green, olive-green or dark olive-green on the grey surfaces. On the larger fragments it can be seen that the glaze cover is partial. The glaze often appears matt.

#### **Fabric 3**

This is slightly finer than Fabrics 1 and 2, and thinner-walled, but still not the classic Hedingham Fineware. The quartz sands, which were again added as tempering, are mainly grey, and sparse white angular inclusions were noted, probably also quartz. Often there is one oxidised margin (Munsell colour (5YR 6/8 to 7/8) and one greyish margin (10YR 7/2). Vessels appear to be coil-built. Scarborough-style early rounded jugs with applied red pellets occur in this ware. The glaze is similar to that of Fabric 2, although there are fewer examples of an obvious splash glaze with glaze cover tending to be more even.

#### **Fabric 4**

This is a general category for examples that are intermediate between the fabrics with added sand-temper, Fabrics 1, 2 and 3, and fineware Fabric 5. This category is also used for abraded, indeterminate sherds. Because it is a general category, examples of Fabric 4 were not sent for thin-section or ICPS analysis. There are examples with pitted/splash glazes as on Fabrics 1–3 and the smoother plain and mottled green glazes.

#### **Fabric 5**

This is the fine, smooth to the touch, classic Hedingham Fineware fabric showing varying amounts of mica and without added temper. Thin-section analysis showed abundant, well-packed, well-sorted sub-angular to rounded fine quartz, mica, iron-rich inclusions and other minerals (see Quinn, Appendix 1). Thin-section analysis also showed some variation within this fabric group, as some samples showed coarser, less well-packed inclusions. ICPS analysis however, showed all the Fabric 5 samples to be chemically similar. Many sherds are oxidised to the typical creamy orange colour (Munsell colours 5YR 7/6 to 7/8) as found on Hedingham Ware from consumption sites, but many examples from Hole Farm are grey, probably the result of over-firing, as the glazes are either matt or bubbled and blistered. Rouen-

style and stamped strip jugs occur in this fabric, but so do the earlier style jugs. Fabric 5 is readily distinguishable from Fabrics 1–3 by its finer but more inclusion-rich nature. Vessels in Fabric 5 often show internal incised horizontal grooves (Pl. 40), suggesting they were made on a wheel, although no definite throwing rings were noted. Thin-sectioning of Fabric 5 samples did not detect relic coils, and alignment of voids parallel to the vessel walls was noted suggesting wheel-throwing. Some examples of Fabric 5 show pitted splash glazes similar to those of Fabrics 1–3 and 6, but vessels are much more likely to have a smooth, plain or more often a mottled green glaze. The plain glaze is often honey-coloured.

#### **Fabric 6**

Fabric 6 is superficially similar to Fabric 5 as it has a creamy orange fabric and unlike Fabrics 1–3 is instantly recognisable as Hedingham Ware. However it is tempered with medium rounded sands and thin-section analysis showed it to be compositionally similar to Fabric 1. The glaze is also similar to that of Fabric 1, although some sherds show quite a lustrous glaze, with no examples of splash glazes.

#### **Sandy orange ware fabric (fabric code hedsao)**

As the name would suggest this is a sandy oxidised fabric typically with orange surfaces (Munsell colour 5YR 6/8) and usually a well-defined grey (7.5YR 5/0) or grey-buff core (10YR 7/2). Although micaceous, it is not instantly recognisable as Hedingham Ware. The fabric contains abundant well-rounded to sub-angular quartz inclusions which may have been added as temper. The silty base clay naturally contains inclusions of fine quartz, chert, fine sandstone, muscovite and biotite mica, amorphous orange weathered inclusions and other inclusions listed in Appendix 1. This sandy orange fabric occurs only in the Starlings Hill group, where stamped strip jugs and the later style combed/reeded and white slip jugs were produced in this ware. One of the samples sent for thin-sectioning shows both relic coils and voids aligned to the vessel margins, which could mean the vessel was coil-built and finished on a turntable. Although relatively coarse like Fabrics 1–3 and 6, thin-section analysis shows that this sandy orange fabric was made from an entirely different clay. This was corroborated by ICPS analysis which showed that hedsao is chemically more similar to the coarseware fabrics than the finewares and was probably made from London Clay. Examples have either a plain lead glaze or more often a very Mill Green-like mottled green glaze — Mill Green Ware being a rival pottery industry to the south of the county (Pearce *et al.* 1982).

#### **The frequency and distribution of fineware fabrics at Hole Farm**

The classic fine, smooth fabric, Fabric 5, is the most frequent at Hole Farm, followed by Fabric 2. The oxidised sandy fabrics, Fabrics 1 and 6 are the least common. The fabrics with an added sand-tempering, Fabrics 1, 2, 3 and 6, are rare in the south kiln stack, comprising kiln 1 and 3, and most frequent in The Ditch. As The Ditch is the earliest feature, this demonstrates that the sand-tempered fabrics are indeed earlier than Fabric 5. The occurrence of these early fabrics in the north kiln stack reflects the fact that these kilns cut The Ditch.

## **The early medieval fabrics**

#### **Early Medieval Ware: fabric code hedcwem**

Although early medieval in character, i.e. coarse and oxidised, this ware is still readily identifiable as a Hedingham product. It is tempered with coarse white and grey quartz sands, added to a fine silty clay matrix. Other inclusions noted in hand specimen include sparse chert, and white inclusions that do not react with dilute hydrochloric acid (perhaps the metaquartzite identified in thin-section). The fabric also contains muscovite and biotite mica, amorphous weathered inclusions and iron rich inclusions. Colour tends to be creamy orange (Munsell colour 5YR 7/6 to 7/8) rather than the red-brown of typical early medieval wares. Relic coils were detected in one sample. Thin-section analysis of this ware shows similarities to the glazed sandy orange ware fabric (hedsao). ICPS analysis of this fabric showed some overlap with the later coarseware fabrics, indicating continuity of clay source from the early medieval to medieval periods.

#### **Early Medieval Ware fine: fabric code hedcwefi**

This is a finer version of the above. In hand specimen it very much resembles the sandier finewares. Only one example has been recorded, a handmade cooking-pot from Hole Farm (Fig. 16.49; Pl. 20). The fabric is very micaceous and oxidised to a creamy orange (Munsell colour 7.5YR 6/6). Thin-section analysis showed it to be similar to hedcwem (above) and to the glazed sandy orange ware fabric (hedsao) in terms of composition and texture. Thin-sectioning shows it has a well-packed red-firing, silty base clay to which rounded sand temper has been added. The fabric also contains large conspicuous dark red to black iron or organic-rich compounds.

## **The coarseware fabrics**

As well as being classified by general appearance and inclusions, the medieval coarseware fabrics are classified according to whether they are reduced or oxidised. There are three categories, oxidised, reduced, and neither fully oxidised or reduced. This has been done because at the assessment stage it was noted that most of the cooking-pots are a reduced grey, but many of the bowls are oxidised to a buff colour. This may be because the bowls represent a single under-fired batch but it is possible that this was deliberate and different vessel types were made in different coloured fabrics, as was the case in the Roman period. Levels of oxidation have therefore been recorded, and as the database is fixed, with no separate field for oxidation, this is recorded as part of the fabric description (hence the fabric codes have a somewhat different notation from that of the fine wares). Thin-section analysis showed that there were no compositional or textural differences between the standard grey-firing fabric (hedcw) and the standard oxidised fabric (hcwox). Hedingham Coarseware fabric is relatively fine and smooth and this is what distinguishes it from other medieval coarsewares. Classifying the coarsewares by fabric and by colour has necessitated the creation of a large number of types, but apart from differences in colour, most of the fabrics listed below vary only in coarseness. ICPS analysis shows that the coarsewares are likely to have been made from London Clay.

**Standard grey fabric (code hedcw)**

Most sherds are of this fabric. It is micaceous with sometimes quite large flakes of mica and is tempered with moderate to abundant, ill-sorted, sub-rounded, sub-angular, grey, colourless and whitish quartz sands. The whitish sands are visible at the surface of this grey-firing fabric and are a distinguishing feature of Heddingham Coarseware. Some vessels show sparse, very large white quartz inclusions at the surface that in some cases may have led to breakage of the vessel. Very occasionally there are rose-coloured sands or straw-coloured sands. The sands can be unevenly distributed. Other inclusions include sparse rust-coloured iron-oxides, which sometimes protrude through the surface, white opaque inclusions, varying in shape, that do not react with dilute hydrochloric acid, and sparse carbonised grains. Fracture is smooth to hackly. Colour is typically dark grey (Munsell colour 10YR 4/1), can be pale grey (10YR 6/1) or blue-grey (2.5YR 5/0). Thin-section analysis showed this fabric to be compositionally similar to the early medieval fabrics.

**Standard grey fabric — finer version (code hcwfi)**

This is similar to the standard fabric but with noticeably finer and/or less abundant sand, giving rise to smoother surfaces. This fabric can be differentiated without microscopic examination. At Hole Farm it is possible that all vessels in this fabric are from a single batch.

**Standard grey fabric — coarser version (code hcwcor)**

This fabric only occurs at the Holy Trinity kiln site at Halstead. There does not seem to be a coarser version of the standard fabric at Hole Farm or the other sites; even the thick-walled storage jars, do not have an especially coarse fabric. The coarse version at Holy Trinity is grey or mainly grey (the same colour as the standard fabric), typically with a fine matrix and the addition of a coarse, rounded quartz sand-tempering. Apart from the coarse tempering, thin-sectioning showed that the fabric was similar to the other coarsewares examined in spite of being from a different kiln site. ICPS analysis did however detect chemical differences.

**Standard fabric — oxidised (code hcwox)**

This is the same fabric as the standard fabric, but oxidised, typically surfaces are orange-buff (7.5YR 6/8), but the interior is darker and redder (5YR 5/8).

**Standard fabric — oxidised, fine (code hcwoxfi)**

This fabric can be as fine as the fineware (Fabric 5) and a creamy orange colour (7.5YR 7/6 to 7/8), with virtually no added sand-tempering and smooth surfaces.

**Standard fabric — oxidised, coarser (code hcwoxcor)**

This fabric has abundant large rounded sands and is oxidised. It is similar to the early medieval fabric (hedcwem), and this was confirmed by thin-section analysis, but has been given a separate classification because it resembles the Transitional Early Medieval Ware fabric (Fabric 13t) found at Stansted Airport and elsewhere (Walker 2004a, 408; Cotter 2000, 40). Examples tend to be a dirty red-brown colour (10R 4/6), rather than the creamy orange of the early medieval fabric.

**Standard fabric — neither totally oxidised or reduced (code hcwredof)**

The actual colours vary and the colours of the more significant pieces are described in comments field of the database. The most typical colour combination comprises grey surfaces with pale salmon-pink cores, suggesting they are not fully reduced.

**Standard fabric — finer, neither totally oxidised or reduced (code hcwredof)**

As above but with finer and/or less abundant sand inclusions.

**Storage jar fabric (code hcwstor)**

As the name suggests this fabric is specific to storage jars, and only occurs at Hole Farm. Examples show grey surfaces but a thick pale salmon-pink interior (2.5YR 6/8). The fabric is fine and vesicular, the tiny vesicles giving a *Crunchie bar* appearance. There are abundant small iron oxide inclusions and abundant white inclusions (probably quartz) and it is tempered with moderate white grey and colourless quartz sands. Thin-section analysis shows the fabric to be the same as that of the standard coarseware (hedcw), so this category probably represents a misfired batch or possibly sherds all from the same vessel. ICPS analysis showed all samples of this fabric to be very similar chemically suggesting this may indeed be the case.

**High carbon fabric (code hcwcarb)**

This is a rare fabric and only occurs at Hole Farm, it is similar to the standard fabric but shows common carbonised grains. The fabric also looks slightly silty and has a thick, dark grey interior (2.5YR 4/0), but buff surfaces (7.5YR 7/4).

**Bulk fabric (code heddef)**

This is the fabric used for bulk-recorded coarsewares regardless of coarseness and oxidisation/reduction (see Chapter 4 for explanation).

**Hole Farm: distribution of fabrics within the kilns and levels of oxidisation and reduction**

Table 3 shows the fabric type totals by kiln. In order to compare the relative amounts of fabric type in each kiln, the amounts are also shown as a percentage of the total pottery in each kiln. As would be expected, the early medieval fabrics are rare in the kiln fills, (being more frequent in the earlier ditch), but make up a higher proportion of the assemblage in lower kilns 3 and 4/5. (The early medieval finer fabric hedcwefi did not occur in the kiln fills.) Kiln 1 showed the largest variation in fabric, with the storage jar fabric, high carbon fabric, and the coarser, and possibly earlier, version of the oxidised fabric occurring only in kiln 1. The finer version of the oxidised/reduced fabric was also found only in this kiln, but is represented only by two sherds.

The standard grey fabric (hedcw) is common in all kilns, including the earlier kilns. Almost all examples of the finer version of the standard grey fabric (hcwfi) occur in kiln 2, and in fact come from the oven of kiln 2, so that it might represent a single batch of pottery. The oxidised fabric is much less common than the grey fabric; it occurs in all four kilns and is most frequent in the kiln stack comprising kiln 2 and kiln 4/5 (the north stack). The finer

	kiln 1		kiln 2		kiln 3		kiln 4/5	
	Amount	% wt	Amount	% wt	Amount	% wt	Amount	% wt
Early medieval fabric (hedcwem)	16g (1 sh)	0.02%	73g (2 sh)	0.05%	55g (2 sh)	0.2%	78g (1 sh)	0.4%
Standard grey fabric (hedcw)	11130g (283 sh)	17.9%	25333g (600 sh)	15.3%	8787g (156 sh)	25.1%	4135g (112 sh)	19.7%
Standard grey fabric, finer (hcwfi)	20g (1 sh)	0.03%	10909g (230 sh)	6.6%	0	0%	107g (1 sh)	0.5%
Standard oxidised fabric (hcwox)	1962g (34 sh)	3.2%	13762g (233 sh)	8.3%	1526g (17 sh)	4.4%	1601g (32 sh)	7.6%
Standard oxidised fabric finer (hcwoxfi)	0	0%	2748g (60 sh)	1.65%	0	0%	0	0%
Standard oxidised fabric coarser (hcwoxcor)	247g (4 sh)	0.4%	0	0%	0	0%	0	0%
Standard fabric, neither totally oxidised or reduced (hcwredo)	13254g (393 sh)	21.3%	5430g (92 sh)	3.3%	2559g (34 sh)	7.3%	5944g (146 sh)	28.3%
Standard fabric, neither totally oxidised or reduced, finer (hcwredof)	94g (2 sh)	0.15%	0	0%	0	0%	0	0%
Storage jar fabric (hcwstor)	1152g (26 sh)	1.9%	0	0%	0	0%	0	0%
High carbon fabric (hcwcarb)	861g (10 sh)	1.4%	0	0%	0	0%	0	0%
Bulk fabric (heddef)	33389g (1335 sh)	53.7%	107170g (3945 sh)	64.8%	22047g (652 sh)	63.0%	9131g (376 sh)	43.5%
<b>Total</b>	<b>62125g</b>	<b>100%</b>	<b>165425g</b>	<b>100%</b>	<b>34974g</b>	<b>100%</b>	<b>20996g</b>	<b>100%</b>

Table 3 Hole Farm fabric variants by kiln quantified by weight in grams (and showing sherds totals in brackets)

version of the oxidised fabric (hcwoxfi), only occurs in kiln 2, and like the finer version of the grey fabric, occurs in the oven of kiln 2.

Examples of pottery that is neither totally oxidised or totally reduced (hcwredo) are found in all kilns. It is least common in kiln 2 and most common in kiln 1 and also forms a high percentage of the pottery in earlier kiln 4/5, where it is the most common fabric. As this is an earlier kiln it could mean that the potters had yet to perfect their firing techniques. However, the complete and semi-complete cooking-pots that were found *in situ* in kiln 1, stratigraphically the latest kiln, (Fig. 22.103 (Pl. 27) and 104), also have the hcwredo fabric. The frequency of this fabric in kiln 1 may not be entirely due to firing conditions, but due to weathering, if the kiln fill was near enough to the surface to be exposed to the elements. In addition, firing conditions can vary within the kiln; for example cooking-pot Fig. 20.84 from kiln 4/5 shows some sherds which are buff coloured and some which are grey, the colour depending on whereabouts in the kiln they have fallen. Plate 43 shows the exterior of a cooking-pot with grey reduced areas and buff oxidised areas.

In order to further investigate any relationship between vessel type and colour, the most frequent vessel types have been quantified by colour (shown by pie charts, Fig. 13). The pie charts show that the small thick-walled jars, the cooking-pots and the jugs are considerably more common in the reduced grey firing fabrics than they are in oxidised fabrics. However the reverse is true of the socketed dishes/bowls and the slightly flared bowls which are much more likely to occur in oxidised fabrics. However, they may represent one misfired batch. The cooking-pot-shaped storage jars are commonest in fabrics that are neither totally oxidised nor totally reduced.

When looking at socketed dishes and bowls by kiln, it was found that this form was not common in kilns 1, 3, 4/5 or in the east stokehole of kiln 2, and that in these groups oxidised vessels were no more common than reduced vessels. Indeed, in the west stokehole of kiln 2 and in kiln 3, reduced socketed dishes and bowls outnumber their oxidised counterparts. This form is most common in the oven of kiln 2 and relatively common in west stokehole of kiln 2, and it is here that nearly all the socketed dishes/bowls are oxidised, so the most likely explanation is that the oxidised examples represent an accidentally oxidised batch and this was not the intended result.

Another way of resolving the question of whether colour is related to vessel form was to examine the pottery from other production sites. The only other production sites that yielded more than one or two bowl fragments were Clare Cottage and Starlings Hill. Clare Cottage produced a rather heterogeneous mixture of bowl fragments, totalling thirteen rims, which were either grey-firing, buff, or red-brown, so that no pattern emerged. However at Starlings Hill, there were seven examples of socketed dishes/bowls in the oxidised fabric and only two in the reduced grey-firing fabric. Either these represent another under-fired batch or this form was indeed deliberately oxidised. Whether vessel form is related to colour will only be resolved by examining pottery from consumer sites.

### Recommendations for the recording of Hedingham Ware fabrics

Scientific analysis has shown that Fabrics 1–3 and 6 are compositionally similar, the variation in appearance

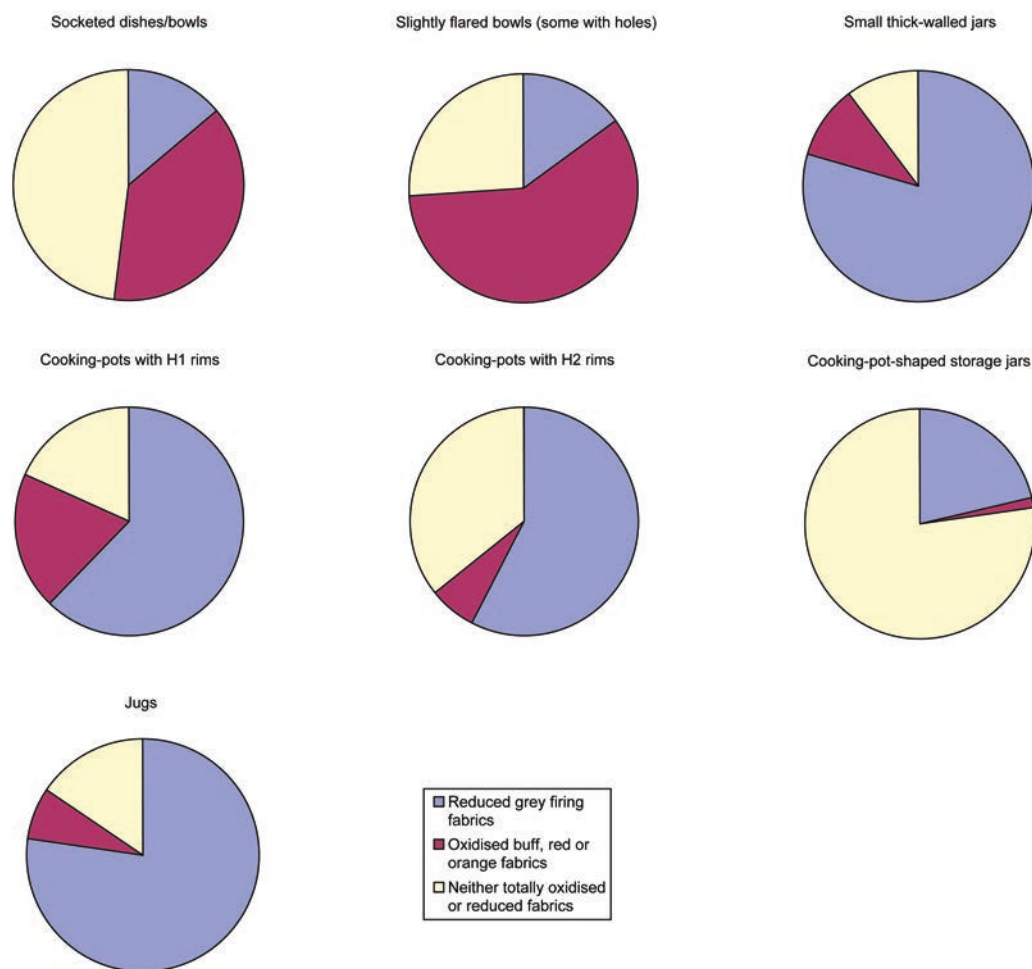


Figure 13 Pie charts showing coarseware fabric colours at Hole Farm by major vessel form, quantified by weight in grams (charts do not include the bulk recorded fabric (heddef) or the Thetford-style storage jars as these occur in their own storage jar fabric)

almost certainly due to mis-firing. It is therefore recommended that Fabrics 1–3 and 6 are given the single classification of Hedingham Early Sandy Glazed Ware. Fabric 5 and intermediate Fabric 4 can be classified as Hedingham Fineware. The sandy orange variant, made from an entirely different clay from that of Fabrics 1–3 and 6, can be classified as Hedingham Sandy Orange Ware.

The large number of coarseware fabric categories are the result of recording oxidation/reduction and fabric together. There is however very little petrological difference between the coarseware fabric categories, although there is some variation in grain size and

abundance of sand-temper. The main category is therefore Hedingham Coarseware, but this could be further subdivided by the coarseness and/or abundance of sand, into Hedingham Coarseware—standard fabric, Hedingham Coarseware—fine sand and Hedingham Coarseware—coarse sand. The Hedingham Early Medieval Ware and Transitional fabrics overlap petrologically with Hedingham Coarseware, but as these are visually distinct traditions, the terms are valid for future recording. The concordance of fabric variants and the suggested categories for future recording of Hedingham Ware from consumer sites is shown on Table 4.

<i>Category and fabric code</i>	<i>New classification for future recording</i>
Fineware/glazed ware: Fabrics 1, 2, 3, and 6	Hedingham Early Sandy Glazed Ware
Fineware/glazed ware: Fabrics 4 and 5	Hedingham Fineware
Fineware/glazed ware: hedsao	Hedingham Sandy Orange Ware
Hedcw, hcwox, hcwredo, hcwstor, hcwcarb	Hedingham Coarseware — standard fabric
Hcwfī, hcwoxfī, hcwredof	Hedingham Coarseware — fine sand
Hcwcōr	Hedingham Coarseware — coarse sand
Hcwoxcōr	Hedingham Transitional Early Medieval Ware
Hedcwem, hedcweſi	Hedingham Early Medieval Ware

Table 4 Concordance of fabric codes and suggested terms for future recording of Hedingham Ware fabrics



# Chapter 4. The typology of vessel forms, sub-forms and decoration

## The finewares

### Introduction and methodology

Significant fineware assemblages occurred only at Starlings Hill and Hole Farm, the other sites produced little, if any, fineware. With the exception of Starlings Hill, finewares only make up a small proportion of each assemblage, the coarsewares forming by far the largest component. None of the fineware is well stratified.

At Hole Farm, the excavator considers that the glazed wares from the kilns were not found *in situ* and this seems likely as only a relatively small amount of finewares are present, a total of 1905 sherds weighing 14.103kg from the kilns and The Ditch, (as opposed to over 300kg of coarseware). Initial laying out showed that most sherds are fragmented and abraded with no near complete or semi-complete vessels (apart from the ‘pig’ jug, see below, Fig. 14.10). The average sherd size is only 7.4g, compared with an average of 32g for the coarsewares. The finewares from Hole Farm therefore appear to be residual, but as they form such an important part of the assemblage, they have been recorded onto the database.

Analysis of the Hole Farm data did show some pattern in the distribution of the various types even though the pottery appears to be residual. Nearly all examples of London-style early rounded jug fragments occurred in The Ditch (which pre-dates the kilns), not an unexpected result as this is the earliest type of jug, dating from the mid 12th century. There are a few examples of this type in the north kiln stack which cut The Ditch; with finds from the oven and the west stokehole of kiln 2, and a couple of examples in lower kiln 4/5. No examples of London-style early rounded jugs were found in the south kiln stack. Scarborough-style early rounded jugs had a similar distribution to that of the London-style jugs, being most frequent in The Ditch, and also present in kiln 2, with finds from the east and west stokeholes. However, there was also a single example in kiln 3 in the south stack. Examples of Rouen-style decoration had a different distribution, being most frequent in kiln 3, although they did occur in The Ditch and in both stokeholes of kiln 2. The stamped strip jugs all occurred in the south kiln stack, in kilns 1 and 3. The remaining decorative styles did not occur at Hole Farm. There does appear therefore to be some correlation between the date of the decorative style and the stratigraphic sequence.

All the Hole Farm finewares from all contexts were examined. However, small body sherds of around 10g or less were counted and weighed by fabric and context, but no further details were recorded onto the database, even if they showed glaze and/or decoration, as they are too fragmented to reveal anything about the overall decorative style or whereabouts on the vessel the decoration occurred. Larger fragments provide more information and were fully recorded, including level of abrasion and

evidence of faults. It was felt that this approach would tease out any dating evidence and levels of fragmentation while saving recording time. Finewares from the other kiln sites and major find-spots were also recorded on the database.

### Jugs (and jug lid)

The jugs have been classified by decorative style rather than by vessel form or sub-form. It has long been noted that in the earlier period the Hedingham industry appears to copy London-type ware pottery and has similarities with the Scarborough industry (Cunningham *et al.* 1983 and Drury *et al.* 1993, 86) as well as following a style all of its own. A typology of decorative styles, which change over time, has been devised by Cotter (2000, 76–82), and this report follows Cotter’s classifications. Identifications are based on Cotter’s illustrations and on actual examples of London-type ware and Scarborough Ware. Most jugs are represented only by fragments apart from the ‘pig’ jug (now lost) and a complete (and present) jug from Acacia House (Fig. 14.1; Pl. 8). As the material is so fragmented, in many cases it was not possible to assign a decorative style. This is especially true at Hole Farm where around only a quarter of fineware sherds could be assigned a decorative style. In the absence of complete profiles, the only measurable component is the jug rim diameter. At both Hole Farm and Starlings Hill, which produced the two largest fineware assemblages, jug rims vary in size between 100 and 140mm, with 120mm the most frequent size. Percentages quoted are calculated from weight of pottery. The rim forms are sometimes described using Cunningham’s rim codes.

### *London-style early rounded c.1140/50–1200* (Fig. 14.1–9)

London-style early rounded jugs are described by Cotter as having ribbed (or rilled necks), broad strap handles and painted red lattice decoration on the body (Cotter 2000, 91). They are the most common decorative style identified at Hole Farm and are also represented at Starlings Hill, Starlings Hill (Chandlers) and Acacia House.

Plate 8 (Fig. 14.1) shows a complete but restored London-style early rounded jug from Acacia House, exhibiting a rounded body, a strap handle thickened at the edges, and rilled neck, typical of this style. There is no fresh break to allow examination of the fabric, but it is creamy orange in colour and appears slightly sandy, so has been assigned Fabric 4. The rim is flat-topped and thickened externally and internally (type B3) with a simple pouring lip. It also shows the characteristic red slip-painted lattice decoration (*cf.* Cotter 2000, 91, fig. 49.1, 4), but differs from the Colchester examples in that the pattern forms loops at the shoulder. This pattern is repeated all the way around the jug. The base is sagging and without thumbing. It has a pitted, apparent olive glaze



Plate 8 London-style early rounded jug Fig. 14.1

extending to the lower part of the vessel, but not covering the lowest part of the decoration. There are areas where the glaze appears matt, this could be due to sulphuration of the glaze (discoloration due to sulphur), or could be due to weathering, the latter is likely to be the case as the surfaces of the jug are abraded, suggesting the jug was exposed to the elements. The inside of the upper handle attachment is covered with gauze as part of the restoration, so the method of handle attachment cannot be determined. The jug is 40cm high and the capacity, determined by filling the jug with rice up to the base of the neck, is 9.1 litres (or 2 gallons). This is an enormous size for a fineware jug and clearly too large for table use. (This jug is also published in Cotter 2000, pl. 1.)

At Hole Farm, the London-style early rounded jugs (which account for 10% of the total jugs) have collared rims (Fig. 14.2–3), sometimes quite markedly collared (Fig. 14.4–5), and incised grooves or rilling around the neck. Again, they have strap handles, thickened at the edges, (as on Fig. 14.1). These handles can be somewhat asymmetric in section being thicker one side than the other. Decoration again comprises mainly vertical intersecting red slip-painted stripes. A large number of sherds from Hole Farm show red slip-painting but very fragmented sherds were not classified as London-style early rounded, as red slip was used in other decorative styles. It is therefore possible that London-style vessels are under-represented at Hole Farm. Fig. 14.6 (Pl. 9) is the least fragmented example of this type from Hole Farm,



Plate 9 Base of London-style early rounded jug Fig. 14.6

and shows a base thumbed at intervals and red slip-painting, probably part of a lattice pattern, but the paint has missed in places. Fig. 14.7, from the shoulder of a jug, shows intersecting red slip-painted stripes below two horizontal bands. Fig. 14.8, again from the shoulder of a jug, shows bands of applied strips, which have been accentuated by incising a line around the edge of each band. Multiple horizontal bands such as this are not paralleled by the Colchester examples or by actual London-type ware early rounded jugs, but have been placed in this category because of their similarity to Fig. 14.7. The only other type of London-style decoration at Hole Farm comprises curving red-painted stripes over an orange glazed background (Fig. 14.9) and is paralleled in London-type ware (Pearce *et al.* 1985, pl. III). There were only two examples with this decoration.

At Hole Farm, as might be expected, London-style sherds occur most frequently in one of the early fabrics, Fabric 2, but they actually occur in all fabrics (apart from hedsao), and are also common in the fine fabric, Fabric 5. Around half the London-style jugs showed faults, either a matt or blistered glaze or were accidentally reduced to a grey colour.

London-style jugs are not common at Starlings Hill, accounting for 6.5% of the total fineware jug assemblage by weight. Finds are represented by a collared rim similar to Fig. 14.3 from Hole Farm, body sherds showing red slip-painting, and a continuously thumbed jug base, with oblique thumb-marks comparable to the base on a London-style early rounded jug from Colchester (Cotter 2000, fig. 49.2). At Starlings Hill (Chandlers), a small buff sherd with red slip-painting and a pale olive glaze was found, perhaps from a London-style early rounded jug.

#### *Scarborough-style early rounded c.1175/1200–1250* (Fig. 14.10–20)

Scarborough-style early rounded jugs are described by Cotter as having strap handles, high-relief plastic decoration, including pellets, strips (plain, twisted or notched), pear-shaped or circular pads (plain or slashed) and sometimes simple faces formed around the spout (Cotter 2000, 91). Jugs of this style were only identified at Hole Farm, where they are slightly less common than London-style (8% of the jugs by weight) and at Starlings Hill where they are slightly more common than London-style jugs (also accounting for 8% of the total jugs).

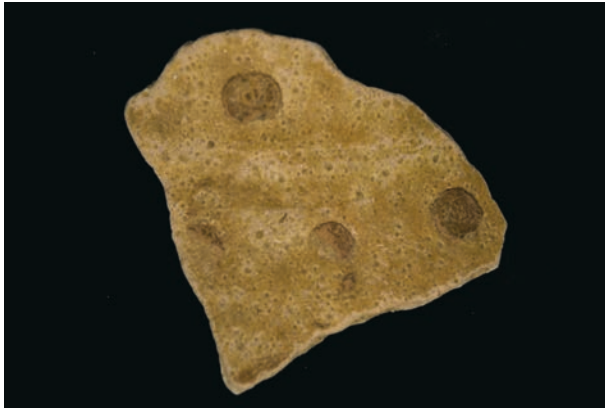


Plate 10 Fragment from the neck of a Scarborough-style early rounded jug showing applied red pellets and a trace of red slip (photographed but not drawn; dimensions as Fig. 14.15)

The most complete example of a Scarborough-style jug was found in The Ditch at Hole Farm, but is now missing (not located with the excavator or at Colchester Museum) although the drawing survives (Fig. 14.10). As the drawing shows the complete profile in section, the jug was presumably not found whole and it is not possible to determine how accurate the reconstruction is. It shows the decoration to be divided into three distinct zones. The neck shows the typical applied red pellets and the body is decorated with scrolling thumbed or notched applied strips. The lower zone above the base is decorated with slip zigzags and in sherd material would look similar to the lattice design on the London-style early rounded jugs. (Fig. 14.16 also shows scrolling thumbed applied strips and red slip-painting.) The jug possesses a tubular spout which has been turned into a simple face by incising 'eyes' on either side. The snout-like tubular spout has earned it the epithet 'pig' jug. The handle, not attached, is a strap handle decorated with an incised zigzag along its length. The base is continuously thumbed. The rim is flat-topped and thickened (sub-form B3), a typical rim form for Scarborough-style jugs, also found on examples at Colchester (e.g. Cotter 2000, fig. 49.3).

Fig. 14.11 from Hole Farm shows similarities to the 'pig' jug, possessing the B3 rim, strap handle (although this time showing an incised wavy line rather than a zigzag), and applied red pellets. The jug is reduced with a blistered glaze (see 'Faults' below) making it hard to discern the pattern, but as well as applied pellets, to the left-hand side of the handle is a red slip brush-stroke, this may be accidental, but could indicate more complex decoration. Also shown on the illustration are accidental streaks of red slip, all oblique and all in the same orientation, which suggests they were done while the vessel was rotating on a wheel or turntable and occurs on several fineware fragments.

Fig. 14.12 from Hole Farm possesses a flat-topped everted rim (sub-form B2), as found on most of the coarseware jugs. It also shows the beginnings of a simple pouring lip, as opposed to the tubular spout of Fig. 14.10 and the bridge spouts found on Colchester examples (Cotter 2000, fig. 49.8). Also notable on this sherd are the squidge marks on the internal surface where the applied pellets have been pressed into the clay (shown on drawing).



Plate 11 Fragment of Scarborough-style jug Fig. 14.15

Handles from Hole Farm, where identified as Scarborough-style, are strap handles with incised wavy line or zigzag decoration (Fig. 14.10 and 11), although such handles also occur on London-style jugs. This type of handle was also found at Starlings Hill and Clare Cottage.

Applied red pellets are a very common form of decoration; at Hole Farm they most often occur on the neck and sometimes on the shoulder, and are often accompanied by other types of decoration, namely:

- thumbed applied strips (Fig. 14.10)
- red slip-painting (Fig. 14.10, 11 and Pl. 10, where slip-painting is just about visible on the shoulder)
- applied shields (Fig. 14.13)
- self-coloured applied strips (Fig. 14.14)
- rouletted thumbed applied strips (Fig. 14.15; Pl. 11)

Fig. 14.14 and 15 differ in that the applied pellets are on the body rather than the neck.

Other types of decoration found on Scarborough-style jugs include:

- curved thumbed applied strips associated with red slip-painting as found on Fig. 14.10 and 16 (as above)
- applied pads and curving applied strips (as Cotter fig. 49.8); on Fig. 14.17 the decoration is self-coloured, on Fig. 14.18 the pads are in red slip (an example of this type also occurred at Starlings Hill Ditch).

At Hole Farm, as with the London-style early rounded jugs, Scarborough-style jugs occur in all fabric types (apart from hedsao), although unlike the London-style jugs they are least common in Fabric 2, occurring mainly in Fabrics 3 and 5. Around 80% of the Scarborough-style material showed faults, and in common with the London-style sherds, faults comprise mainly a matt and/or blistered glaze and accidental reduction.

By far the most interesting find from Starlings Hill is a virtually complete domed lid with a central knob (Fig. 14.19) (MPRG form 7.1.4). With a diameter of 120mm, it is the right size to fit on a jug. Fragments of Hedingham Ware lids have been found at Colchester (Cotter 2000, fig. 51.28–9), one of them is from a probable 12th century context (Cotter 2000, 83, fig. 51.29). Fig. 14.19 has been classified as Scarborough-style as lids occur on

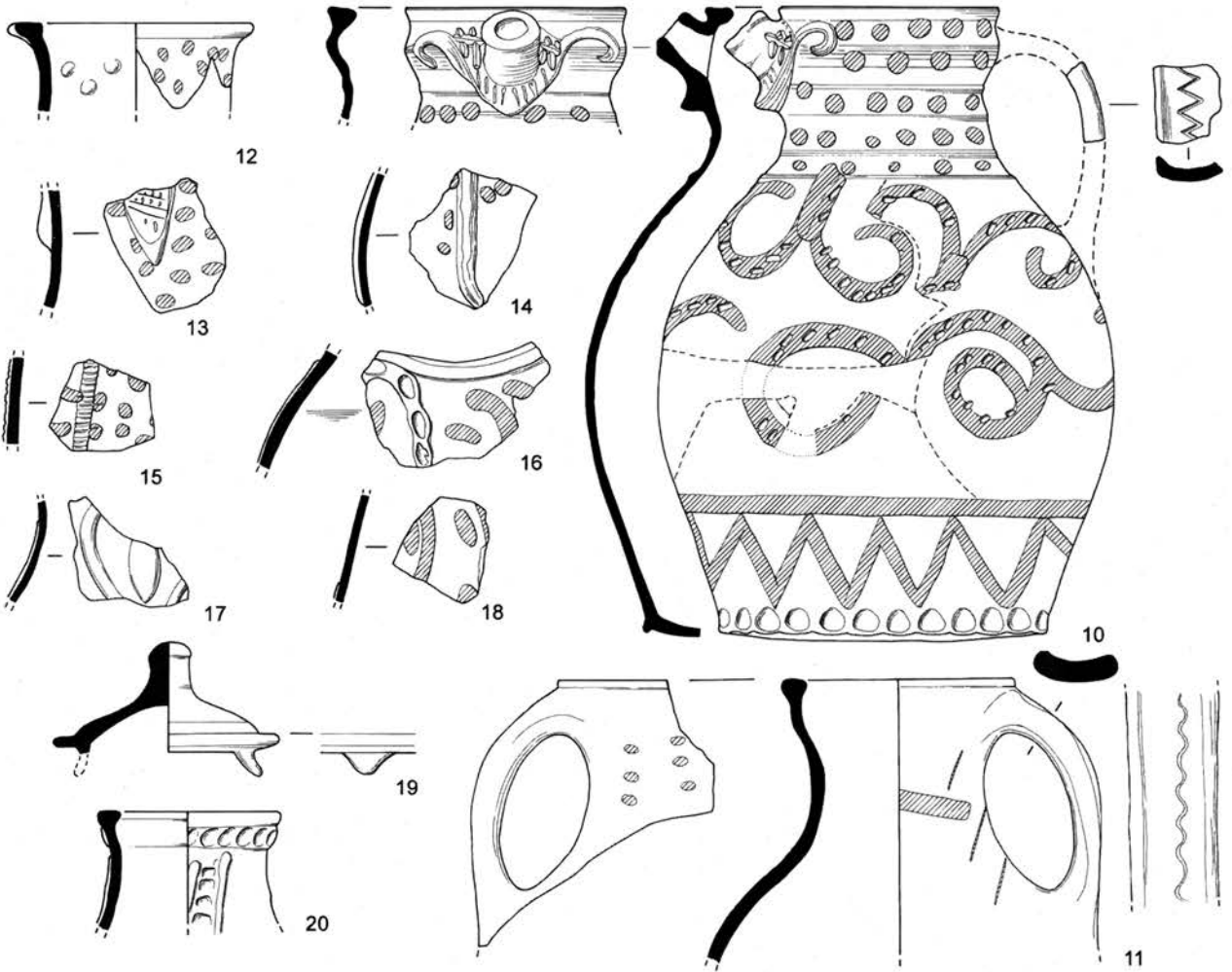
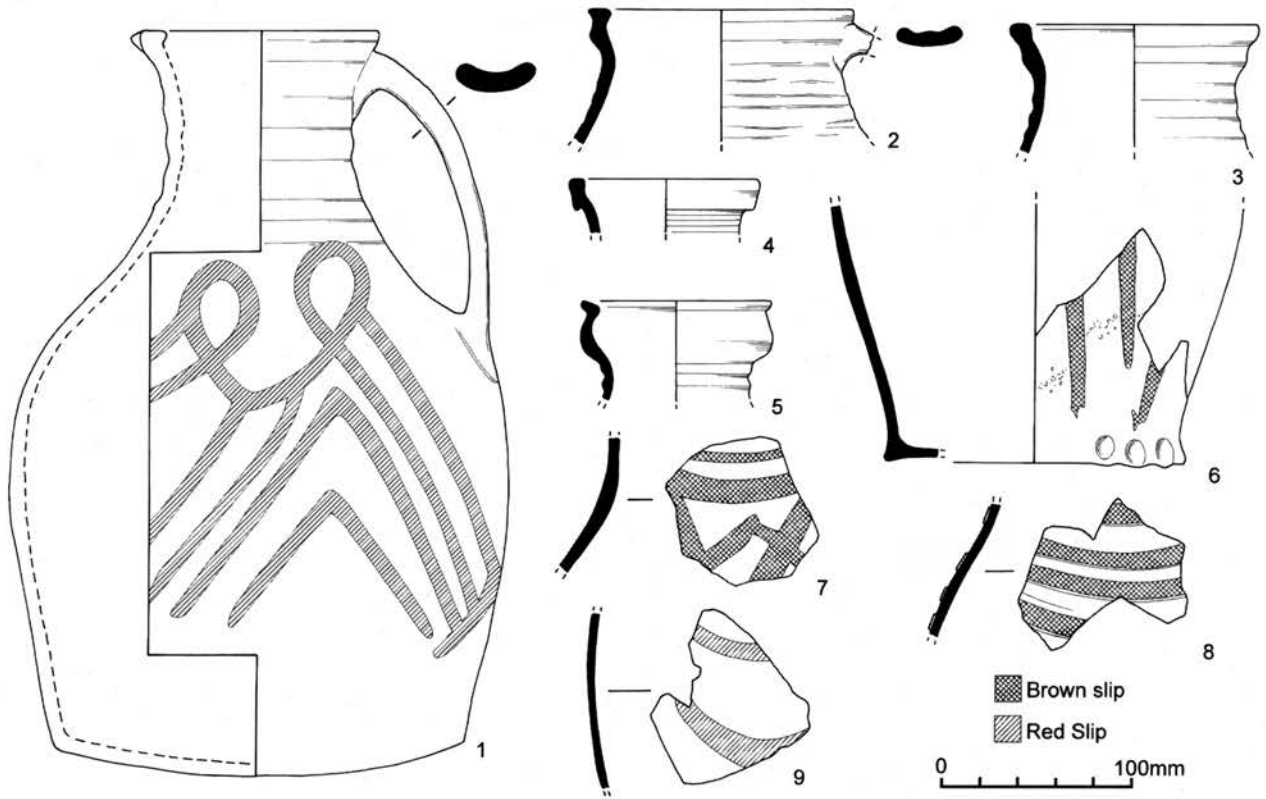


Figure 14 The fineware typology: London-style early rounded, Nos 1-9; Scarborough-style early rounded, Nos 10-20

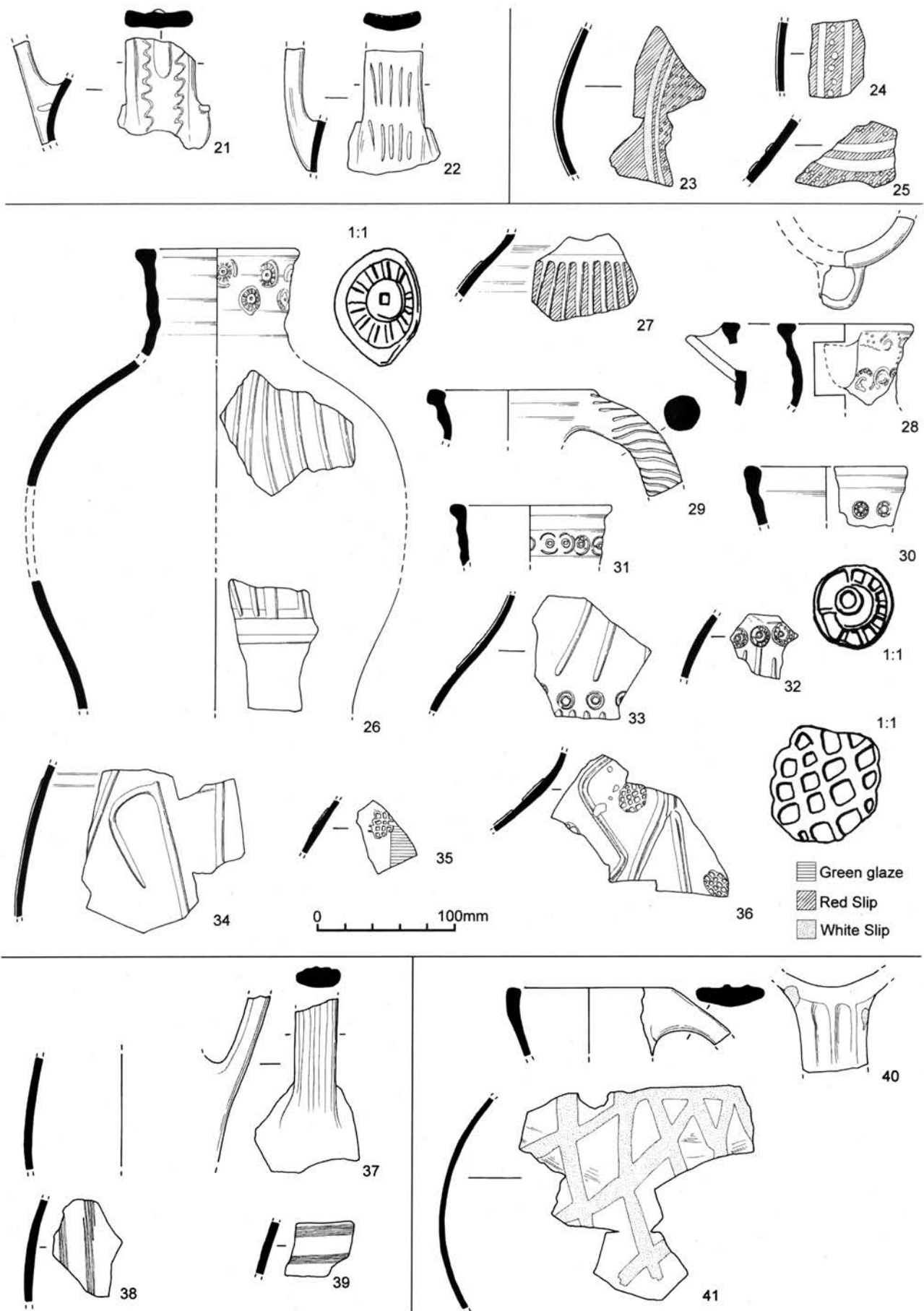


Figure 15 The fineware typology: Early rounded style — general, Nos 21–2; Rouen-style, Nos 23–5; stamped strip, Nos 26–36; combed or reeded style, Nos 37–39; white-slipped, Nos 40–41



Plate 12 Early rounded-style jug handle Fig. 15.22

Scarborough Ware jugs, but are not particularly like the Hedingham example (e.g. Farmer 1979, figs 14–15). The Hedingham Ware lid is orange with buff surfaces, has a pitted olive green glaze, and is in intermediate Fabric 4. Another notable example is jug rim Fig. 14.20 (in Fabric 5), decorated with vertical applied strips enclosing a column of applied scales. There is a thumbled cordon below neck. It shows parallels in Scarborough Ware (Rutter 1961, fig. 3.18/1), although it also shows similarities to London-type ware North French-style jugs (Pearce *et al.* 1985, fig. 54.203). There is a small fragment of a similar jug (in Fabric 4) and a body sherd (in Fabric 5) showing applied red pellets and a rouletted applied strip, similar to the Scarborough-style jug depicted in Cotter 2000, fig. 52 (not illustrated).

*Early rounded-style — general c.1140/50–1200*  
(Fig. 15.21–2)

There are some fragments from early rounded jugs that cannot be differentiated into Scarborough or London-style. These occur at Hole Farm (1.5% of the total) and Starlings Hill (6% of the total). The only fragment from Hole Farm that merits illustration is Fig. 15.21, a broad strap handle showing two incised wavy lines and the beginnings of applied decoration to the side of the handle. Also of interest is a collared jug rim and upper handle attachment showing an indentation or ‘ear’ at either side of the handle, *cf.* Cotter (2000, fig. 49.8) (not illustrated). At Starlings Hill there are single examples of B2 and B3 rims with strap handles that are of early style. Slightly more diagnostic is a strap handle showing cat’s claw decoration (Fig. 15.22; Pl. 12) (similar to Cotter 2000, fig. 49.4). It shows an orange fabric, darker surfaces and mottled green glaze. A fourth fragment, the shoulder of a jug showing



Plate 13 Fragment from Rouen-style jug Fig. 15.23

incised grooves is assigned as early style by virtue of its coarse fabric, Fabric 2. The other examples are all in Fabric 5.

*Rouen-style c.1200–1250*  
(Fig. 15.23–5)

These appear to be copying London-type ware Rouen-style jugs that ultimately copy the whiteware jugs made in Rouen in northern France. It is much easier to identify Rouen-style sherds than it is early rounded jugs, by their applied pellets over a red slip background. The Scarborough-style jugs also show applied pellets but the two styles can easily be differentiated as the Rouen-style pellets are of white, not red, clay, and are smaller and more rounded; the Scarborough-style pellets are more irregular. Examples of Rouen-style decoration occur at Hole Farm and Clare Cottage.

They are uncommon at Hole Farm comprising only 2% of the fineware jugs by weight. Examples occur in The Ditch, in the east and west stokeholes of kiln 2, and are most frequent in kiln 3. There are also examples from other features. No rims, bases or handles were identified in this ware, only Rouen-style body sherds. Unlike the early rounded jugs, Rouen-style body sherds occur only in the fine fabric, Fabric 5, apart from a single example in Fabric 3, and all examples are over-fired showing combinations of accidental reduction accompanied by a matt and/or blistered glaze. They may therefore represent the remains of a single batch.

Fig. 15.23 (Pl. 13) shows a zone of applied white pellets, over a red background, bounded by applied white strips. It is not paralleled in Cotter, but is very similar to some Rouen-style jugs in London-type ware (e.g. Pearce *et al.* 1985, fig. 26.56). Fig. 15.24 shows a single column of applied pellets and is comparable to Cotter (2000, fig. 50.15). Fig. 15.25 is from the shoulder of a jug and shows a pattern of slip bands and dots. The Clare Cottage examples are similar to Fig. 15.24.

*Stamped strip c.1225–1300/25*

(Fig. 15.26–36)

Stamped strip jugs have rows of stamps around the neck and sometimes around the shoulder and close together vertical applied strips on the body. They usually have twisted rod handles (although these can also occur on Rouen-style jugs). Unlike earlier styles, this style is not copying London-type ware or for that matter any other industry. Examples of stamped strip jugs are one of the commonest types, encountered at several of the production centres, namely Broak's Wood, Foxborough Hill (the 1962 excavation), Hole Farm, Shalford Road, and the Starlings Hill group.

This said, at Hole Farm stamped strip jugs were actually less common than the early rounded jugs accounting for only 5% of the total. All occur in the south kiln stack comprising kilns 1 and 3, apart from two examples found unstratified, and one in a non-kiln context. All occur in the fine fabric, Fabric 5. Unlike the Rouen-style sherds, there are only three examples of accidental reduction and one example of a blistered glaze, the rest are oxidised to a creamy orange or buff colour and without fault.

At Hole Farm, rims, where present, are all flat-topped and thickened, type B3 (Fig. 15.26; Pl. 14) the same rim type found on the Scarborough-style jugs. One possesses a pouring lip. No twisted rod handles associated with this type of jug were found in the Hole Farm assemblage and no bases were found that definitely come from stamped strip jugs. The best example of a stamped strip jug is Fig. 15.26 (Pls 14–15). It shows rows of applied stamps around the neck. These are usually called ring-and-dot stamps but they are also known as cartwheel stamps and this may be a more accurate description, as those on Fig. 15.26 show radiating spokes and have a distinctive square hole in the middle, just like an axle hole. There are only two other examples at Hole Farm with stamped decoration and both are similar to this example. Fig. 15.26 (Pl. 15) also shows vertical applied strips on the body that terminate at the lower part of the pot where they are delineated by two horizontal applied strips. Both the stamps and the strips in this example are in a clay paler than that used for the pot body, although other examples show self-coloured applied decoration. It is also common for the applied strips to overlie a red slip background (Fig. 15.27). There are examples where the vertical applied strips are not evenly spaced and where one of the vertical applied strips is slightly wavy.

At Starlings Hill, stamped strip jugs are the most common type accounting for nearly 30% of the fineware jugs, almost all are in Fabric 5 with a few examples in Fabric 4. Rims are mainly of type B3, with thickened and inturned rims (G1) and a single example of a B2 rim. One, Fig. 15.28, shows a parrot-beak or bridge spout. Handles, where present, are all of the twisted-rod type (Fig. 15.29).



Plates 14–15 Fragments from stamped strip jug  
Fig. 15.26

There is either a double (Fig. 15.28) or a single row (Fig. 15.30–31; Pl. 16) of cartwheel stamps around the neck. A row of stamps can also appear on the shoulder (Fig. 15.32), an example of this also occurs at Starlings Hill Ditch (Fig. 15.33) and at Starlings Hill (Chandlers). There are no definite examples of stamps pressed into applied pads but instead are stamped directly onto the pot. Often the stamp is poorly defined, either because the clay is too squidgy, excess glaze has got into the spokes, the stamp is applied too lightly or the sherd is abraded. Only the most clearly defined stamps have been illustrated. More than one stamp has been used, but all are fairly similar. It is possible that the central hole (i.e. the axle hole of the cartwheel) was impressed separately, as on some examples the hole is off-centre (e.g. Fig. 15.32), which has a round axle hole. The stamp on Fig. 15.30 (Pl. 16) is smaller with a relatively large sub-round centre, and Fig. 15.31 has a small square axle hole. The stamps on Fig. 15.33 do not show any spokes. One example (not illustrated) has crescent-shaped stamps similar to those at the Shalford Road kiln (see below), which are probably cartwheel stamps impressed at an angle.

Several body sherds at Starlings Hill show vertical applied strips and as at Hole Farm, some are self-coloured



Plate 16 Rim from stamped strip jug Fig. 15.30



Plate 17 Fragment from stamped strip jug Fig. 15.36

and some are in clay paler than that used for the pot body. Presumably pale coloured clay strips were used to make the strips stand out, but often there is very little difference between the colour of the body and the strip once the glaze has been applied. One example has used buff clay for the strips and this has worked, the strips being pale green, with a dark green background. The strips have also been accentuated by incising lines along the edges of the strip. A variation on the stamped strip jug appears at Starlings Hill Ditch (Fig. 15.34) which shows vertical applied strips and one crooked strip.

Fig. 15.35 and 36 (Pl. 17) from Starlings Hill Ditch show gridiron stamps, the latter accompanied by straight and curving applied strips that have a very clearly defined central ridge. Again, the strips are in a clay paler than that used for the pot body and the stamps are applied on to pads of the same pale clay. Gridiron stamps feature on stamped strip jugs found at Colchester (*cf.* Cotter 2000, fig. 50.17) so again these may represent variations of the stamped strip jug, although curving applied strips and stamps also feature on Scarborough-style jugs.

The stamped strip jugs at Foxborough Hill (one example only) and the Shalford Road kiln are similar to those at Hole Farm and Starlings Hill, both in terms of decoration and rim and handle form. However at Shalford Road, the cartwheel stamp shows a variation whereby the centre is crescent-shaped (Orr and Brooks 2009, fig. 3.1 and 1a). Here, the stamps are pressed directly into the body of the pot and not into an applied pad.

*Combed or reeded c.1250/75–1350*  
(Fig. 15.37–39)

In Cotter's typology, combed and reeded-style decoration is found on pear-shaped/biconical jugs. At the production sites it occurs only at Starlings Hill with a single example from Foxborough Hill (1960 excavation). At Starlings Hill it accounts for 16% of the total, with very similar material at the various Starlings Hill find-spots. There are examples of jug fragments with ribbed handles characteristic of this type of jug (Fig. 15.37) and body sherds decorated with vertical combing (Fig. 15.38) or horizontal reeding/combing usually under a mottled green glaze (Fig. 15.39). They occur in Fabrics 4, 5 and hedsao. Although Fig. 15.37 is represented only by a fragment, the shape does suggest it could be from a pear-shaped jug, the same is true of fragments from Starlings Hill (Chandlers), which are paralleled by Drury (*et al.* 1993, fig. 43.137).

Unlike the example illustrated by Cotter (2000, fig. 51.24), most of the ribbed handles are sub-oval rather than sub-rectangular in section. No rims or bases belonging to this style of jug were identified. This type of jug is a later style and appears to be copying Mill Green Ware decoration. The single example from Foxborough Hill is again from a ribbed strap handle.

*White slipped*  
(Fig. 15.40–41)

Hedingham Ware jugs with white slipped decoration do not feature in Cotter's typology and are not normally thought of as a Hedingham Ware style. Examples occurred at Starlings Hill and the various Starlings Hill find-spots. There are only two examples of this from the actual Starlings Hill kiln site (4% of the total); jug Fig. 15.40 (in Fabric 4) shows a thickened inturned rim, which is typical enough, but also shows a broad handle with two thumb-marks at the top. There are random patches of white slip-painting on the rim and handle beneath a partial decomposed matt glaze. The second example (in Fabric 5) (not illustrated), is a fragment from the body of a pot, showing slip-painting under a plain lead glaze, not unlike that found on Mill Green Ware.

Findings with white slipped decoration from Starlings Hill Ditch occur only in the sandy orange fabric (hedsao), although the sample size is so small this may not be significant. The most interesting fragment is Fig. 15.41 (Pl. 18) showing an intersecting lattice pattern, as if mimicking weaving, which is not at all typical of Hedingham Ware, although it does occur on jugs made elsewhere, e.g. in Medieval Harlow Ware (Walker 2000a, fig. 23.4) and London-type ware (*cf.* Pearce *et al.* 1985, fig. 49.168). In addition, a shoulder sherd, unfortunately too fragmented to illustrate, shows the remains of what looks like an applied bearded face mask, the beard represented by incised lines. The surrounding body of the jug shows a partial white slip-coating under a mottled green glaze. There are also several other sherds showing a partial white slip-coating usually under a mottled green glaze, examples of which also occur at Starlings Hill (Chandlers).

*Jugs not assigned a decorative style*  
(Fig. 16.42–45)

A large number of sherds cannot be assigned a decorative style and most are too fragmented to merit further





Plate 18 Fragment from white slip-painted jug  
Fig. 15.41

mention. At Broak's Wood there is one example of a pinched applied strip paralleled at Harwich (Walker 1990a, fig. 13.10) and at Shalford Road a sherd is published showing broad horizontal and diagonal applied strips (Orr and Brooks 2009, fig. 3.3). At Clare Cottage there is the lower handle attachment of a glazed rod-handled jug, circular in section, and showing dimpled decoration (Fig. 16.42), it shows similarities with a coarseware jug handle from Hole Farm (Fig. 31.169).

Fig. 16.43 from the Starlings Hill kiln may be from a small drinking jug (in Fabric 5) and shows a mottled green glaze. Fig. 16.44 (Pl. 19) also from the Starlings Hill kiln is the largest of eight sherds from the same vessel showing diagonal, sometimes intersecting applied strips. The strips are very dark, almost black, and there is a somewhat pitted olive-green glazed background. The fabric is the typical creamy orange Fabric 5 and the applied strips are buff in colour, so a colourant must have been added to the strips to produce the dark colour. XRF analysis of the glaze showed this colourant to be copper (see Appendix 3, Sample 12). This type of decoration is not paralleled by Cotter (2000) and does not appear to feature on London-type ware or Scarborough Ware. Of interest from Starlings Hill Ditch are examples of bifid handles showing a



Plate 19 Fragment from jug Fig. 16.44 showing dark applied strips

column of circular piercings along the centre (too fragmented to illustrate). Fig. 16.45 is the only jug base to be illustrated separately. Instead of thumbing around the base, it shows vertical slash marks. A similar base is published by Cotter (2000, fig. 50.70), where the incisions are described as thumbnail nicks. The example in Cotter belongs to a Rouen-style jug, but as Fig. 16.45 is in Fabric 3 and from The Ditch, it is more likely to be from an early rounded jug.

#### *Fineware jugs: fabric and form*

The fineware jugs from all sites have been tabulated by fabric and decorative style in order to examine the correlation between the two (Table 5). London and Scarborough-style early rounded jugs occur in all fabrics apart from the sandy orange variant. London-style early rounded jugs are most frequent in intermediate Fabric 4, although most of this is accounted for by the complete London-style jug from Acacia House. Aside from Fabric 4, they are most frequent in the early grey-firing fabric, Fabric 2, whereas the Scarborough-style jugs are by far the most frequent in the classic fabric, Fabric 5. There is only one example of Rouen-style decoration in an early fabric, Fabric 3. All the later style jugs, i.e. stamped strip, combed/reeded and white slip jugs occur in Fabrics 4, 5 and the sandy orange fabric.

Decorative style	Fabrics													
	1		6		2		3		4		5		hedsao	
	Nos	Wt	Nos	Wt	Nos	Wt	Nos	Wt	Nos	Wt	Nos	Wt	Nos	Wt
London-style early rounded	4	97	14	148	39	763	9	84	47	3038	31	569		
Scarborough-style early rounded	3	54	2	8	1	22	7	133	11	337	28	870		
Early rounded-style — general					1	19					8	417		
Rouen-style							1	19			37	349		
Stamped strip									6	132	87	1861	13	347
Combed or reeded									15	283	14	424	11	508
White slipped									1	130	2	15	6	150
<b>Totals</b>	<b>7</b>	<b>151</b>	<b>16</b>	<b>156</b>	<b>41</b>	<b>804</b>	<b>17</b>	<b>236</b>	<b>80</b>	<b>3920</b>	<b>207</b>	<b>4505</b>	<b>30</b>	<b>1005</b>

Table 5 Fineware decorative style by fabric quantified by weight (in grams) and sherd count from all quantified production sites

### **Vessel forms other than jugs**

(Fig. 16.46)

A very small number of fragments from vessels other than jugs were recovered from Hole Farm and Starlings Hill. Only one is complete enough to illustrate.

#### *Flat wares*

Fig. 16.46 from Starlings Hill is a flat base with flared sides in Fabric 4, showing a partial internal glaze and is perhaps from a dish. Two similar internally glazed flat bases were recovered from Hole Farm, the more complete example has some of the vessel wall surviving, its angle again suggesting it is from a dish or flared bowl. Both Hole Farm examples are in Fabric 5.

#### *Handles*

An example from Starlings Hill, too fragmented to illustrate, shows a probable horizontal handle from a bowl or jar which has come away from the vessel. It is extremely abraded and was found unstratified, which could mean it is not from the kilns, although patches of glaze where the handle has come away from the body would indicate it is a waster. A small fragment of lug handle, which has also come away from the vessel wall, was found at Hole Farm (kiln 2, west stokehole). It shows splashes of orange-yellow glaze and is of early fabric, Fabric 1.

#### *Lids*

There is fragment from a possible glazed lid, from Hole Farm (kiln 2, west stokehole) in Fabric 5.

### **Fineware glazes**

Glazes are commonly bubbled or blistered or have a decomposed powdery matt appearance, the latter either due to a manufacturing fault or from weathering, so only limited observations can be made about the glazes. The glazes have already been described by fabric (above) and in general the earlier fabrics (Fabrics 1–3 and 6) have a plain pitted glaze, sometimes this is obviously a splash glaze and sometimes glaze cover appears more even and varies in colour according to the colour of the pot body beneath. Vessels in the smooth Fabric 5 (and intermediate Fabric 4) can also have a pitted glaze, but are more likely to have a smooth lead glaze usually orange, honey coloured, or a mottled green glaze. On some examples there is a two-tone glaze where the plain lead glaze and the copper-green colourant have been applied in separate operations, this was first noted by Drury (1976a, 268). A two-tone glaze was also noted on some of the earlier fabrics.

Little can be said about the extent of glaze cover because most of the assemblage is represented by small sherds. Certainly, many of the red slip-painted jugs in Fabric 2 have a very sparse glaze, although this may not have been the intended result. Complete London-style early rounded jug Fig. 14.1 (Pl. 8) has a more or less all-over glaze, but it does not cover the lower part of the decoration.

London-style early rounded jugs tend to have a pitted plain lead glaze, sometimes this is obviously a splash glaze and sometimes glaze cover is more even. There are a few examples with either a two-tone splash glaze or a smooth glaze without pitting. As might be expected, similar glazes occur on Scarborough-style early rounded jugs and early rounded jugs in general. There is a slightly

higher incidence of the smooth glaze without pitting on the Scarborough-style jugs. The Scarborough-style jugs from the Starlings Hill group all show smooth glazes without pitting and there are examples with a pale green or a mottled green glaze as opposed to a plain lead glaze. Nearly all the examples of Rouen-style decoration from Hole Farm have a misfired blistered or bubbled glaze. The few examples from Clare Cottage have a smooth plain lead glaze.

The stamped strip jugs from Hole Farm all have a smooth or occasionally pitted plain lead glaze. The single example from Foxborough Hill also shows a plain lead glaze. In contrast, most of the examples of this style at Starlings Hill have a mottled green glaze. The glazes at the Shalford Road kiln are degraded and do not show a colour. The combed or reeded-style jugs (which were absent at Hole Farm, but relatively common at the Starlings Hill group) almost always have a mottled green glaze, again showing a marked preference for green glazes at Starlings Hill. The single example of this type at Foxborough Hill shows traces of a yellowish glaze. White slip jugs, which occur only at Starlings Hill, show either a smooth plain or a mottled green glaze.

Scientific analysis of the glazes by Mike Hughes and Duncan Hook (see Appendix 3) shows the glaze to be composed of lead oxide and confirms that copper is responsible for producing the mottled green glaze. Thus the glaze composition is similar that of other medieval finewares including Mill Green Ware. The composition of the glaze is also similar to that of Medieval Harlow Ware, except that at Harlow copper was not used as a colourant (although it was used in producing the post-medieval Black-glazed Ware made at Harlow). No difference in composition of glazes was detected between the pitted splash glazes which are commoner on the earlier fabrics and the smoother glazes more often found on the finer fabrics. However, the pale green glaze which sometimes occurs on the earlier fabrics was produced by iron not copper. The analysis also confirms that the red/brown background colour found on the Rouen-style jugs and used for the applied pellets characteristic of the Scarborough-style jugs, is produced by using dark iron-rich clays and is not due to a glaze colourant. Perhaps the most interesting finding is that small amounts of zinc in the glaze indicate that the copper is derived, not from copper ore, but from brass, probably scrap brass, as this is an alloy of copper and zinc. This was most likely applied by sprinkling brass fillings onto the glazed surface, which would account for the mottled effect. The copper green glaze tends to occur on the later style jugs.

### **Early medieval vessel forms produced by the Hedingham industry**

Early medieval pottery occurs at the Hole Farm, Crows Cross and Holy Trinity kiln sites, where it either represents earlier pre-kiln occupation of the site, or earlier production that evolved from Early Medieval Ware into medieval coarseware (see Gazetteer for further details). Because it is not Hedingham Coarseware, a typology of early medieval vessel forms is beyond the remit of this project, but it is important as a possible ancestor of Hedingham Ware.

### Early Medieval Ware from Hole Farm

(Fig. 16.47–9)

Vessels in early medieval fabrics were found in The Ditch, with a small amount in the fills of the kilns where it is presumably residual. Although they are in the early medieval tradition, these wares are still recognisable as Hedingham products. Some of the early medieval vessels in The Ditch are fire-blackened and were therefore used, but it is possible that some of the material represents earlier production on site and samples were therefore sent for thin-section and ICPS analysis to determine its relationship with Hedingham Coarseware. The early medieval fabrics, which are described in the fabrics section, comprise Early Medieval Ware (code hedcwem) and a finer, much less sandy version (hedcwefi). Early medieval vessel forms were only recorded onto the database if they are of intrinsic interest or help with dating. Vessel forms recorded, all in fabric hedcwem comprise:

- cooking-pot fragments with thickened everted rims and thumbbed beaded rims (none illustrated)
- dishes with beaded rims, one is illustrated (Fig. 16.47) (this form also occurs in a Hedingham Coarseware fabric (hewfi) at Foxborough Hill, 1960)
- the lower handle attachment from a jug showing a the remains of a strap handle attached at the shoulder of a jug (too fragmented to illustrate)
- the remains of a spike or cresset lamp (Fig. 16.48) found in The Ditch.

Of interest is a large fragment of a cooking-pot in the finer version of the early medieval fabric (hedcwefi) found in The Ditch (Fig. 16.49; Pl. 20). Although it has the developed H1 rim type, the unevenness of the vessel walls shows that it is handmade and early. It has a micaceous creamy orange fabric, rather like that of the finewares, and has darker surfaces. It is very similar to a cooking-pot found at Great Easton motte and bailey, from a ditch containing other pottery datable to the 12th century (Walker in prep.).

Worth mentioning are three examples of the coarse oxidised version of Hedingham Coarseware (hewoxcor) showing reddish surfaces, which may be the equivalent of Fabric 13t found at consumer sites, which is transitional between Early Medieval Ware and medieval coarseware. Two handles in this fabric are illustrated in the main typology (Fig. 33.199–200). There is also a cooking-pot in this ware possessing an H2 rim and decorated with a row of dimpling and a thumbbed applied strip.

### Early Medieval Ware from Crows Cross

Most of the pottery recovered from the Crows Cross production site comprises Early Medieval Ware. Unlike that from Hole Farm however, it is not recognisably a Hedingham product, having the standard red-brown surfaces and grey cores of Early Medieval Ware produced throughout the county and varying very little in appearance. This is with the addition of a few sherds of the reddish transitional Early Medieval Ware (see above). There is nothing in the archive to say whether this pottery was actually found in the kiln, so again this either represents earlier occupation of the site, or earlier production before the pottery evolved into Hedingham Coarseware. The vessel forms comprise mainly cooking-



Plate 20 Early medieval cooking-pot Fig. 16.49

pots with undeveloped rims and fragments from dishes, bowls and storage jars. None of this has been entered onto the database, although the vessel forms and sub-forms present have been described in more detail in the archive.

The Crows Cross material was examined further in order to determine whether it does indeed represent pottery production. Some of the cooking-pots appear fire-blackened on the sides and below the rim which might indicate that the pottery has been used for cooking, although it is possible that smoking occurred in the kiln. One of the most common faults is spalling, where flakes detach from the surface, although again, as it is sometimes the underside of the base that is spalled, this might be through use rather than a manufacturing fault. Stress tears occur on some vessels, and one example shows superficial cracks resembling mud cracks. These are more likely to be manufacturing faults. As some of the pottery shows flashing, caused by coming into direct contact with the fuel, it may have been fired in a clamp kiln rather than a proper kiln structure, where the flames and the pottery do not come into contact.

### Early Medieval Ware from Holy Trinity

A small proportion of pottery from this kiln site has been classified as Early Medieval Ware, and like that from Crows Cross none is recognisably a Hedingham product. Bowl fragments are the only vessel form present and include part of a flared bowl with a hole below the neck, a vessel form also made in the Hedingham Coarseware fabric (see below). Of more interest is a glazed Early Medieval Ware sherd. It is brown-orange in colour with a dark internal surface and is decorated with parallel vertical white slip stripes over a dark background and shows a pitted lead glaze. The uneven surfaces show that it is handmade.

### Early Medieval Ware from Starlings Hill

There is a single example of this (in fabric hedcwem), an H1 cooking-pot rim, which is a developed type that usually occurs in medieval coarseware.

## The coarsewares

### Introduction and methodology

The coarsewares formed the bulk of the assemblage at all sites with the exception of Starlings Hill. Some vessel

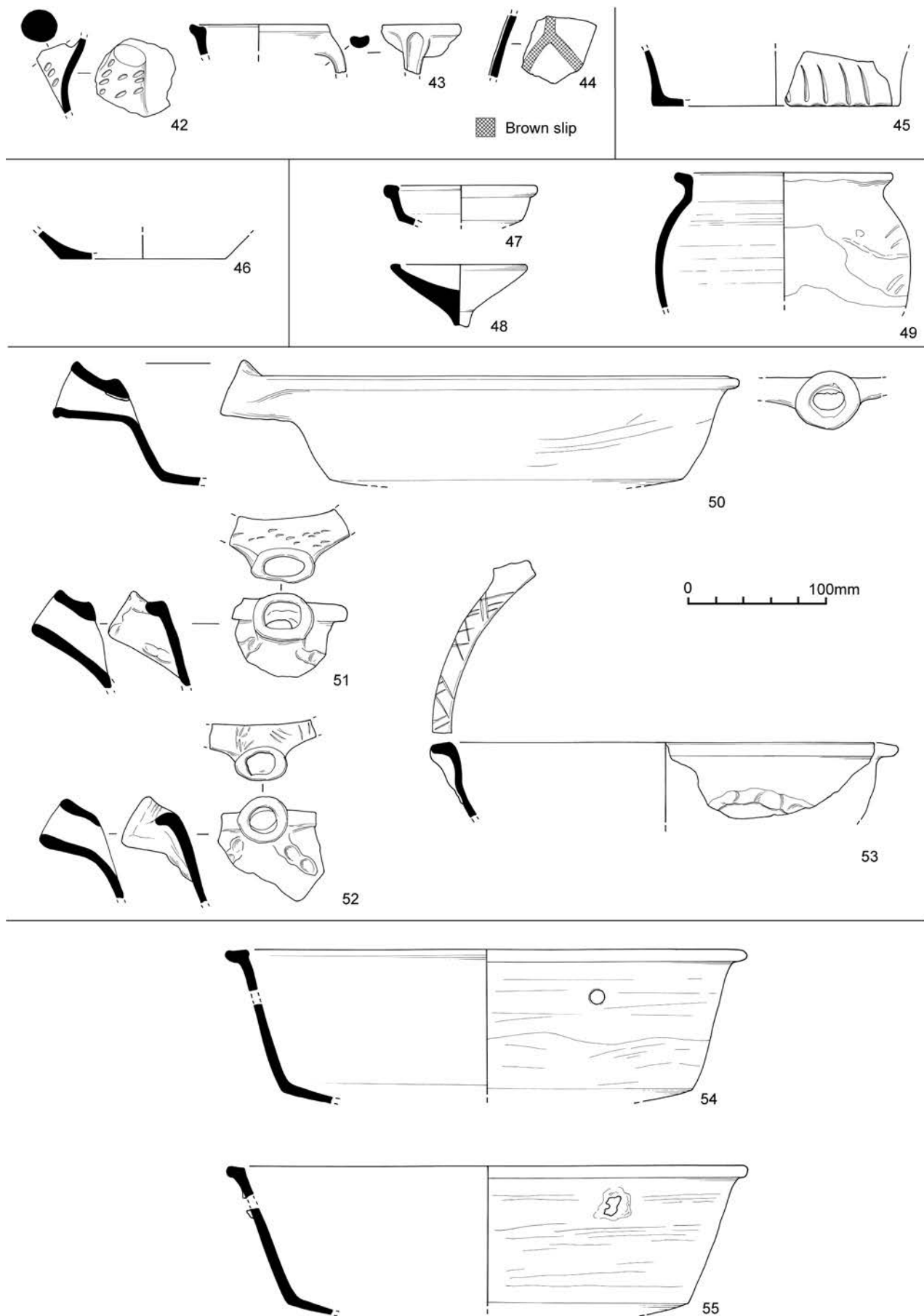


Figure 16 The fineware typology: jugs not assigned a decorative style, Nos 42–45; vessel forms other than jugs, No.46; Early Medieval Ware vessel forms, Nos 47–49; The coarseware typology: socketed dishes/bowls, Nos 50–53; large slightly flared bowls, Nos 54–55

forms and sub-forms are present at virtually all sites, for example cooking-pots with flanged or squared rims, others are unique to certain production sites (such as the thin-walled jars from Crows Cross). For sites other than Hole Farm, all well stratified coarsewares were entered onto the database, but because of the sheer quantity of Hedingham Coarseware from Hole Farm, quantification was more selective.

Initial assessment and laying out of the pottery from Hole Farm showed that much of the material is fragmented and conveys limited information. It was decided therefore to fully record only the larger and more diagnostic fragments, all others were counted and weighed by context and recorded simply as coarseware without using the fabric sub-groups defined above. The fabric code used for this is heddef, i.e. default fabric. Unstratified or poorly stratified pottery was only fully recorded if it was of intrinsic interest.

Fragments from Hole Farm selected for full recording are:

- rim fragments large enough to identify vessel-form with certainty and large enough to measure rim diameter with accuracy, this varies according to vessel form as follows
  - bowls that have a complete or almost complete profile and 10 to 15% EVES or more
  - cooking-pots that have a shoulder and 15 to 20% EVES or more
  - large fragments of jugs, and jugs that have 20% EVES or more
- decorated body sherds large enough to discern decorative pattern, orientation of pattern, e.g. vertical thumbed applied strips, and whereabouts on the vessel the decoration occurs
- fragments that help with dating, e.g. datable cooking-pot rim types
- fragments that show a kiln fill may be contaminated such as H4 cooking-pot rims

#### Socketed dishes/bowls

(Vessel form A14)  
(Fig. 16.50–53)

This vessel form occurs at Hole Farm with a single example from Starlings Hill. At Hole Farm this vessel type is represented by five vessels (the number of vessels is obtained from the number of sockets). Three are from kiln 2, one is from kiln 4/5 and one is from a non-kiln feature. Only one profile is present, Fig. 16.50, it has flared sides, a flanged rim and a slightly sagging base. The diameter is around 340mm and the height around 80mm. As the height is less than one third of the diameter, according to the MPRG classification, Fig. 16.50 is a dish rather than a bowl. The remaining, more fragmented examples of this type have similar diameters of between 320 and 340mm, and all but one has a flanged rim. Socket Fig. 16.51 is similar to that of Fig. 16.50 but shows the remains of diagonal thumbed applied strips converging on the underside of the spout. There are also rather randomly positioned incised marks on the top of the flange. The marks are slightly curved and look as if they might be fingernail marks, but simple experiments (jabbing a

fingernail into modelling clay) did not replicate the same shape. Fig. 16.52 shows similar decoration, with cut marks also on the rim. The steeper angle of Fig. 16.51 and 52 suggest they could be from bowls rather than dishes.

The example from Starlings Hill (Fig. 16.53), is in an oxidised fabric, and shows a flanged rim with the scar of a socket attachment. It is decorated with cross-hatching on the rim and a curving applied strip on the body.

#### Large slightly flared bowls often with holes in the sides

(Vessel forms B4A and B3)

(Fig. 16.54–55; Fig. 17.56–62; Fig. 18.63–65)

##### *Examples from the Hole Farm assemblage*

No complete or semi-complete vessels are present but there are a number of profiles. The bowls are slightly flared with sagging bases. They can have straight sides (B4A: Fig. 16.54 (Pl. 21), 55 (Pls 22–23), Fig. 17.56, 57, and 58), but others have slightly curved sides (Fig. 17.59). Most have a very slight neck below the rim. At Hole Farm, the straight-sided bowls occur in all four kilns but are most frequent in kiln 2. Conversely those with slightly curved sides are commoner in the other kilns. Bowls (of either type) from kilns 2 and 4/5 tend to have flanged rims (sub-form E5) while those from the southern stack, kilns 1 and 3, tend to have thicker rims (sub-form B2). This pattern is also reflected in the cooking-pot rims (below).

Bowl diameters at Hole Farm range from 300 to 480mm, with rims between 360 and 420mm the most frequent. There is a slight tendency for straight-sided bowls to be larger than the curved bowls. Depths of bowls range between 85 to 106mm, the measurement taken from the rim to the basal angle, 100mm being the most common size. No correlation was found between rim diameter and depth, but the sample size was very small, as only eighteen bowl profiles are present.

Many of the bowls have holes cut through the sides beneath the rim. The hole can be situated immediately below the rim or up to 40mm beneath. The size of the hole ranges from 8 to 15mm across. Sometimes the hole is very neat as if cut out with something like a pastry cutter (e.g. Fig. 16.54; Pl. 21), but often the hole is roughly cut out from the inside, perhaps with a knife, to leave extraneous clay on the outside (e.g. Fig. 16.55; Pls 22–23), which for some reason was not trimmed off before firing, leaving a hole that can be very irregular in shape. One example was noted where the hole was cut out from the outside leaving extraneous clay on the inside. Bowls with untrimmed holes do not appear to be confined to a particular kiln



Plate 21 Bowl Fig. 16.54 showing cleanly cut hole

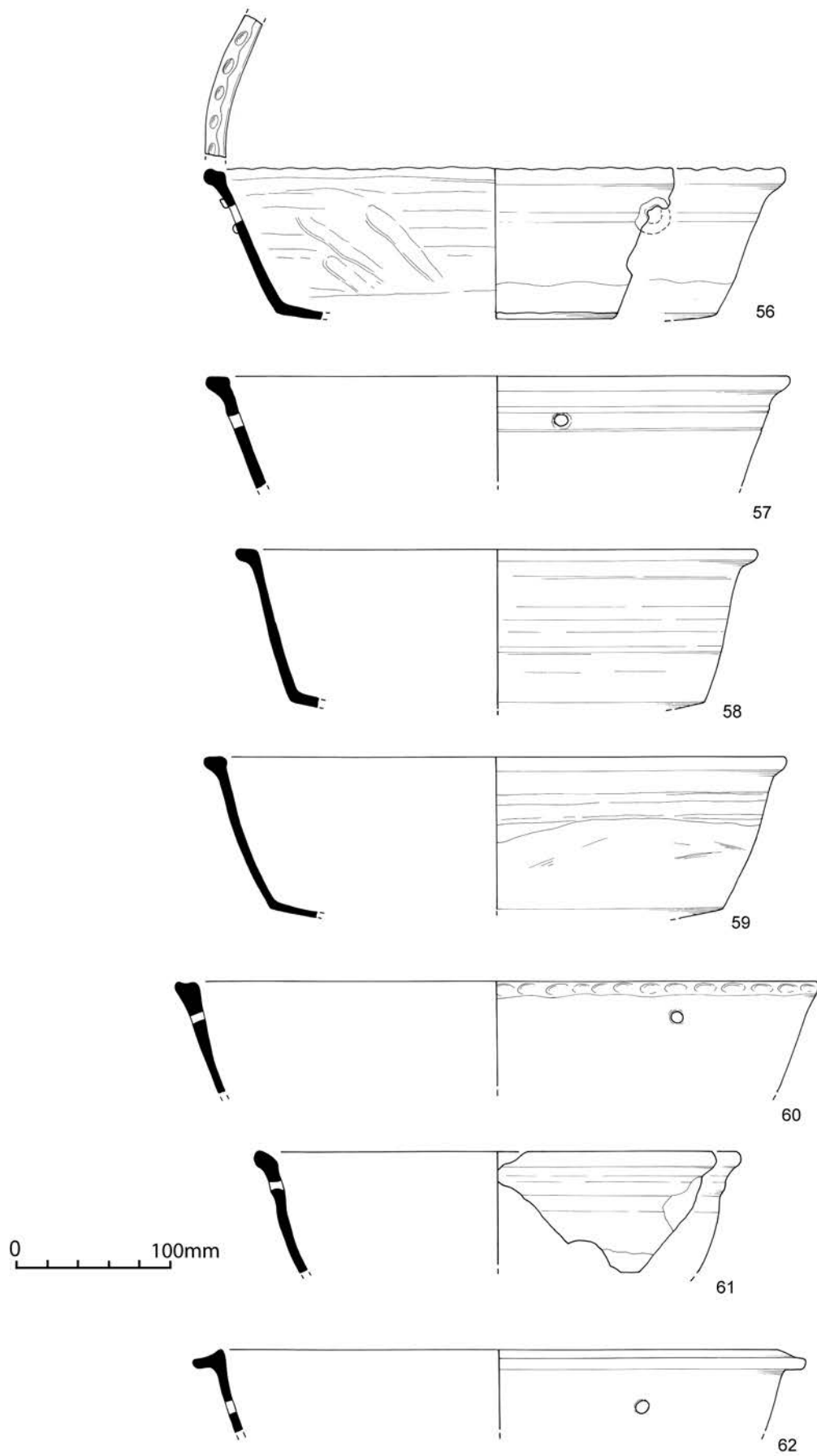


Figure 17 The coarseware typology: large slightly flared bowls, Nos 56–62



Plate 22 External view of bowl Fig. 16.55 showing displaced clay around hole



Plate 23 Internal view of bowl Fig. 16.55

stack, occurring in kilns 1 and 2. They are however uncommon in the earlier kilns, with only one example in kiln 3 and none in kiln 4/5. No bowl fragment had more than one hole and it was not possible, due to the fragmentation of the assemblage, to determine whether the complete bowl would have had more than one hole, or whether all bowls of this type had holes. Trying to determine the number of holes per bowl by comparing the number of holes (a total of thirty-seven) to the total bowl EVES proved meaningless as often the hole was incomplete, so the same hole could be counted more than once, and because the total EVES for all bowls was only 878%, or the equivalent of almost nine vessels, giving an unlikely average of 4.1 holes per bowl. As the hole occurs on the upper part of the bowl, and the profile is often incomplete, it is not always possible to say whether the bowl is curved or straight-sided, but where the profile is complete holes are more common on straight sided bowls.

There is some variation in rim type of these bowls, and these variants — often one-offs — have been illustrated. Fig. 17.60, which is in an oxidised fabric has a thickened flat top with a thumbed outer edge. The thumbed rim indicates this bowl may represent earlier production. Fig. 17.61 has an everted rim, conversely Fig. 17.62 and Fig. 18.63 have down-turned flanged rims and Fig. 18.64 has a hollowed rim.

Decoration/surface treatment comprising bands of incised grooves around the necks of bowls is common on bowls from kiln 3 and from the west stokehole of kiln 1 (e.g. Fig. 17.59), but entirely absent in north stack, kilns 2 and 4/5. The grooves occur on curved and straight-sided bowls with B2 rims. A very small number of bowls show a row of dimpling below the neck, done by pressing with thumb or finger (Fig. 18.64). Dimpling is common on cooking-pots and curfews (see below), but rare on bowls, with a total of only five examples, all of which are from the north kiln stack. Other types of decoration are rare and confined to the rim of the bowl. Fig. 17.60 shows thumbing on the outer edge of the rim and Fig. 17.56 shows dimpling on the outer edge to give a braided effect. Instead of braiding, Fig. 18.65 shows unevenly spaced skewer marks around the edge of the rim. All these decorated rims occur only in kiln 1 and there are only one or two examples of each. A curved-sided flared bowl from kiln 3 shows slight and uneven faceting around the rim edge (not illustrated) this hardly constitutes decoration,

but is mentioned as it occurs on other vessel forms, such as cooking-pots (e.g. Fig. 22.108).

#### *Examples from other production sites*

The flared bowl also occurs at Acacia House, Clare Cottage, Foxborough Hill, Shalford Road and Starlings Hill, although usually in small quantities (see gazetteer entries). Most are fragmented and similar (but not always identical) to the Hole Farm examples. None have been selected for illustration. Examples with a hole below the rim occur at Clare Cottage. At Holy Trinity, there is single example of a holed bowl, but in early medieval fabric, showing a hole in the neck cut out from the inside, with extraneous clay on the outside, in the same manner as the Hole Farm examples. This may indicate that holed bowls are an early form. Examples from Clare Cottage and Foxborough Hill (1962) show incised grooves below the neck, so this is not unique to kiln 1/3 at Hole Farm.

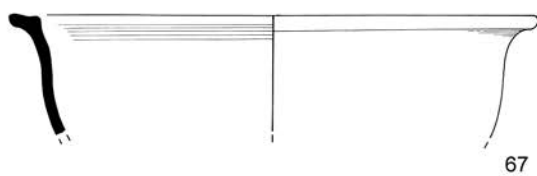
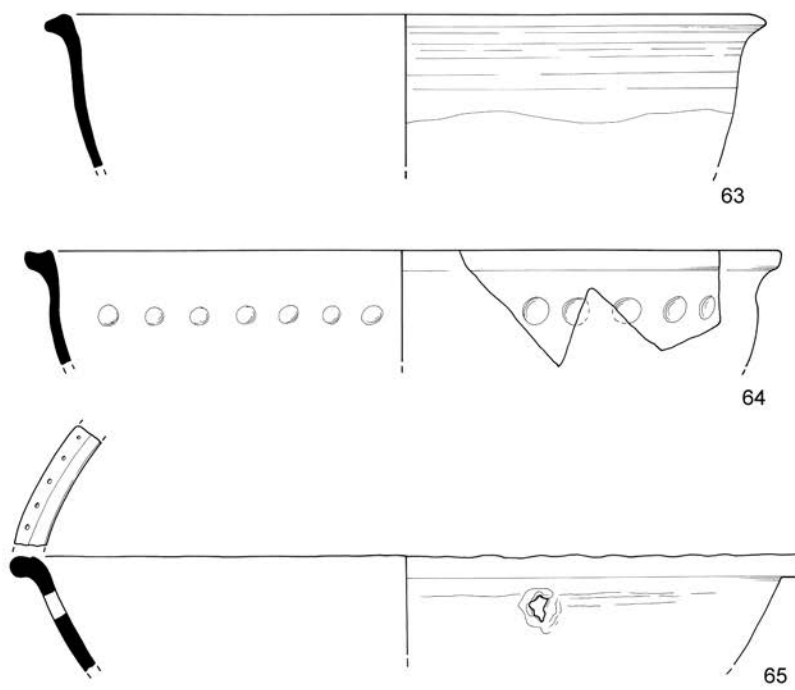
The assemblages from Shalford Road and Starlings Hill were large enough to compare bowl sizes. Those from Starlings Hill were similar in all respects to the Hole Farm bowls with a similar size range of 360 to 400mm, and there is a single profile of a flared bowl (vessel type B4A) with a flanged rim, similar to Fig. 16.54 (Pl. 21), from Hole Farm. It is fairly shallow with a diameter of 380mm and a depth, from rim to basal angle, of 86mm. The bowls from Shalford Road tend to be larger than those from Hole Farm, measurable rims varying from 400 to 480mm in diameter with a cluster around 440mm. The illustrated Shalford Road bowls are curved-sided and more out-flaring than the Hole Farm group (Orr and Brooks 2009, fig. 4.16–19).

#### **Vertical-sided bowls**

(Vessel form B10)

(Fig. 18.66–7)

There is a slight variant in bowl form at Hole Farm, where the sides are vertical and then curve inwards towards the base, as opposed to the slightly out-flaring sides of most bowls. The form is uncommon and occurs in kiln 4/5 indicating it might be an earlier type. Two examples are illustrated.



0 100mm

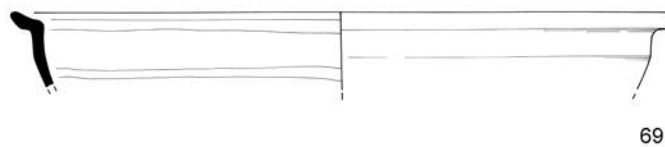
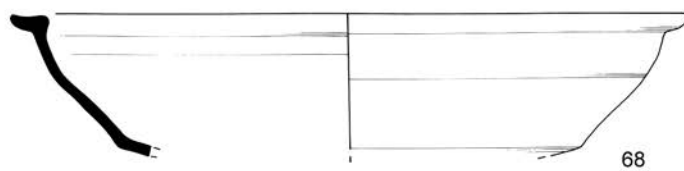
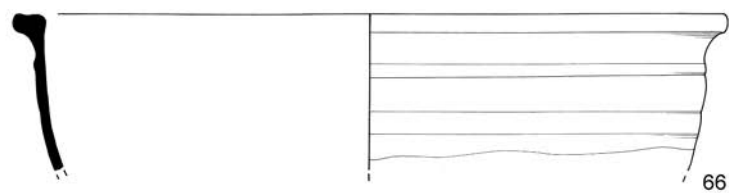


Figure 18 The coarseware typology: large slightly flared bowls, Nos 63–65; vertical sided bowls, Nos 66–67; carinated bowls, Nos 68–69; handled bowls, No.70



### **Carinated bowls**

(Vessel form B9)

(Fig. 18.68–9)

At Starlings Hill there is a complete profile of a flared bowl with a flanged rim, similar to those above but with a carination, or change of angle, below the rim (Fig. 18.68). Carinated bowls are the commonest bowl type at Starlings Hill, unfortunately most are rather fragmented, although one does have a hole in the neck as found on the slightly flared bowls. The hole, like many of the Hole Farm examples is cut out from the inside and shows extraneous untrimmed clay on the outside surface. On the illustrated example, it is clear that the carination has been made by knife-trimming. There are only two rather fragmented examples of this type from Hole Farm, including one from The Ditch in an early medieval fabric, so this may be an early type. A single example of a carinated bowl with a flanged rim occurs at Clare Cottage (Fig. 18.69).

### **Handled bowls**

(Vessel form B11)

(Fig. 18.70)

There is one example of a handled bowl (or possibly a jar), from The Ditch at Hole Farm (Fig. 18.70). Although fragmented it shows a straight-sided bowl with the remains of a strap handle attaching at the rim. At the point of handle attachment there are two thumb-marks on the inside of the rim, as found on some of the jugs (e.g. Fig. 31.164).

### **Small thick-walled jars**

(Vessel form C3E)

(Fig. 19.71–4)

At Hole Farm, these occur in upper kilns 1 and 2 (i.e. in both kiln stacks) with a few examples in lower kiln 3. They also occur in The Ditch and in non-kiln features. Because they are thick-walled they have been given a separate classification, but there is quite a lot of variation within this group. Rims are usually thickened, flat-topped and sometimes everted (B2), the squared sloping rim (H2) is also common. Sometimes the neck is hollowed. Rim sizes range from 90 to 160mm, 140mm being the most frequent. Only one profile is present (Fig. 19.73) and shows a pot considerably wider than it is high, so that it could also be classified as a bowl. The other illustrated examples are of much more jar-like proportions. Like the cooking-pots, they are often rilled on the upper half, but Fig. 19.74 shows pronounced rilling around the entire profile. Jar Fig. 19.71 shows a slight carination in the middle, created by knife-trimming and this is also evident on other examples.

The only other site where this vessel form occurs is at Starlings Hill, where there is a single example, an almost complete profile similar to Fig. 19.73 from Hole Farm. It has an H2 rim, and like the Hole Farm example shows a carinated shoulder formed by knife-trimming.

### **Cooking-pots**

(Vessel form C3)

The cooking-pots, as might be expected, are extremely common and constitute by far the largest component of the Hole Farm assemblage, totalling 63% of the quantified pottery. Cooking-pots are squat jars, usually wider than they are high with a sagging base. Some complete or almost complete cooking-pots at Hole Farm were found stacked *in situ*, in the uppermost kilns, 1 and 2. The

illustrated cooking-pots, almost all from Hole Farm, are shown in order of rim shape, profile and kiln number. A small number of the illustrated cooking-pots are from non-Hole Farm sites and are illustrated if they are particularly complete or new types. The rims are classified according to Drury's typology of cooking-pot rims (Drury *et al.* 1993, 81–4). For the two largest coarseware assemblages, Hole Farm and Clare Cottage, the frequencies of the cooking-pot rim types have been examined.

The breakdown of cooking-pot rim types by kiln at Hole Farm is summarised in Table 6 to highlight any differences between kiln assemblages. The frequency of cooking-pot rim types from Clare Cottage, a virtually unstratified assemblage, is shown in Table 7.

#### *Cooking-pots with beaded rims sub-form C1/3*

At Hole Farm only, very occasional examples of cooking-pots with early medieval-type beaded rims (C1 and C3) occur in standard Hedingham Coarseware fabrics. Rim form C1 has an external bead and rim form C3 has an external bead and an internal thickening. They are not particular to any one kiln (see Table 6) and are most likely residual. None are illustrated (see Cotter 2000, fig. 27 for illustrations of this rim type).

#### *Cooking-pots with upright squared rims sub-form H4A*

(Fig. 19.75–78)

This type occurs only at Hole Farm (although comparable rims are present at Starlings Hill, see below). This is an early type as evidenced by the fact that the larger fragments are confined to The Ditch, with only small abraded fragments occurring in the kiln fills, although they are far more frequent than the beaded rims (see Table 6). In spite of the fact that they are typologically earlier, they occur in the standard Hedingham Coarseware fabrics, not in Hedingham Early Medieval Ware fabrics. The rims are upright, sub-squared with a slight hollowing internally. Fig. 19.75 is from The Ditch and fire-blackening on the sides shows it has been used. Fig. 19.76 is from kiln 1 and is one of the larger fragments of this rim type found in the kilns. Fig. 19.77 is also from one of the kilns (kiln 2) and shows a groove around the rim, a variation that also occurs on later rim types (Fig. 22.106). The H4A rim type does not occur in Drury's typology. Fig. 19.78 from The Ditch shows a related rim form that is more squared and everted. It is comparable to the B4 rims published by Drury (*et al.* 1993, fig. 39.48–55).

#### *Cooking-pots with B4B rims*

(Fig. 19.79)

This is another type peculiar to Hole Farm. Fig. 19.79 shows a thickened, very everted rim and is from kiln 3. This is a rare rim form with only four examples, all from kilns 1 and 3.

#### *Cooking-pots with B2 rims*

(Fig. 19.80–83)

At Hole Farm, cooking-pots with thickened flat-topped everted rims, sub-form B2, occur in all the kilns, but are relatively the most numerous in the earlier kilns, kilns 3 and 4/5. This fits in with Drury's typology, as this is an early type datable to *c.* 1200. There are two profiles at Hole Farm with this rim, both in kiln 3 (Fig. 19.80 and 81). Both have slightly shouldered profiles and rims that are slightly hollowed internally. The rim of Fig. 19.80 is somewhat

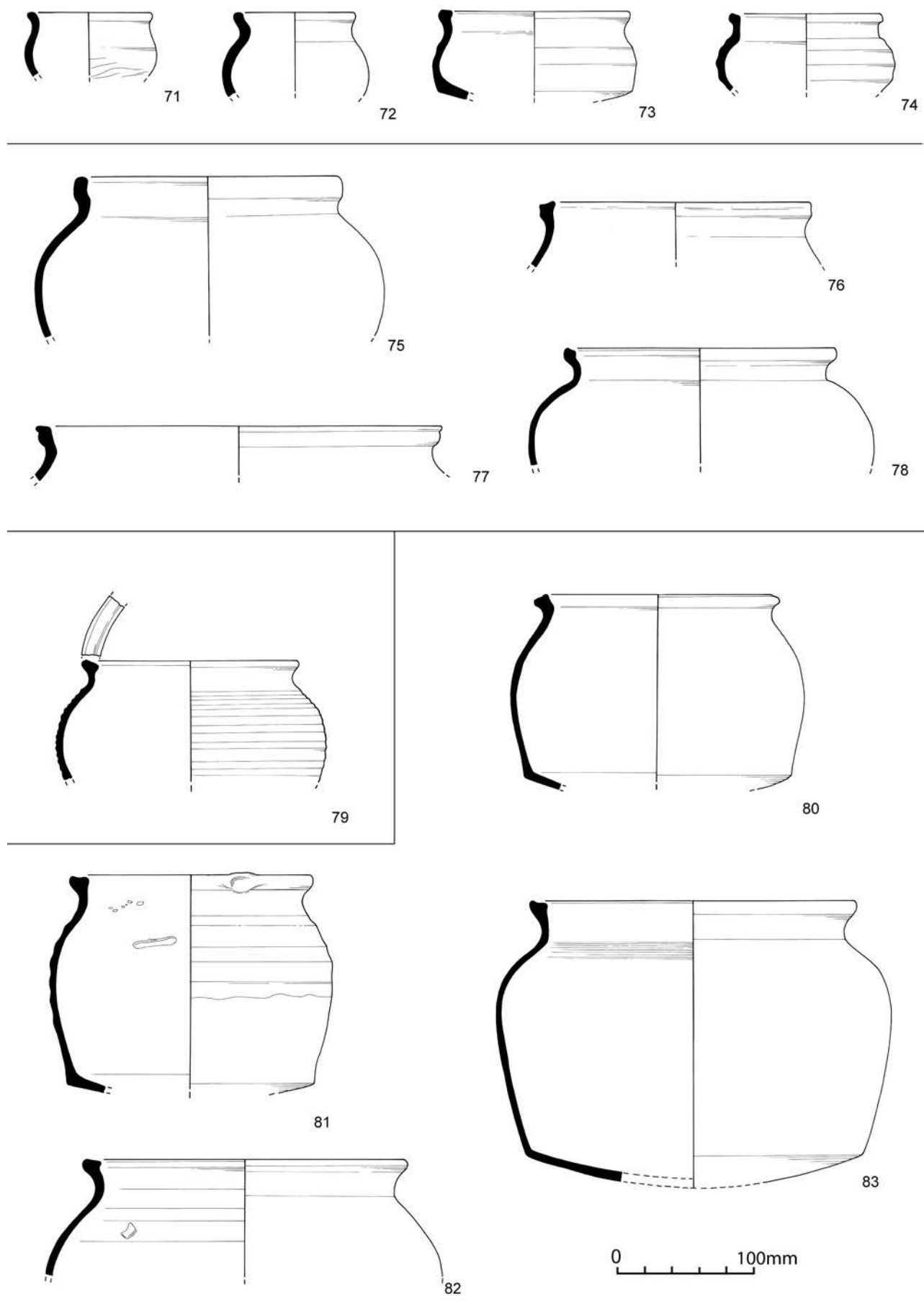


Figure 19 The coarseware typology: small thick-walled jars, Nos 71–74; cooking-pots with upright squared rims sub-form H4A, Nos 75–78; cooking-pots with B4B rims, No.79; cooking-pots with B2 rims, Nos 80–83

	<i>Cooking-pot rim type</i>						
	<i>C1/3</i>	<i>H4A</i>	<i>B4B</i>	<i>B2</i>	<i>H1</i>	<i>H2</i>	<i>H1/H3</i>
kiln 1	1 sherd 16g 0% EVES	19 sherds 219g 18% EVES	7 sherds 190g 51% EVES	29 sherds 626g 84% EVES	203 sherds 5023g 145% EVES	880 sherds 31142g 1882% EVES	2 sherds 133g 32% EVES
kiln 2	3 sherds 164g 30% EVES	139 sherds 1673g 0% EVES	absent	5 sherds 93g 12% EVES	2596 sherds 100178g 6334% EVES	48 sherds 1803g 133% EVES	absent
kiln 3	1 sherd 41g 11% EVES	3 sherds 55g 0% EVES	1 sherd 41g 12% EVES	36 sherds 1771g 157% EVES	64 sherds 2549g 204% EVES	398 sherds 18912g 1207% EVES	absent
kiln 4/5	absent	6 sherds 70g 0% EVES	absent	12 sherds 386g 97% EVES	370 sherds 13228g 2769% EVES	19 sherds 536g 170% EVES	absent
<b>Totals</b>	<b>5 sherds</b> <b>221g</b> <b>41% EVES</b>	<b>167 sherds</b> <b>2017g</b> <b>18% EVES</b>	<b>8 sherds</b> <b>231g</b> <b>63%EVES</b>	<b>82 sherds</b> <b>2876g</b> <b>350%EVES</b>	<b>3233 sherds</b> <b>120978g</b> <b>9452% EVES</b>	<b>1345 sherds</b> <b>52393g</b> <b>3392% EVES</b>	<b>2 sherds</b> <b>133g</b> <b>32% EVES</b>

Table 6 Hole Farm cooking-pot rim frequencies in chronological order by kiln, calculated from sherd count, weight and EVES

down-turned. Fig. 19.82, again from kiln 3, has a flat-topped rim with internal thickening.

At Starlings Hill there is one complete shouldered profile with a B2 rim (Fig. 19.83), which is similar to Fig. 19.82 from Hole Farm. It is ochre coloured with a 'smoked' interior and shows an area of abrasion on one side only as if part of the cooking-pot was exposed to weathering. It is knife-trimmed above the base and shows horizontal striations around the inside of the shoulder. Other B2 rims at Starlings Hill are represented only by fragments (five examples) and occur in the standard grey-firing, oxidised or partially oxidised fabrics. A number of B2 rims from Starlings Hill are in fact borderline with the upright squared rim (H4A) as found at Hole Farm. Single examples of the B2 rim occur at Crows Cross and Holy Trinity. They are also present at Shalford Road, but only make up a tiny fraction of the total.

#### *Cooking-pots with H1 rims*

(Fig. 20.84–90; Fig. 21.91–100)

H1 rims are relatively narrow flanged rims, above an upright neck, normally with a flat top, although those with slightly everted rims are also classified as H1. At Hole Farm this is a very common type (see Table 6), occurring in all kilns but far more common in the north kiln stack comprising kiln 2 and 4/5. Several cooking-pots were found stacked *in situ* in the oven of kiln 2, and unless otherwise stated all the illustrated examples are from kiln 2.

Fig. 20.84, 85 and 86 have slack profiles, i.e. where the sides of the vessel do not flare out, so the girth is little wider than the rim. Fig. 20.84 has a very short neck and is from earlier kiln 4/5. Fig. 20.85 is somewhat warped, so the slack profile may not have been the intended shape. Most cooking-pots with H1 rims have rounded or slightly shouldered profiles, i.e. the widest part is around the middle of the vessel. Almost all the complete and semi-

complete cooking-pots have been illustrated to show the variability within this form (Fig. 20.87; (Pl. 24), 88, 90 and Fig. 21.91–93). Plate 25 (not drawn) shows a rather warped version of this vessel shape. For examples of H1 cooking-pot rims with decoration, see Fig. 21.96, 98, 99 (Pl. 26) and 100, discussed below.

Cooking-pots with H1 rims are present at several other production sites, and the two most complete profiles from Clare Cottage are illustrated; Fig. 21.94 shows a rounded profile and everted rim. Fig. 21.95 shows a rounded profile and horizontal flanged rim. H1 cooking-pots also occur at Acacia House, Crows Cross, Foxborough Hill (1960, 1962), Holy Trinity, Shalford Road (where they are by far the commonest rim type) (Orr and Brooks 2009, fig. 4.12–15) and Starlings Hill. However no complete profiles were recovered from these sites, although those from Starlings Hill were complete enough to note that several had slack rather than shouldered or rounded profiles. All are comparable to the Hole Farm material.

#### *Cooking-pots with H2 rims*

(Fig. 22.101–110; Fig. 23.111–119; Fig. 24.120–122)

H2 rims are thicker and more squared than H1 rims and tend to have a sloping top. At Hole Farm H2 rims occur in all four kilns, but in contrast to the H1 rims, were far more common in the south kiln stack comprising kiln 3 and kiln 1 (see Table 6). All the illustrated examples of H2 rims are from these two kilns. In addition, the profiles of cooking-pots with H2 rims have more pronounced shoulders (Fig. 22.101–103, (Pl. 27)), contrasting with the more rounded profiles of the H1-rimmed cooking-pots, although Fig. 22.104 does have a more rounded profile. There is some variation in the shape of the H2 rims, which could mean that the assemblage from kilns 1 and 3 is less homogeneous than that of kilns 2, 4/5, perhaps representing the results of several firings. For example,

	<i>Cooking-pot rim type</i>					
	<i>H2</i>	<i>H1</i>	<i>H1/3</i>	<i>H3</i>	<i>H3A</i>	<i>E5</i>
<b>Totals</b>	<b>68 sherds</b> <b>1899g</b> <b>465% EVES</b>	<b>41 sherds</b> <b>1762g</b> <b>275% EVES</b>	<b>8 sherds</b> <b>406g</b> <b>86% EVES</b>	<b>8 sherds</b> <b>162g</b> <b>64% EVES</b>	<b>33 sherds</b> <b>1392g</b> <b>195% EVES</b>	<b>23 sherds</b> <b>363g</b> <b>123% EVES</b>

Table 7 Clare Cottage cooking-pot rim frequencies in chronological order, calculated from sherd count, weight and EVES



Figure 20 The coarseware typology: cooking-pots with H1 rims, Nos 84–90



Plate 24 Cooking-pot Fig. 20.87



Plate 25 Warped cooking-pot (photographed but not drawn; ht 172mm, estimated rim diameter 200mm)

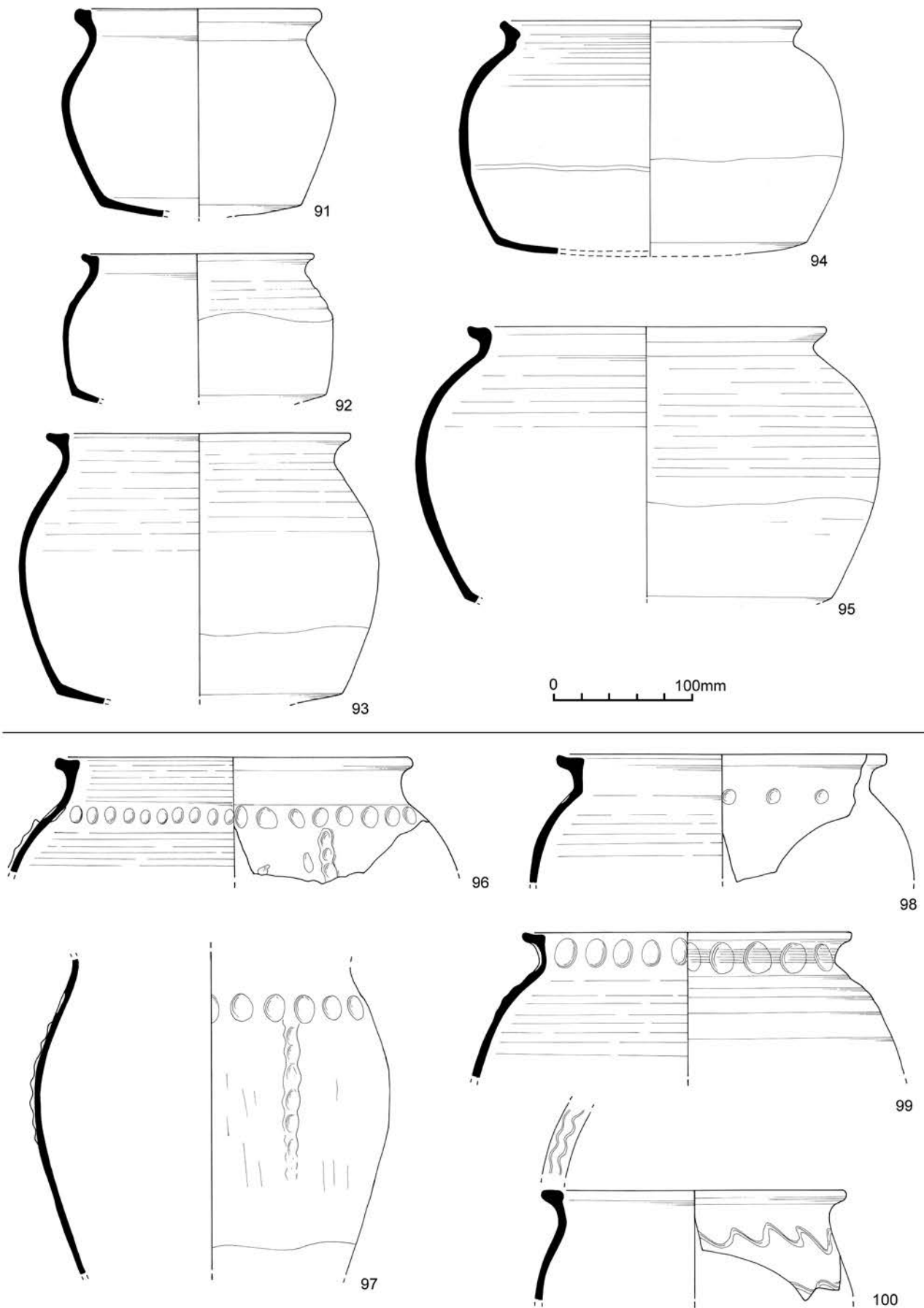


Figure 21 The coarse ware typology: cooking-pots with H1 rims, plain, Nos 91–95; decorated, Nos 96–100



Plate 26 Decorated cooking-pot Fig. 21.99



Plate 27 Cooking-pot Fig. 22.103

rimms can have rounded rather than squared edges (Fig. 22.105). Some rims have a groove around the edge (Fig. 22.106), while others are very squared Fig. 22.107). In addition, there is a rim with a down-turned edge, which is faceted in places (Fig. 22.108).

At Clare Cottage, H2 rims are the most frequent cooking-pot rim type (see Table 7). Like Hole Farm, some examples have rounded rather than squared edges (Fig. 23.115) and a number are hooked beneath (Fig. 22.109). Fig. 22.110 shows a rounded edge and slight hollowing of the inside of the rim.

At Starlings Hill, H2 rims are less common than the H1 rims. Most were found in kiln 2 and most occur in the standard grey-firing fabric (hedcw) and are similar to those at Hole Farm where they are paralleled by examples from Hole Farm kilns 1, 2 and 3. At Shalford Road, H2 rims are also far less common than the H1 rims. Examples of H2 cooking-pot rims occur at Crows Cross and Foxborough (1962). Those from Foxborough have slightly everted necks, rather than the typical upright neck. For examples of H2 cooking-pot rims with decoration, see Fig. 23 and Fig. 24.120–122, discussed below.

#### *Cooking-pots with H1/H3 rims* (Fig. 24.123)

These are rims that are intermediate between the H1 and the later blocked, neck-less form H3. These are not common; a couple of examples occur at Hole Farm, and they are slightly more frequent at Clare Cottage, one example of which is illustrated (Fig. 24.123). At Acacia House there is one example that is intermediate between the H1 and the E5 rim.

#### *Cooking-pots with H3 rims (and H3A rims)* (Fig. 24.124–126)

These are blocked neck-less rims with no intervening neck. This typologically later rim does not occur at Hole Farm, but it does occur in significant quantities at Clare Cottage and in small quantities at Crows Cross, Shalford Road and Starlings Hill. At Kemp's Wood, this is the only cooking-pot rim type illustrated (Petchey 1976, fig. 14B.1–8). One example from Starlings Hill is illustrated (Fig. 24.124), which is very similar to the single example from Crows Cross. At Clare Cottage there is a variant of the H3 rim where the rim is everted, this is assigned the code H3A, such vessels have rounded profiles (Fig. 24.125–126). H3A rims occur only at Clare Cottage where they are actually more common than the H3 rim (see Table 7).

#### *Cooking-pots with E5 rims* (Fig. 24.127)

This is the most developed form in Drury's typology with a flanged neck-less rim. Again this form is uncommon and represented only by fragments. It occurs at Clare Cottage (Fig. 24.127), where rims can be plain, as illustrated (E5A) or slightly hollowed (E5B). Two examples of the E5 rim occurred at Starlings Hill, one of which is very small with a diameter of only 160mm. Most examples of this type are relatively fine and thin-walled and are related to the small jar forms (see below) but are classified as cooking-pots to fit in with Drury's typology.

#### *Cooking-pot sizes and ratios*

The cooking-pots from the two largest coarseware assemblages of Hole Farm and Clare Cottage were examined in order to look at sizes and ratios.

#### *Cooking-pot sizes and ratios at Hole Farm*

A total of twenty complete cooking-pot profiles are present, of these there are only two profiles with B2 rims and two profiles with H2 rims, the rest have H1 rims, so there was little value in comparing dimensions by rim type. Most of the cooking-pots with complete profiles have been drawn, so the easiest way to look at the relative proportions is to examine the drawings. Most of the cooking-pots are wider than they are high, but there does not appear to be a standard ratio between height and rim diameter. For example, Fig. 21.92 is considerably wider than it is high, with the height equalling only about 60% of the rim diameter. Not all cooking-pot profiles possessed a complete base, so the most accurate way to compare height with rim diameter was to measure the distance between rim and basal angle. When comparing this ratio it was found that the heights of most cooking-pots were between 77% and 87% of the rim diameter. The bases are as wide as, or wider than the rims. Fig. 20.88, which has a diameter of around 180mm, is a complete vessel and so its capacity was measured by filling it with rice, which, when filled to the brim, is 4750mls or 8.4 pints.

The cooking-pot rim diameters have also been examined to determine the size range and frequency, and whether the rims were made to standard sizes, although because there is not a standard ratio between rim and height, this will not tell us the size ranges in terms of capacity of the actual complete cooking-pots. They obviously did not have standardisation as we know it today.

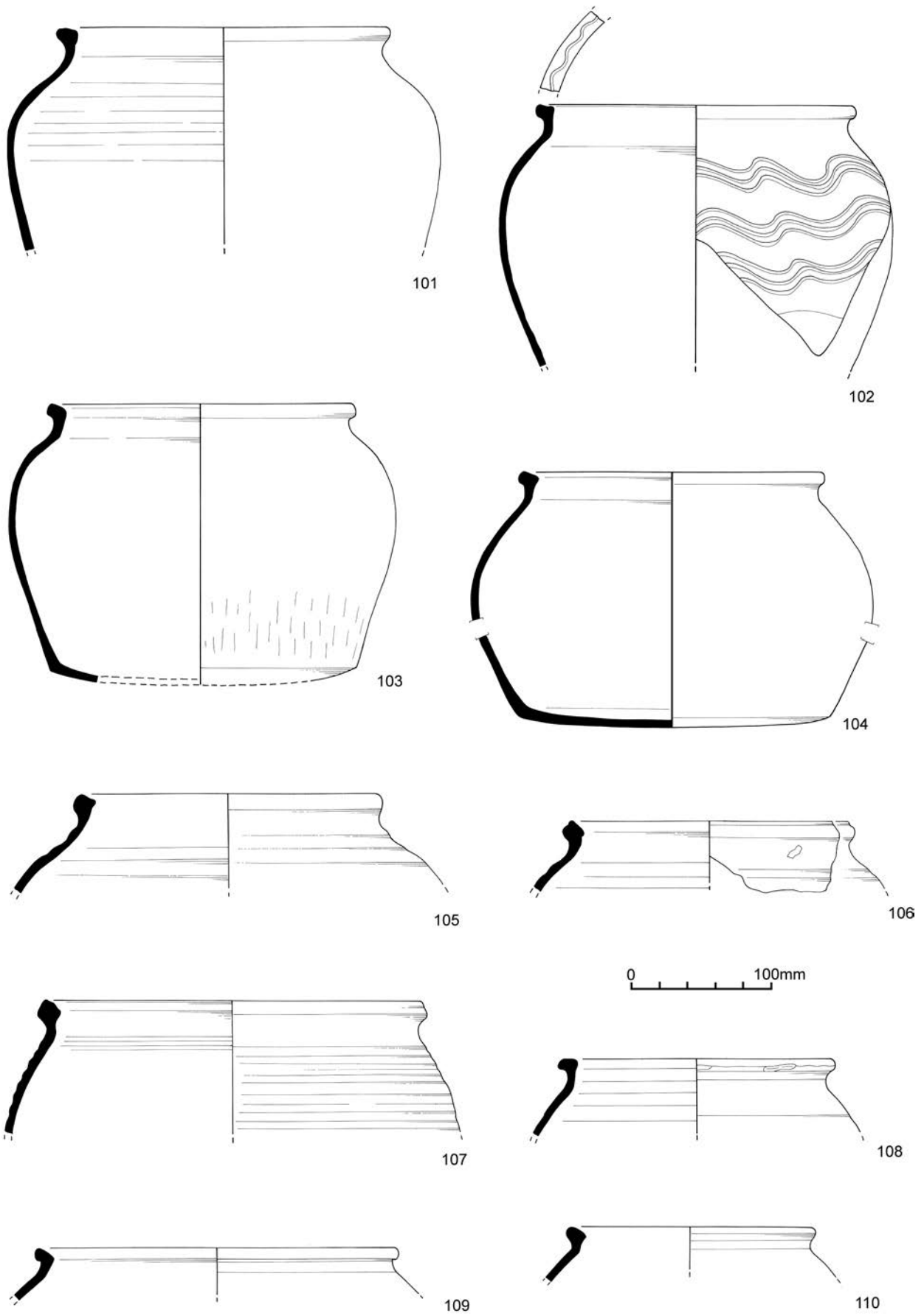


Figure 22 The coarseware typology: cooking-pots with H2 rims, Nos 101–110



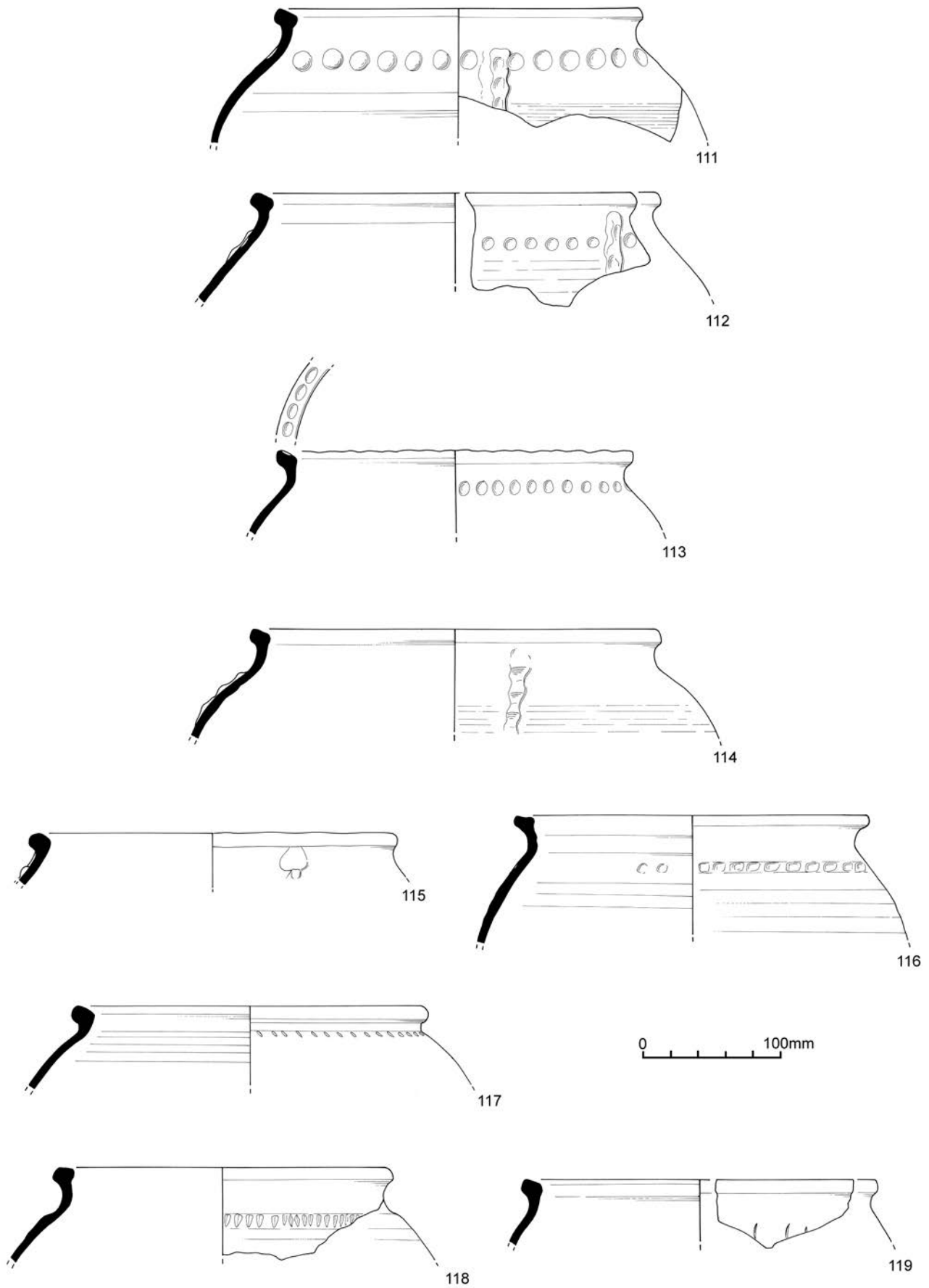


Figure 23 The coarseware typology: cooking-pots with H2 rims, Nos 111–119, all showing decoration

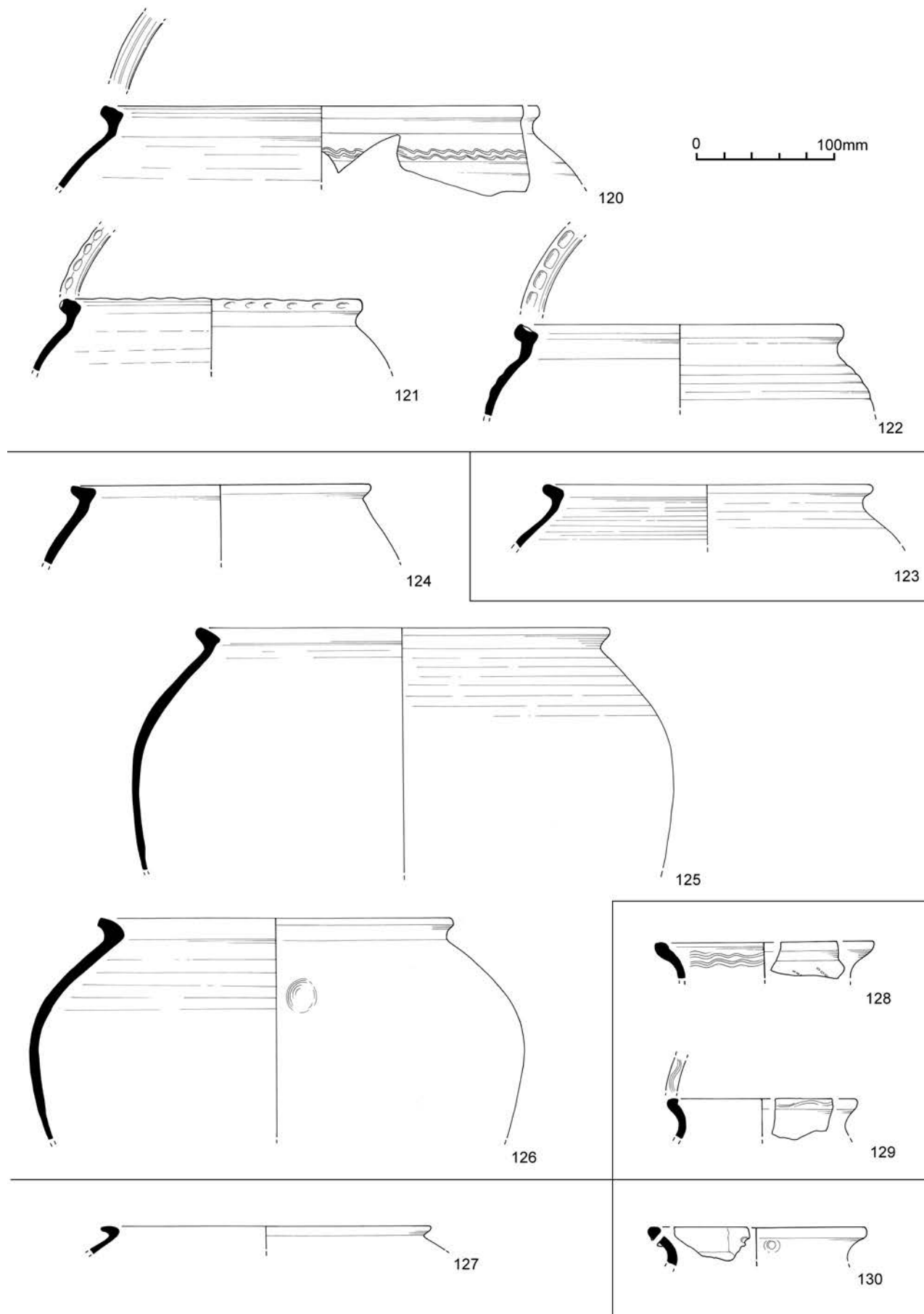


Figure 24 The coarseware typology: cooking-pots, with H2 rims, all showing decoration, Nos 120–122; with H1/H3 rims, No.123; with H3 (and H3A) rims, Nos 124–126; with E5 rims, No. 127; jars with combed decoration, Nos 128–129, small jars with perforated flanged rims, No. 130

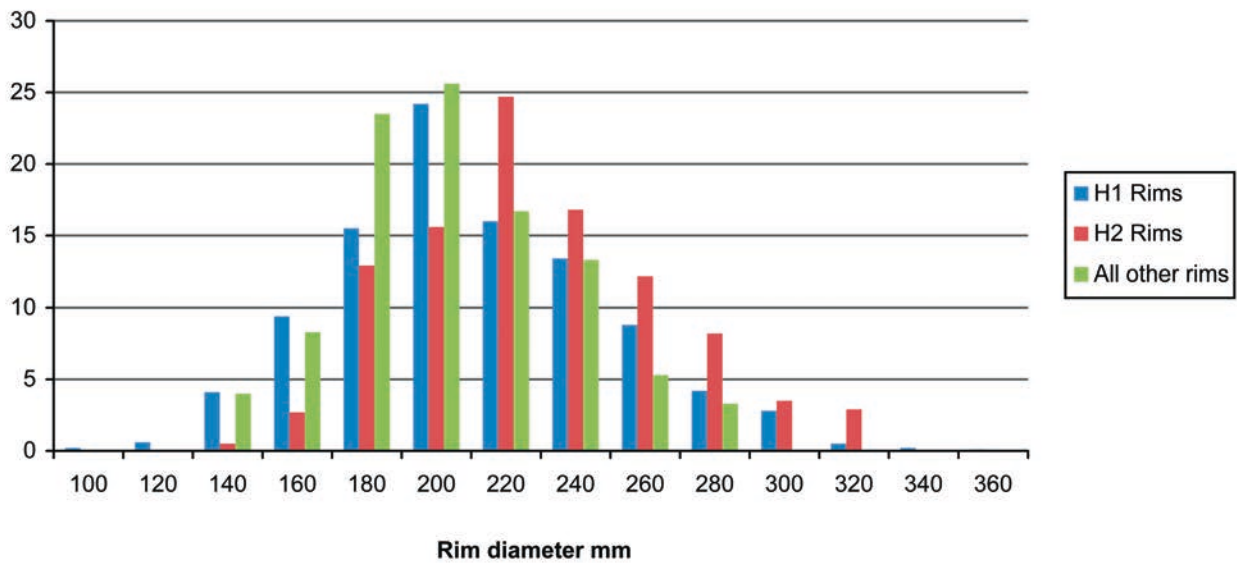


Figure 25 Frequency of cooking-pot size ranges by rim type at Hole Farm by percentage EVES

The frequency of cooking-pot rim type by rim diameter at Hole Farm is shown by means of a bar chart, Figure 25. This shows the frequencies of rim diameters, the most common types, H1 and H2 are itemised separately, but because there relatively few of the other rim types (C1/3, H4A, B4B, B2, H1/3) they have been lumped together under 'all other rim types'. Figure 25 shows that the total size range of cooking-pots is between 100 and 340mm, but there are only one or two examples at the extreme ends of this range (i.e. with diameters of 100, 120 and 340mm), so that most rims range from 140 to 320mm. As H1 rims are far more common than H2 rims, EVES has also been shown as a percentage of the total so that comparisons can be made between the two. Overall 70% of cooking-pot rims lie between 180 and 240mm diameter, with 200mm being the most frequent size, and with the frequency gradually falling off towards the

extreme ends of the size ranges. Figure 25 shows no evidence that cooking-pots were made in a set of sizes.

When comparing the H1 and H2 rims, it can be seen that the large sizes are more common in the H2 rims, and the small sizes more common in the H1 rims. In the mid range however, there is little difference between the two types with around 70% of both types occurring in the 180 to 240mm range. The most frequent size for the H1 rims is 200mm diameter (24% of the total) and the most frequent size for the H2 rim is 220mm (25% of the total), so again there is very little difference between the two.

#### Cooking-pot sizes and ratios at Clare Cottage

Only two cooking-pot profiles are present (Fig. 21.94 and 95) so little can be said in the way of size comparisons. The two cooking-pots do have similar proportions though, both with a height of 81% of the rim diameter, this falls into the range of the Hole Farm cooking-pots.

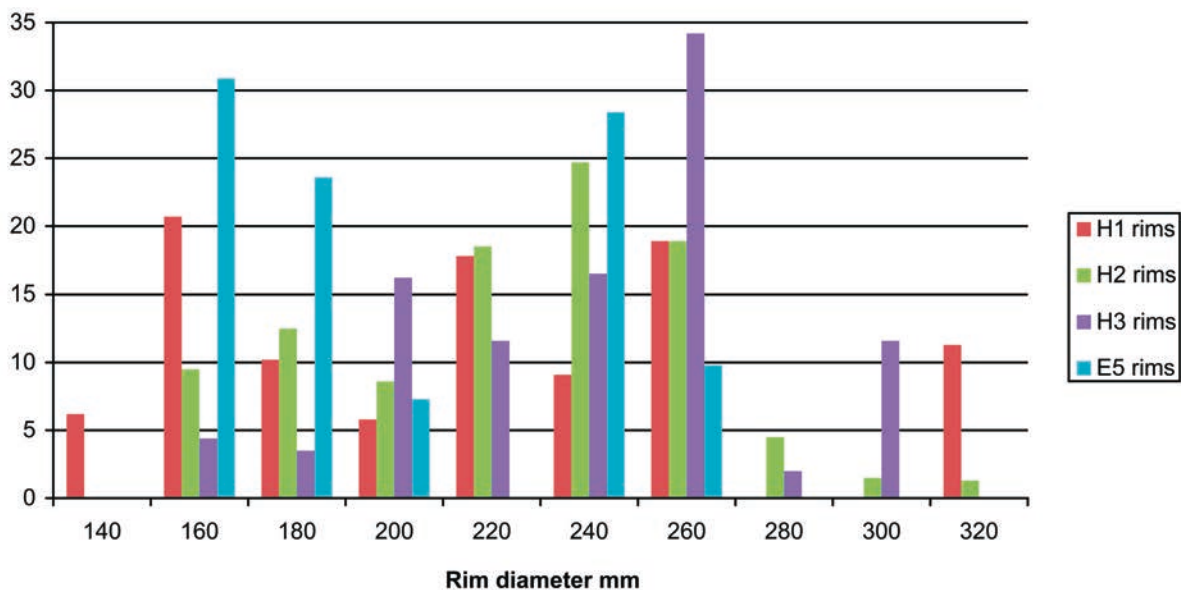


Figure 26 Frequency of cooking-pot size ranges by rim type at Clare Cottage by percentage EVES

The frequency of cooking-pot rim type by rim diameter at Clare Cottage is shown by means of another bar chart, Figure 26. To simplify the bar chart, the H2 rim also includes the H2A variant and the H3 rim includes the H1/H3 and H3A variants. Figure 26 shows that the cooking-pots range in size from 140mm to 320mm, similar to the size range of the Hole Farm cooking-pots, but the Hole Farm distribution pattern, with the frequencies gradually falling away either side of the commonest size, does not occur on the cooking-pots with H1 rims at Clare Cottage. Here, the most frequent size for H1 rims is the rather small size of 160mm, followed by 260mm, then 220mm. The lack of a pattern may be due to the small sample size at Clare Cottage, with a total of 275% EVES as opposed to 9359% EVES for H1 rims at Hole Farm. The most frequent rim size for the H2 cooking-pot rims at Clare Cottage is 240mm with rim sizes either side of this, at 220mm and 260mm, the next most frequent sizes. This is a slightly larger size than the H2 cooking-pots at Hole Farm, where the most frequent diameter is 220mm. Figure 26 shows that there is a mini peak at 180mm for the H2 rims at Clare Cottage, with measurements either side of this (at 160 and 200mm) also relatively common. It would therefore appear that there are two main sizes of H2 rims, of around 240 and 180mm, but that the larger size was made in greater quantities.

A diameter of 260mm is by far the most frequent size for the H3 rims and these are about twice as frequent as any other rim size. This is bigger than the most frequent sizes for the H1 and H2 rims. The slightly smaller size of 240mm is also relatively common and perhaps more significantly, there are two smaller peaks at the 200mm size and at the 300mm size, so again this provides some evidence that the H3-rimmed cooking-pots were made in a range of sizes. As H3 rims are typologically later than the H2 and H1 rims, this could mean that cooking-pots are getting larger over time. No such pattern emerged with the E5 rims, typologically the latest, which appear to have two main size ranges, small, between 160 and 180mm, the most frequent size, and a larger size of around 240mm.

*Hole Farm: cooking-pot decoration and surface treatment*  
 Decoration is common on cooking-pots, and is generally confined to the rim and shoulder. The only exceptions to this are bands of wavy line combing on the body of the pot (e.g. Fig. 22.102) and vertical thumbed applied strips (e.g. Fig. 21.96–7). Because decoration occurs on the rim and shoulder, the most effective way of quantifying decoration is by EVES. Decoration occurs on about 22% of cooking-pots, but is about twice as common on cooking-pots with H2 rims (35%) than it is on cooking-pots with H1 rims (17%). None of the complete and semi-complete cooking-pots found *in situ* in kilns 1 and 2 are decorated, and there are no complete profiles of decorated cooking-pots.

#### Rows of dimpling

The most common type of decoration is a row of dimples around the shoulder, 17% of all cooking-pot rims show this type of decoration, and it accounts for 78% of all the decoration on the cooking-pots. The dimples vary in size and can be circular (Fig. 23.111) or more oval in shape (Fig. 23.113, and Pl. 28) Simple experiments (pressing a finger into unbaked clay) show that these dimples were almost certainly made with a finger, with the larger



Plate 28 cooking-pot showing a row of oval dimpling (photographed but not drawn; dimples measure 12 x 9mm)



Plate 29 Internal view of cooking-pot Fig. 21.99 showing squidge marks

rounder dimples made with a thumb. A row of corresponding squidge marks where the digit has pressed into clay often appears on the internal surface (Fig. 23.111, and Pls 29, 30). Some of the dimples are so lightly pressed they are difficult to spot, the vessel having to be tilted until the dimples are emphasised by shadow. A number of the dimples are very small, only about 8mm across (Fig. 23.112). These could have been made by a tool, but in a least one case were made by the finger as the remains of a fingernail mark can be seen (Pl. 31), the small size of the dimpling and fingernail mark suggest the decoration was carried out by a child. Also noticeable is the rather wrinkled surface of this dimpling, showing the decoration was carried out while the surface was wet. The spacing varies, usually the dimples are closely spaced (Fig. 23.111) but they can be quite widely spaced (Fig. 21.98). The neatness of the decoration also varies. Another variation is large round dimpling, which occurs around the neck, rather than the shoulder (Fig. 21.99; Pl. 26). As this occurs only in kiln 2, it is probably the work of an individual potter. A dowel-shaped hone stone was found at the Hole Farm site and it is possible that this was also used to make the dimples, see below (Pl. 36).

Sometimes the dimples are associated with other types of decoration, most commonly vertical thumbed applied strips (Fig. 21.96–7; Fig. 23.111–12). In most cases it was not possible to determine which was done first, the dimpling or applying the strip, but in some cases it was evident that the dimpling was done first as the strip



Plate 30 Internal view of cooking-pot showing squidge marks, same vessel as Pl. 28



Plate 31 Row of dimpling showing fingernail marks (photographed, but not drawn; dimples measure 8 x 8mm)

overlies it (Fig. 23.111) and in other cases the dimpling was done after the strip was applied (none illustrated), so it probably depended on the preference of the potter. Cooking-pots with rilled sides (see below) often show dimpling, the horizontal rilling serving as a guide to place the dimples. A row of dimpling can also be associated with dimpling on the rims (Fig. 23.113).

A row of dimpling appears to be almost universal, not only occurring on cooking-pot pots with H1 and H2 rims, but also on the earlier type cooking-pots including an example with a beaded rim (C1), and on upright squared rims (H4A) from The Ditch. They also occur on the typologically later H1/H3 rim. This type of decoration was therefore current throughout the entire period of production at Hole Farm.

The possibility of a correlation between rim diameter and dimpled decoration was investigated and it was found that this type of decoration occurs only on the larger cooking-pots. It is absent on cooking-pots below 200mm diameter, with only a few examples on cooking-pot rims of 200mm diameter, the commonest rim size overall. Dimpling is most frequent on cooking-pots of around 240–260mm diameter, and many of the rarer, large cooking-pots over 300mm diameter also show dimpling. Both examples of the largest sized cooking-pots with a diameter of 340mm are dimpled. Large pots are sometimes decorated with thumbled applied strips and this

is thought to strengthen the vessel or aid grip, but a row of dimpling would appear to serve neither purpose.

Other types of decoration on the shoulders of Hole Farm cooking-pots

A much smaller number of cooking-pots show a row of decoration below the neck other than thumbled or fingered dimpling. Fig. 23.116 from kiln 3 shows a row of dimpling, but the sub-squared shape of the dimples suggest they are more likely to have been made with a tool, rather than thumb or finger. Fig. 23.118 shows a row of shallow notches, aligned along the uppermost row of rilling. It is fairly unevenly done using a tool. There are only seven rim fragments showing this type of decoration, all with H2 rims and all from kiln 1. They range in size between 220 and 260mm. A single example from kiln 1 (Fig. 23.119) shows what looks like a row of fingernail marks below the neck. Fig. 24.120 from kiln 1 shows a single band of wavy line combing below the neck, the decoration being aligned on the rilling. There may be more examples of this decoration, but as many combed sherds are fragmented, it is not possible to tell whether the combing is around the shoulder only, or there are bands of combing all the way down the body as on (Fig. 22.102). Fig. 24.120 is also accompanied by grooving on the rim, see below. None of the above variants occur on H1 rims, or on rims from the north kiln stack comprising kiln 2 and kiln 4/5.

Decoration on the rims of Hole Farm cooking-pots

A few rims, all but one from kiln 1, the other being unstratified, show two grooves around the top of the rim, producing a central ridge and raised edges. It occurs on B2 rims, B4B rims (Fig. 19.79) and on H2 rims (Fig. 24.120). The unstratified example is an H1 rim. Grooved rims are sometimes accompanied by other types of decoration on the body (see illustrated examples).

A small number of rims are thumbled or dimpled. Most characteristic are eight examples, all from kiln 1, all with H2 rims that show dimpling around the outer edge of the top of the rim. Sometimes this is neatly done at an oblique angle to form a braided effect (Fig. 24.121) and sometimes the decoration is more obviously thumbled/fingered (Fig. 24.122). This type of decoration also occurs on bowls (e.g. Fig. 17.56). In addition, there is a beaded rim, thumbled on the outer edge characteristic of 12th century early medieval cooking-pots, but occurring in the standard Hedingham Coarseware fabric (not illustrated). A few other rims are squared (H2) but thumbled on the outer edge (too fragmented to illustrate).

Wavy line combing around the top of the rim, and sometimes around the edge of the rim is relatively common, with around ten examples (Fig. 21.100 from The Ditch, and Fig. 22.102). Unlike the other types of rim decoration, this is widely distributed and not restricted to H2 rims; examples occur in all four kilns and it occurs on H2, H1, and B2 rims. It is usually associated with wavy line combing around the body.

There are four examples, all with H2 rims, that show faceting around the outer edge of the rim (Fig. 22.108), this can be classified as surface treatment, as the faceting is uneven and does not appear decorative. In some cases the faceting has been created by slicing off the clay probably with a knife, in other cases the method is unclear and it may be thumb-made.

#### Decoration on the body of Hole Farm cooking-pots

Vertical thumbed applied strips are commonest on the sides of larger-sized vessels of 260mm and above, but also occur on some of the smaller cooking-pots, down to about 180mm. This was an unexpected result because, as noted above, thumbed applied strips are usually confined to the larger cooking-pots and are thought to help strengthen the vessel and aid grip. As there were no complete profiles it was not possible to determine the number of strips to a pot, but cooking-pots from consumer sites generally show four evenly spaced strips. At Hole Farm, the strips usually originate at the neck (Fig. 23.111), but can start below the neck (Fig. 21.96) or immediately below the rim (Fig. 23.112). They generally finish a few centimetres above the base, although Fig. 21.97 shows the strips finishing not far below the mid point. The illustrations show that thumbed applied strips are commonly associated with rows of dimples, but they do occur without (e.g. Fig. 23.114).

Combed decoration has already been mentioned as it occurs on the rims and shoulders of cooking-pots but it also occurs as bands of combing around the body (Fig. 21.100, Fig. 22.102). There are only three examples of this recorded on cooking-pots, there may be more, but without a rim, the body may be from a jug, and on very fragmented rims it is not clear whether the decoration is only around the shoulder or whether it extends down the sides.

Rilling/horizontal incised lines is a form of surface treatment rather than decoration. It is quite common and was noted on 20% of all cooking-pots (by EVES). It is found on B4B, H2 and H1 cooking-pot rims but is most common on H1 rims. Often it is barely noticeable (e.g. Fig. 20.86), but on other examples the rilling is quite pronounced (e.g. Fig. 22.107). It usually only occurs on the shoulder of the vessel, although is sometimes obscured further down the sides by later trimming of the vessel. On other examples the rilling extends to around the middle of the vessel (Fig. 20.84). The top row of rilling can form a guide on which to align a row of decoration around the shoulder. Sometimes, instead of rilling there are incised grooves around the sides made with a tool (Fig. 19.79, 81).

#### *Clare Cottage: cooking-pot decoration and surface treatment*

Apart from rilling on the upper half of the vessel, decoration is rare and confined to cooking-pots with H2 rims, with the exception of a single H1 rim. All the typologically later rims (i.e. the H3, H3A and E5 rims) are plain. Styles of decoration are similar to those of Hole Farm, comprising vertical thumbed applied strips (two examples, one illustrated, Fig. 23.115), a row of notches around the shoulder (two examples, one illustrated, Fig. 23.117) and occasional faceting around the rim edge, probably done with a knife (two examples, including the H1 rim). As with Hole Farm, the decoration is confined to the larger cooking-pots of 220mm rim diameter and above, but there is too little data for this to be meaningful. A row of dimpling around the shoulder, so common at Hole Farm, was not encountered at Clare Cottage.

#### *Starlings Hill: cooking-pot decoration and surface treatment*

Decoration on cooking-pots is not as common as it is at Hole Farm, and as at Clare Cottage, there are no examples of a row of dimpling. However, there are similarities with Hole Farm, comprising rilling around the shoulder,

vertical thumbed applied strips, and faceting around rim edge done with a knife or thumbnail (found on an H2 rim). There is also a single example of a groove around the outer edge of the rim as on Fig. 22.106 from Hole Farm.

#### *Cooking-pot decoration and surface treatment from other sites*

Examples of decorated cooking-pots were found at some of the minor production sites. Foxborough (1960), Crows Cross and Acacia House all produced cooking-pot rims with a row of dimples around the shoulder, showing that this style of decoration is not unique to Hole Farm. At Acacia House one of the H1 rims is decorated with a vertical thumbed applied strip originating at the neck, so this is a style of decoration found at several production sites (i.e. Acacia House, Hole Farm, Clare Cottage and Starlings Hill). At Holy Trinity, there is an example of an H1 rim showing a single wavy incised line decoration around the rim and around the shoulder. It is very similar to Fig. 21.100 from Hole Farm, in both decoration and rim form, although the Hole Farm example shows combed rather than wavy line decoration.

#### **Jars with combed decoration**

(Fig. 24.128–129)

Two jar rims from Hole Farm show fairly complex combed decoration and have been classified separately. Fig. 24.128 from kiln 2 shows an everted rim with wavy line combing around the inside of the neck and a row of pricked-combing, done by stabbing with the end of a comb, around the outside of the neck. Fig. 24.129, also from kiln 2, shows combing on top of the rim and around the outer edge.

#### **Small jars with perforated everted rims**

(Fig. 24.130)

There are only two examples of this form, both from Hole Farm, one is illustrated. They are fragmented and occur only in The Ditch, but they have been included in the typology as they are of intrinsic interest. Both are in the standard coarseware fabric, although one is partially oxidised. Both have hollowed everted rims which have been pierced from the inside outwards, as evidenced by the extraneous clay on the outside of the hole. Fig. 24.130 shows a sub-circular area of scarring or lamination on the inside of the rim around the hole and may be some kind of attachment scar. However no such scar occurs on the other example.

#### **Pipkins/small cooking-pots/jars**

(Vessel form C3 and C8)

(Fig. 27.131–139)

At several sites there are a number of small thin-walled vessels that might be from small cooking-pots or other jar forms with rims that do not fit into Drury's typology. At Clare Cottage there are two hollowed everted rims (Fig. 27.131,132) that might be from pipkins, although no tripod feet or straight handles characteristic of this vessel type were noted in the assemblage. There is also an everted rim from some kind of small jar form (Fig. 27.133). These vessels are represented only by fragments. None are decorated and rim diameters range from 100 to 240mm.

Present in the Hole Farm assemblage, from kiln 2, is a single example of another small jar with an everted rim, similar to Fig. 27.133 from Clare Cottage. Also from Hole

Farm is a single lid-seated jar rim, from kiln 1, which is sufficiently different to be classified separately from the rest of the cooking-pots (Fig. 27.134).

At Crows Cross there are the remains of six to seven jars, several of which have been illustrated (Fig. 27.135–138). They are cooking-pot-shaped but thin-walled and have unusual rim types (see illustrations). All are of a similar size with diameters of between 220 and 240mm, with one slightly larger example of 260mm diameter. They have either slack or rounded profiles, and the upper half of the body is often rilled or shows horizontal striations. Fig. 27.135 has a flanged rim and is the most cooking-pot-like, the others have everted necks, Fig. 27.137 and 138 showing a lid-seating.

Included in this category, from Foxborough Hill (1960), is a small jar (Fig. 27.139) with a rounded profile and slightly down-turned rim. It is probably wheel-thrown and in a relatively fine fabric (hcwfi).

#### Jar rim with an internal lid-seating

(Fig. 28.140)

There is a single example of this from Hole Farm, which has a category of its own as it does not fit into Drury's cooking-pot rim typology and as it is not thin-walled, it does not fit into the category above. It is from kiln 1.

#### Large Thetford-style storage jars

(Vessel form C21)

(Fig. 28.141; Fig. 29.142–5)

These are the large slab-built storage jars decorated and strengthened by thumbled applied strips. The best example

of this type is the virtually complete storage jar from Crows Cross (Fig. 28.141; Pls 32–33). It has a simple upright rim and shows a thumbled cordon around both the inside and outside of the neck. The profile is slightly shouldered, much like some of the cooking-pots, but the base is entirely missing. The body is decorated with vertical and diagonal thumbled applied strips and, in the gaps left by the strips, there is wavy line combing, done after the strips were applied. There was no opportunity to examine the fabric closely, but it appears to be the standard grey ware fabric. Fragments of this vessel-form also occur in Early Medieval Ware at Crows Cross. The resemblance to Thetford-type ware storage wares is fairly superficial and there are a number of differences in vessel form and decoration which are described further in Chapter 6.

From Foxborough Hill (1962) there are several thick-walled slab-built body sherds from Thetford-style storage jars showing thumbled applied strips, one example has strips intersecting at right angles, while another shows diagonal intersecting applied strips (too fragmented to illustrate).

At Hole Farm these large storage jars do occur, but are uncommon and fragmented (18% EVES, twenty-nine sherds, weighing 1321g). Only two rims were found, both illustrated (Fig. 29.142–3). Examples of this vessel form were found only in kiln 1, with a few fragments also in non-kiln contexts. They are thick-walled and have a coarse vesicular fabric (hcwstor) (see Chapter 3). Body sherds tend to be flat and slab-like indicating large sized vessels, and are decorated with closely spaced, heavily pressed, ribbon-like thumbled applied strips, which can be either

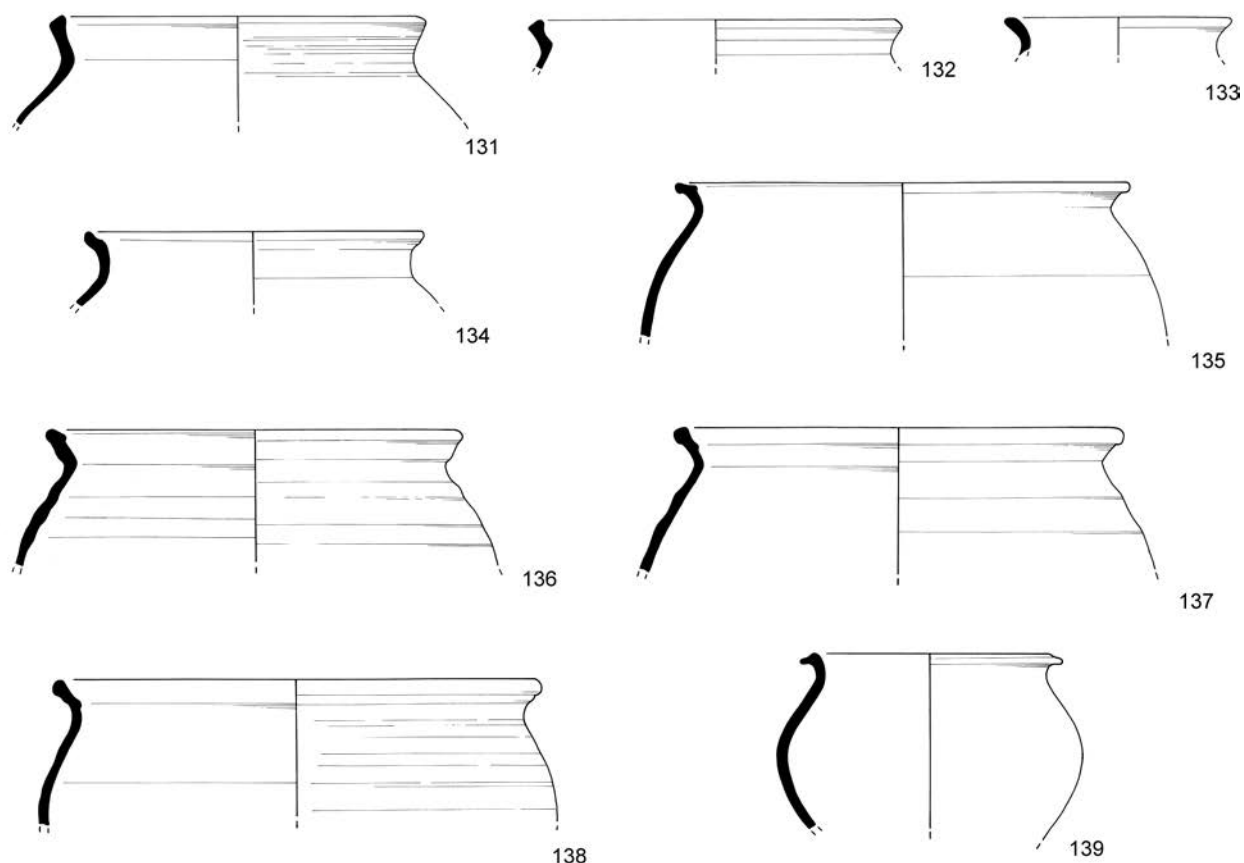


Figure 27 The coarseware typology: pipkins/small cooking-pots/jars, Nos 131–139

horizontal, vertical or diagonal (Fig. 29.144–5). These do not occur on the Crows Cross storage jar and are not closely paralleled in Thetford-type ware. Both rims are of type H2, and are of similar size, measuring around 240mm in diameter. Both show thumbed rims and horizontal thumbed applied strips, the more complete example, Fig. 29.142, showing very closely spaced strips, similar to the body sherds. There is one possible sagging base from a storage jar, not illustrated, showing the terminals of two thumbed applied strips. No definite storage jar bases were found, although there is one base in storage jar fabric which shows thickening created by applying a strip around the basal angle, which was then thumbed with small regular thumb-marks.

### Cooking-pot-shaped storage jars and undifferentiated storage jars

(Vessel form C21A)

(Fig. 29.146–150)

At Hole Farm, these are commoner than the Thetford-style storage jars (353% EVES, 103 sherds, 6313g). They occur in both kilns 1 and 2, with a single example in kiln 4/5, although they are commonest in kiln 1. Unlike other vessel forms, no differences were detected between the different kilns. Nearly all have the squared, sloping top H2 rim, regardless of which kiln they are from. A couple of examples have thinner, flanged rims and are classified as H1 rims, and there is one example of a B2 rim. Most rim diameters measure between 220 and 260mm. There are no complete profiles, but there are some very large fragments. Fig. 29.146, from kiln 1, is the most complete example showing vertical thumbed applied strips, the spacing suggesting the complete vessel would have had eight applied strips. It also has a thumbed rim, a feature of most storage jars. The fabric is unusual in that it has a large amount of carbon inclusions and has been assigned a separate code (hcwcarb), two other cooking-pot-shaped storage jars have this fabric variant (see Chapter 3).

Fig. 29.147, also from kiln 1, is similar to the previous example, but the thumbing is on the outer edge of the top of the rim and is more neatly done, producing a braided effect as found on some of the H2 cooking-pot rims. Fig. 29.148 is actually from The Ditch and shows a very squared rim with grooving around the edge, again as found on some of the H2 cooking-pot rims (e.g. Fig. 22.106). Fig. 29.149 from kiln 2 varies in that it has a thumbed applied cordon around the neck, from where a

vertical thumbed applied strip originates. A second example with a thumbed cordon, this time from kiln 1, is also shown (Fig. 29.150).

A small fragment of the basal angle survives on Fig. 29.146 and shows part of a thumb-mark. Another base fragment (not illustrated) which appears to come from this type of storage jar indicates that this vessel type had a thumbed applied strip around the base. This thumbing differs from that of the jug bases (see below), in that it extends to the underside of the base and not just the outer edge. Body sherds, presumably from this type of storage jar, sometimes show diagonal applied strips. There were no definite examples of storage jars with a row of dimpling around the shoulder as found on the cooking-pots and some other vessel types.

At Clare Cottage, there is a single example of a thick-walled H2 jar rim with a relatively coarse fabric and large diameter of 340mm which may be from a storage jar. Decorated with a thumbed applied cordon below the neck, it is comparable to the Hole Farm examples. A flat body sherd decorated with intersecting applied strips may also be from a storage jar, but could equally well be from a curfew (see below).

Thick-walled H2 rims probably from similar storage jars occur at Foxborough Hill (1960 and 1962). In contrast to Hole Farm, the two examples from the 1962 excavation show a row of dimples below the neck, one also has large thumb-marks around rim, similar to Fig. 29.146 from Hole Farm.

At Starlings Hill, there are three possible cooking-pot-shaped storage jar rims, all from kiln 2, with horizontal applied cordons around the shoulder or vertical applied strips that might be from storage jars. Unlike the Hole Farm examples, all are fairly thin-walled and not easy to differentiate from cooking-pots. They are comparable to Fig. 29.148 and 150 from Hole Farm. At Holy Trinity, there is a thick-walled base sherd showing the remains of



Plate 32–33 views of large storage jar No. 141





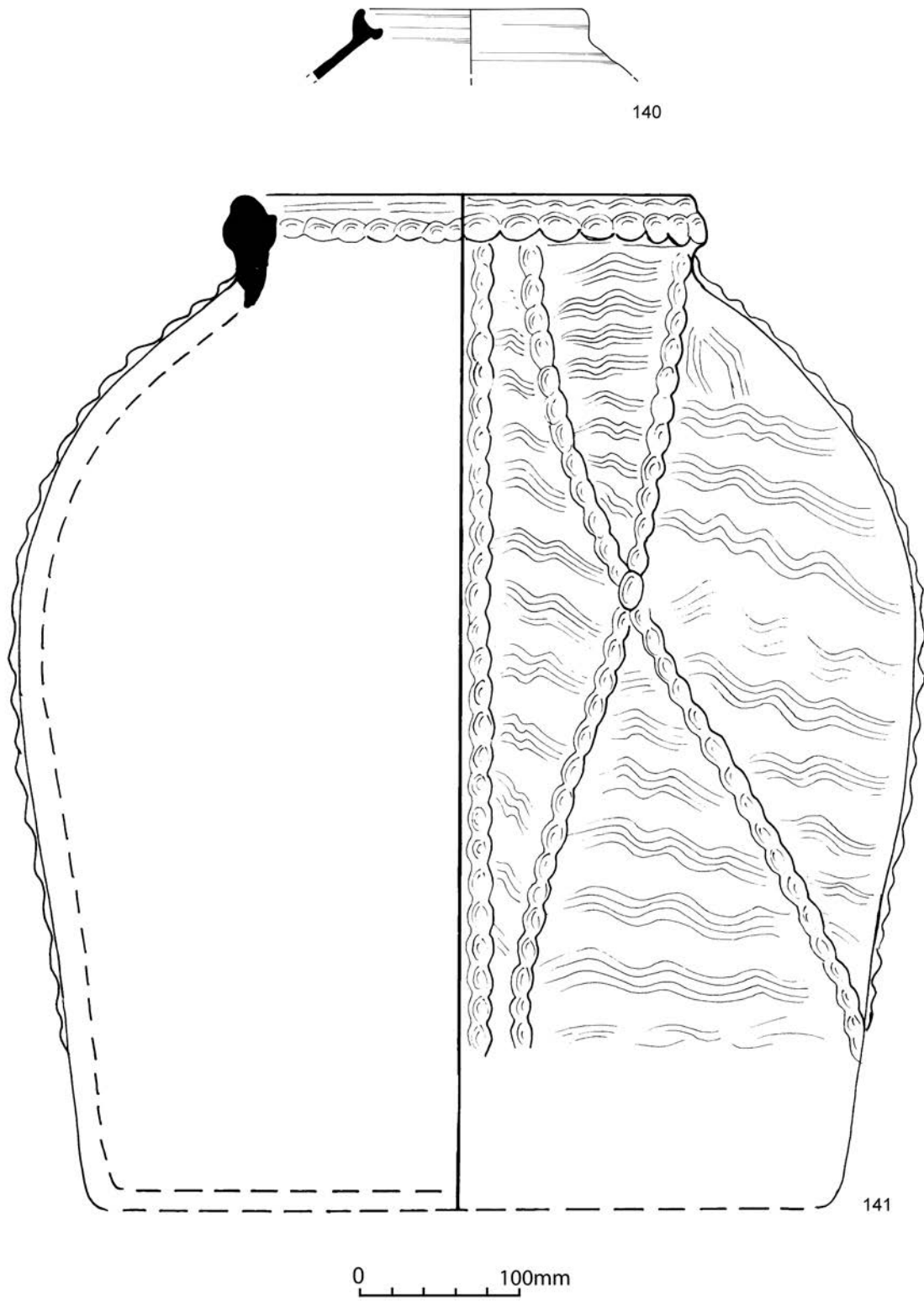


Figure 28 The coarseware typology: jars with an internal lid-seated rim, No.140; large Thetford-style storage jar, No.141

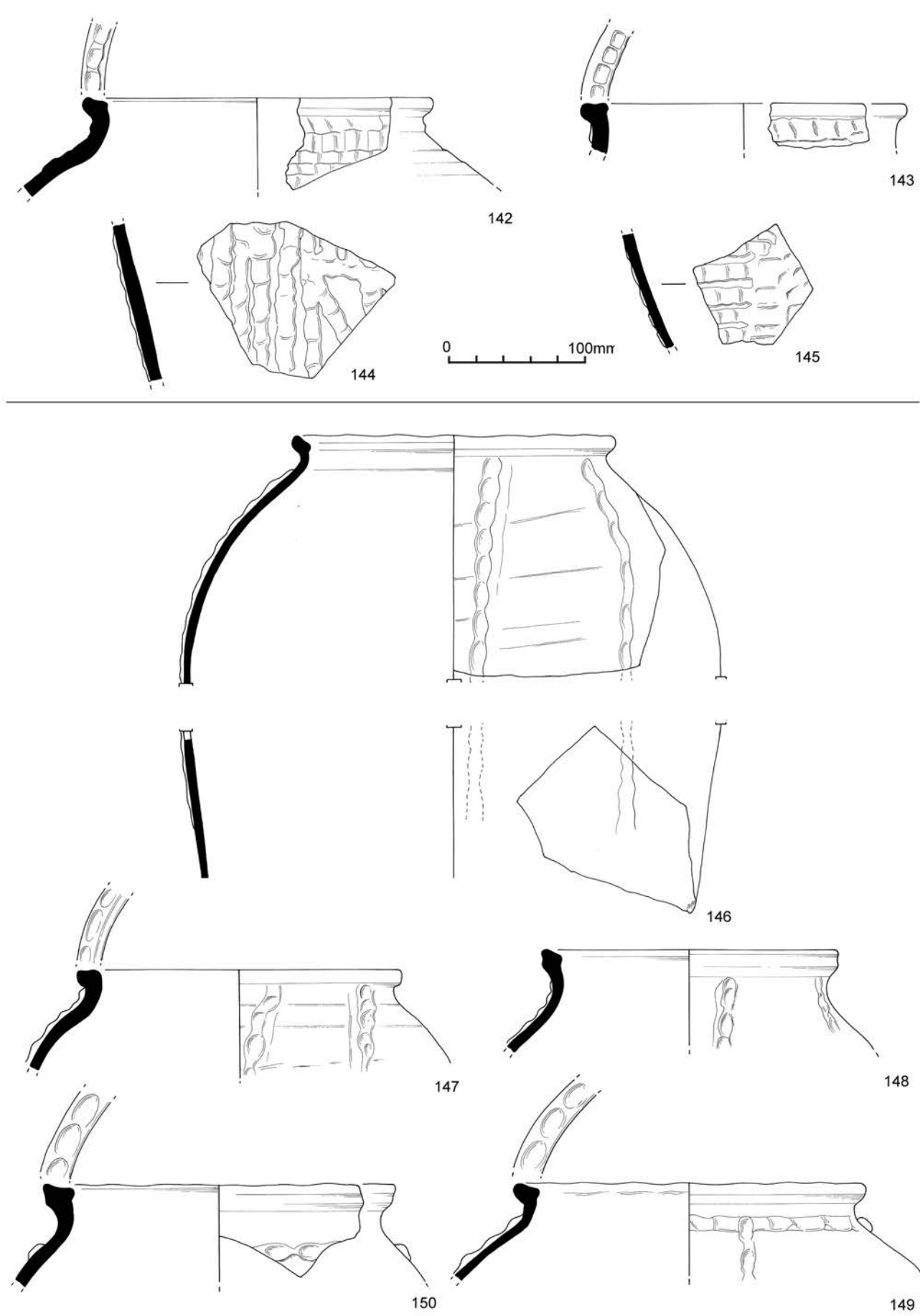


Figure 29 The coarseware typology: Large Thetford-style storage jars, 142–145; cooking-pot-shaped storage jars and undifferentiated storage jars, 146–150

closely spaced vertical applied strips that may be from a storage jar.

### **Spouted pitchers and handled storage jars**

(Vessel form C22)

(Fig. 30.151–152)

The most interesting find from Foxborough Hill (1960) is the spout from a Thetford Ware-style spouted pitcher (Fig. 30.151) showing thumbing or faceting around the edge of the spout and two thumb-marks on the rim, as found on the top of jug handle attachments (see below).

There is a possible related form at Hole Farm, Fig. 30.152, which is either from a spouted pitcher, unfortunately minus its spout, or from a handled storage jar. It is not from the kilns but was found during ditching beyond kilns near the farm. In spite of not being found in or around the kilns, it has a definite Hedingham Coarseware fabric, very micaceous and grey with red-brown margins (hcwredo). The inside is laminated so it could well be a waster. It has a strap handle showing slight thumbing at the edges, typical of jugs found in the Hole Farm kilns, and wavy line combing on rim and body. The vessel looks handmade. Both these pieces are of interest because they resemble pottery made at the Frogs Hall kilns, near Takeley, to the south-west of Sible Hedingham (Walker 2006, fig. 36).

### **Spouted jugs**

(Vessel-form D2)

(Fig. 30.153)

This form which has a tubular spout occurs only at Hole Farm. Fig. 30.153, from kiln 2, is the most complete example, being in possession of a rim. The shape of the rim and neck is the same as the jugs with pouring lips (below). The spout, which has been inserted through the vessel wall, is attached to the rim with a strut of clay. There are two further spouts, one from kiln 2 and one from The Ditch, not illustrated as they are not attached to a rim, although both show scars where the strut was attached. One shows two dimple marks just below the spout and the other shows a thumbed applied strip just below the spout, so that the decoration is comparable to the decoration beneath the sockets of the socketed bowls (Fig. 16.51–2).

### **Rounded jugs and jug fragments**

(Vessel form D and D4A)

The only complete profiles are of rounded jugs. According to the MPRG typology (3.1.8) these are jugs with an evenly rounded profile and the maximum girth around the mid-point. They occur chiefly at Clare Cottage with one example from Hole Farm. The remaining jugs, although numerous, are represented only by fragments but it is likely that most of these are also from rounded jugs. These fragments are therefore classified by component parts and decoration.

#### *Jugs from Hole Farm*

(Fig. 30.154–163; Fig. 31.164–178)

The complete profile of a rounded jug excavated from Hole Farm was unfortunately lost sometime after excavation and has not been viewed by the author. However, a drawing of the vessel was done by the DoE and has been reproduced here (Fig. 30.154). According to the excavator, the jug was found in The Ditch and has a reddish oxidised version of the coarseware fabric

(probably hcwox). It has a sagging base and rather cooking-pot-shaped body, which is similar to the jugs from Clare Cottage, although somewhat taller (see below). The neck is short and the rim thickened and everted. A strap handle, like the Clare Cottage examples, attaches at the rim and just above the shoulder of the jug. Apart from the handle, this complete jug is unlike the jugs excavated from the kilns.

Jugs form a large proportion of the assemblage, accounting for about 12% by weight of the quantified assemblage. Unfortunately the assemblage is fragmented. Jugs occur in all kilns and no differences in jug morphology between kilns were noted. Some types of component parts are very common, while others are one-offs.

#### *Jug rims and necks*

Nearly all Hole Farm jugs are between 120 and 140mm in diameter (a similar size range to the fineware jugs), and were probably substantial vessels. Nearly all the jugs with rims larger than 140mm are warped so the rim diameter may not be accurate. The rim diameters by frequency shown as percentage EVES are as follows:

- 100mm 15%
- 120mm 575%
- 140mm 845%
- 160mm 109%

Jug rims are most often flat-topped and externally thickened (rim form B2) (Fig. 30.155–156), sometimes also thickened internally (rim form B3) (Fig. 30.157–158). Occasionally the rims are more narrow and almost flanged (Fig. 30.159). There is one example of an in-turned rim from kiln 2, as found on the Clare Cottage jugs (Fig. 33.185), the rim fragment is small and abraded and may be residual. Another occasional variant is the squared rim as found at Acacia House (Fig. 33.189). Many possess a simple pouring lip (Fig. 30.159) or sometimes a pinched pouring lip (Fig. 30.155). Necks are most typically rilled and waisted, i.e. instead of being totally vertical they are narrowest at the middle of the neck (e.g. Fig. 30.159). Fig. 30.160 from The Ditch shows a grooved rather than rilled neck. Necks can also be plain or only slightly rilled (e.g. Fig. 30.157) but are less common than rilled necks.

#### *Jug handles*

Jug handles invariably attach at the rim (as opposed to the neck), and from the few jugs complete enough to show it, the lower handle attachment is at the shoulder or widest part of the body (e.g. Fig. 30.157). Strap handles with thickened edges are the most common type (Fig. 30.161), often the edges are thumbed (Fig. 30.157) and the thumbing can continue slightly below the handle attachment, where this happens the thumbing takes the form of thumbed applied strips, rather than just thumbing. It is noticeable on jug handles Fig. 30.162 and 163 that the thumbing on the right-hand side of the handle is much more clearly defined than on the left, perhaps the potter was right handed.

There are a number of variations. The handle can have a central ridge, sometimes only at the upper part of the handle, which then tapers out (Fig. 30.157), or the central

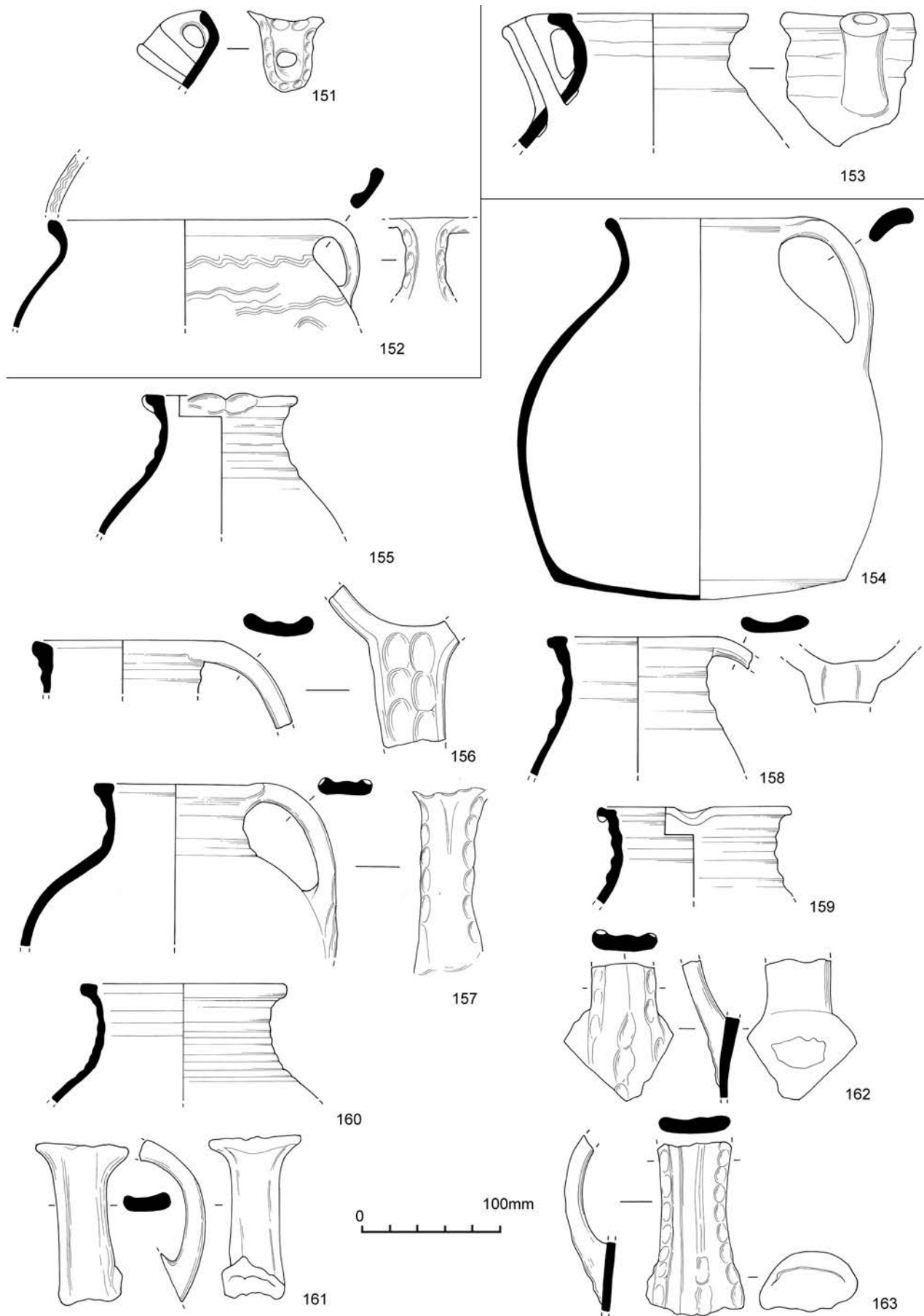


Figure 30 The coarseware typology: spouted pitchers and handled storage jars, Nos 151–152; spouted jugs No.153; rounded jugs and jug fragments, Nos 154–163

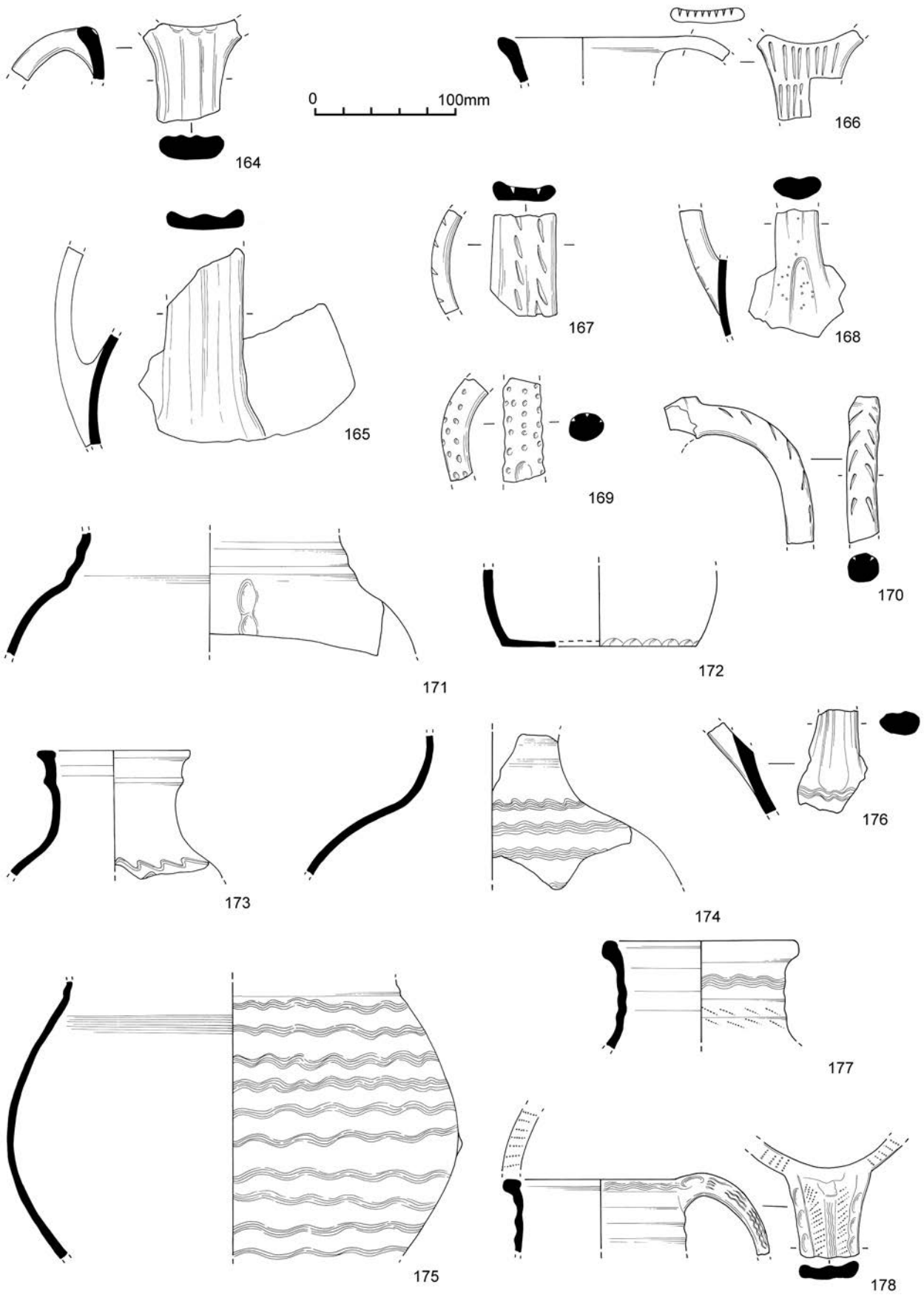


Figure 31 The coarseware typology: jug handles, Nos 164–170; jug bodies and bases, Nos 171–172; jugs with combed decoration, Nos 173–178

ridge can be continuous, turning into thumbing at the lower part of the handle (Fig. 30.162). Handles can also be ribbed (Fig. 30.163 and Fig. 31.164). Fig. 30.163 shows ribbing with only one rib terminating in a thumbed applied strip. Fig. 31.165 shows a broad strap handle with a faint central ridge. It is from one of the lower fills of kiln 4/5, and may be earlier than the other jugs. The ribs and central ridges appear to have been thrown up by thumb-made grooves on either side rather than applied. The upper rim attachment of Fig. 30.158 shows a strap handle with a wide thumbed groove in the centre, which creates the thickened edges. The thumbing goes over the top of the rim, so that there is displaced clay on the inside of the neck. Fig. 30.161 is a detached example of this type of handle. Quite often the upper handle attachment ends with two thumb-marks at the top of the inside of the rim (e.g. Fig. 30.157). Occasionally, there are three such thumb-marks (as on Fig. 31.164). Handle Fig. 30.156 is a variant of the strap handle showing two faint columns of thumbing down the length of the handle.

The following handles are either rare or one-offs. Fig. 31.166 shows incised cat's claw decoration as sometimes found on the finewares (compare to Fig. 15.22). Fig. 31.167 shows two columns of slashed decoration, this is normally a very common method of handle treatment, but is rare at Hole Farm. Fig. 31.168 differs from most Hole Farm jug handles in that it is D-shaped in section rather than a strap handle and shows a thumb-mark at the base. Combed example Fig. 31.176 has a similar section. Fig. 31.168 is decorated with a series of pin-pricks terminating in a vague spiral at the base of the handle. Some of the spiral marks poke through to the inside of the handle attachment and may have served as a means of securing it. Two rod handles, with a rounded section, are also illustrated, Fig. 31.169 and 170. Neither is from the kiln fills, although Fig. 31.169 is from a layer above kiln 1. Fig. 31.169 shows three columns of irregular skewer marks. Fig. 31.170 is actually sub-squared in section and shows two oblique columns of stabbed decoration.

#### Jug bodies and bases

Bodies, although fragmented appear to be rounded, and therefore probably would have been similar in shape to the jugs from Clare Cottage and the complete, but now missing, jug from Hole Farm (Fig. 30.154). Occasionally jugs are decorated with thumbed applied strips which originate at the junction of the neck and shoulder (Fig. 31.171) and again were probably similar to the Clare Cottage jugs. No definite jug bases were recovered. However, if the jugs had cooking-pot-shaped bodies (as Fig. 30.154), they would have had sagging bases that could not be differentiated from cooking-pot bases. There are a number of bases which have either a continuously thumbed applied strip around the base, or are continuously thumbed without an applied strip, one is illustrated (Fig. 31.172). If this is from a jug, it must have been a fairly small jug, but there are several continuously thumbed bases of a size commensurate with the normal size jugs. Occasionally the thumbing around the base is discontinuous.

#### Jugs with combed decoration

Jugs with combed decoration from Hole Farm are sufficiently different to be classified as a separate category, however rim and handle forms are largely the

same as the plainer jugs. Jugs with combed decoration are uncommon, and not confined to a particular kiln, being present in all kilns apart from kiln 4/5, there are also a number of examples from The Ditch. Again, only fragments of these jugs occur. Fig. 31.173 shows a jug with a plain neck, a bead below the rim, and bands of wavy line combing starting at the base of the neck. Jug fragments Fig. 31.174–6 show how this decoration continues down the body of the jug. Unlike most of the non-combed jugs, Fig. 31.177 has a squared rim and shows fairly complex combed decoration on the neck, comprising a band of wavy line combing above two rows of oblique pricked combing. The number of tines is seven and the decoration is very neatly done. Fig. 31.178 shows very complex combed and pricked-combed decoration on the rim and handle including along the edges of the rim and handle. A comb with six prongs would appear to have been used. Jug rim Fig. 31.178 and combed jug body Fig. 31.175 are both from related contexts and could be part of the same vessel, although the sherds do not join. None of the jugs show a row of dimpled decoration as found on the cooking-pots.

#### *Jugs from Clare Cottage*

(Fig. 32.179–182; Fig. 33.183–188)

Jugs are the most numerous identifiable vessel type at Clare Cottage. It is a smaller but less fragmented assemblage than Hole Farm and it is easy to quantify jugs by counting the number of upper handle attachments (assuming that each jug has one handle). Using this method, a minimum of eighteen jugs is present. There are three complete (but reconstructed) jugs (Fig. 32.179, 180 and 183) and two semi-complete rounded jugs (one is illustrated, Fig. 32.181). They are all of a similar shape having a rounded body, but with a slight shoulder at the mid-point or just above the mid-point, so that they are somewhat cooking-pot-shaped. The complete jugs are approximately as wide as they are tall. The bases of the complete jugs are wide and convex (but not as wide as the shoulder). The upper handle joins at the rim and the lower handle attaches at the shoulder.

#### Jug rims and necks

Jug necks are cylindrical or slightly everted and can be plain (Fig. 32.179–81) or rilled (Fig. 32.182). Rims are usually flat-topped with an internal thickening (sub-form B3) or can be slightly everted (Fig. 32.182). Some rims are rounded, as found on reconstructed jug Fig. 33.183, sometimes with an internal thickening. Since jug Fig. 32.183 with a rounded top is the same shape as the jugs with flat-topped rims, it shows there is no correlation between rim type and vessel form. All the more complete rims examined show a barely discernible pouring lip opposite the handle. The pouring lip is absent on the illustration of jug Fig. 32.183, but this may be because much of the rim is a reconstruction. The rim diameters by frequency shown as percentage EVES are as follows:

- 90mm 8%
- 100mm 333%
- 110mm 507%
- 120mm 452%
- 130mm 40%

- 140mm 28%

They range between 90 and 140mm, with rims of 110mm the most frequent followed by 120mm, then 100mm. Jug rims at the extreme ends of these ranges are rare. No correlation between rim type and rim diameter was noted. Jug rim sizes tend to be smaller at Clare Cottage than they are at Hole Farm.

#### Jug handles and decoration

Handles at Clare Cottage are usually sub-oval in section and plain (e.g. Fig. 32.180). Decorated examples comprise jug Fig. 32.179, which shows multiple small chisel-shaped stab marks, and Fig. 32.181, showing a single column of stab-marks. The only example of decoration on the body, apart from the girth grooves (as found on Fig. 32.180 and Fig. 33.183), comprises the vertical thumbed applied strips on jug Fig. 32.181. These also feature on jugs from Hole Farm (Fig. 31.171). The lower handle attachment is normally plain; there is only one example of a thumb-mark at the base of the handle and one example of thumbed 'ears' at either side of the handle attachment. The handles are quite unlike those on the jugs from Hole Farm, being oval in section rather than strap and there is no evidence of thumbing at the edges or centre of the handle, neither are there thumb-marks at the top of the handle. In addition, no jugs were found at Clare Cottage with combed decoration. However, there are a few body sherds from Clare Cottage showing wavy line decoration that would have been either from cooking-pots or jugs.

#### Other jug fragments

As well as the homogeneous assemblage with complete and semi-complete jugs described above, there are a number of coarseware jug fragments that show different rim and handle types, that may represent contamination from earlier or later levels. These are nevertheless Hedingham products and have been illustrated for the typology (Fig. 33.184–188). There are examples of in-turned rims (Fig. 33.184–5), the former possessing a ribbed strap handle (but not like those of Hole Farm), and the latter showing grooves around the rim and a pouring lip, which is somewhat better defined than those of the jugs described above. There is also an example of a collared jug rim (Fig. 33.186), and jug handles which are sub-circular in section rather than oval (Fig. 33.187–8). Fig. 33.187 shows a single column of stabbing along the handle. A single fragment of thumbed jug base was found (not illustrated).

#### *Jugs from other production sites* (Fig. 33.189–191)

Several of the other production sites produced coarseware jugs. Of interest from Acacia House is quite a large fragment from the top of a jug (Fig. 33.189) which shows a squared rim, rilled neck, and strap handle decorated with a central thumbed applied strip. There is a second similar jug rim and handle, this time the handle has a central ridge (without thumbing). These are broadly comparable to examples from Hole Farm.

At Starlings Hill, there are eleven coarseware jug rims. Rim diameters of between 120 and 140mm are similar to those of the coarseware jugs from Hole Farm. Like the Hole Farm examples, many have B2 rims and rilled necks or necks with horizontal grooves. However, collared rims

similar to those of the early style finewares are also present (Fig. 33.190), which also show a pouring lip. There are examples of strap handles with thickened edges, sometimes thumbed at the edges. One example of the latter also has a central ridge and three thumb-marks where the handle meets the rim, all features found on Hole Farm jugs. One handle, with a central groove and columns of pricked combing down either side is of a type not present in the Hole Farm assemblage (Fig. 33.191). The only other sherd possibly from a jug is a continuously thumbed sagging base.

At Shalford Road, jug fragments comprising rims and handles account for 5% of the total. A slightly flanged jug rim with a pouring lip and rilled neck is illustrated (Orr and Brooks 2009, fig. 3.5), which is comparable to Fig. 30.159 from Hole Farm. All the illustrated handles are strap handles (Orr and Brooks 2009, fig. 3.6–8), and those complete enough, show that the handle attaches at the rim. There are handles thumbed at the edges and showing cat's claw decoration (fig. 3.6), which are similar to examples from Hole Farm. Orr and Brooks' strap handles fig. 3.7–8 show what looks like skewered decoration, not found on Hole Farm jugs, but this does occur on curfew handles (*cf.* Fig. 33.197).

At Foxborough Hill (1962) there are strap handles with thumbed edges similar to those from Hole Farm and examples of inturned/collared jug rims, two showing a matt splash glaze, although they are in a coarseware fabric, albeit oxidised. Of interest from Holy Trinity is a fragment of internally bevelled jug rim with attached handle. It is a typical strap handle showing a thumb-mark at either side of the upper handle attachment, as found on fineware early style jugs (*cf.* Cotter 2000, fig. 49.8). At Kemp's Wood, there are illustrated examples of ribbed jug handles (Petchey 1976, fig. 14B.9–10), the latter being similar to Fig. 33.184 from Clare Cottage. There is also a fragment of collared jug rim (fig. 14B.11) similar to Fig. 33.190 from Starlings Hill.

#### **Chimney pots**

(Vessel form X25)

(Fig. 33.192–3)

At Hole Farm, a total of three chimney pot fragments were recovered, all from kiln 3, but with such a small number of fragments it is not possible to say whether they were a speciality of this kiln. All are similar, and occur in either oxidised or partially oxidised fabrics. The largest fragment is illustrated, Fig. 33.192. It shows the flared end of a chimney pot and is decorated with a column of vertical thumbing, its spacing suggesting there would have been four such columns.

A fragment of chimney pot was excavated from Foxborough Hill (Fig. 33.193). Like the Hole Farm examples it is in an oxidised fabric, being brown-orange in colour but is decorated with vertical thumbed applied strips, rather than thumbing directly onto the vessel. The sides are vertical and there is an internal flange. It would appear to be of a slightly different design from the Hole Farm examples; either that or Hole Farm Fig. 33.192 is from one end of a chimney pot and this example represents the other end.

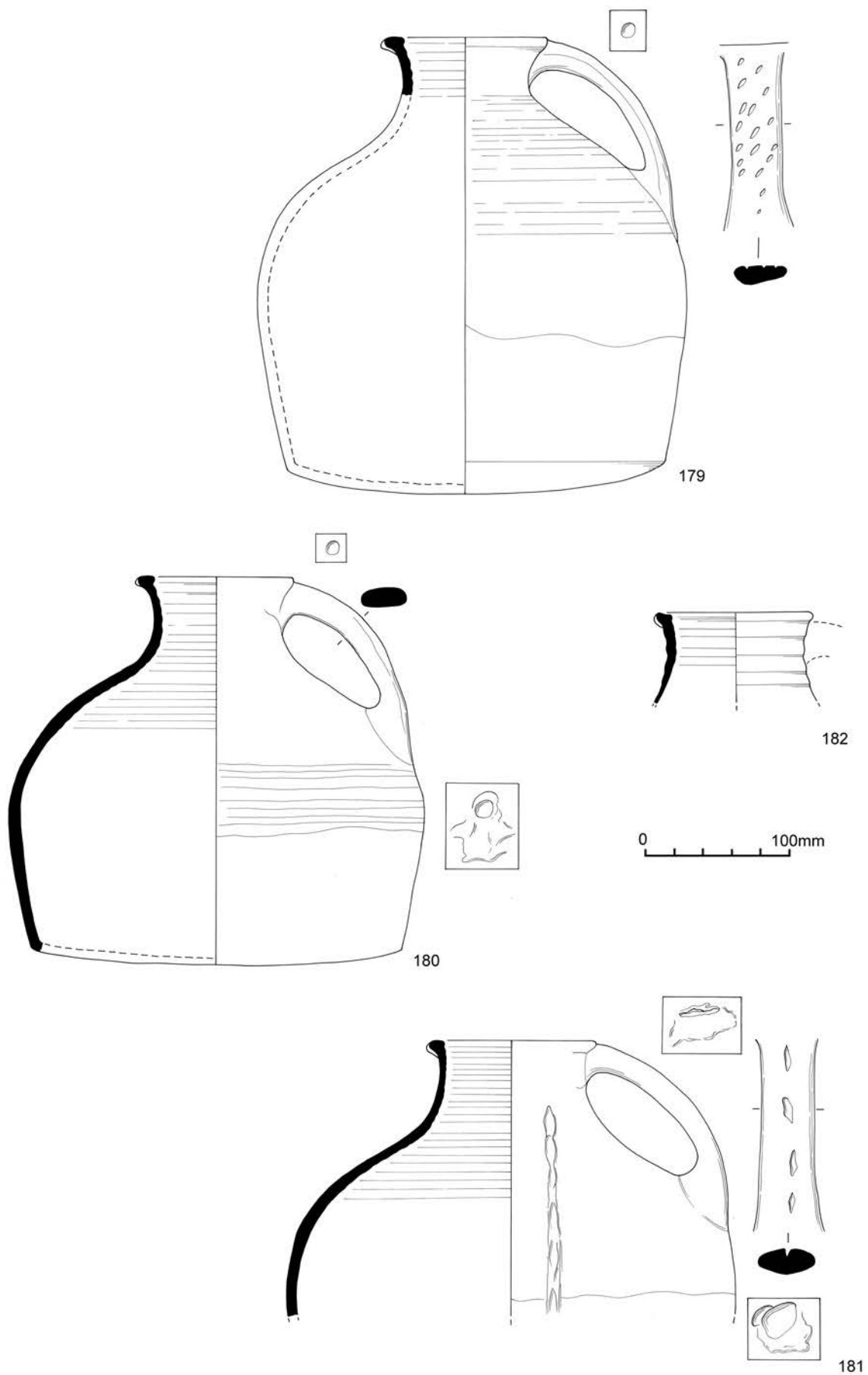


Figure 32 The coarseware typology: jugs from Clare Cottage, Nos 179–182



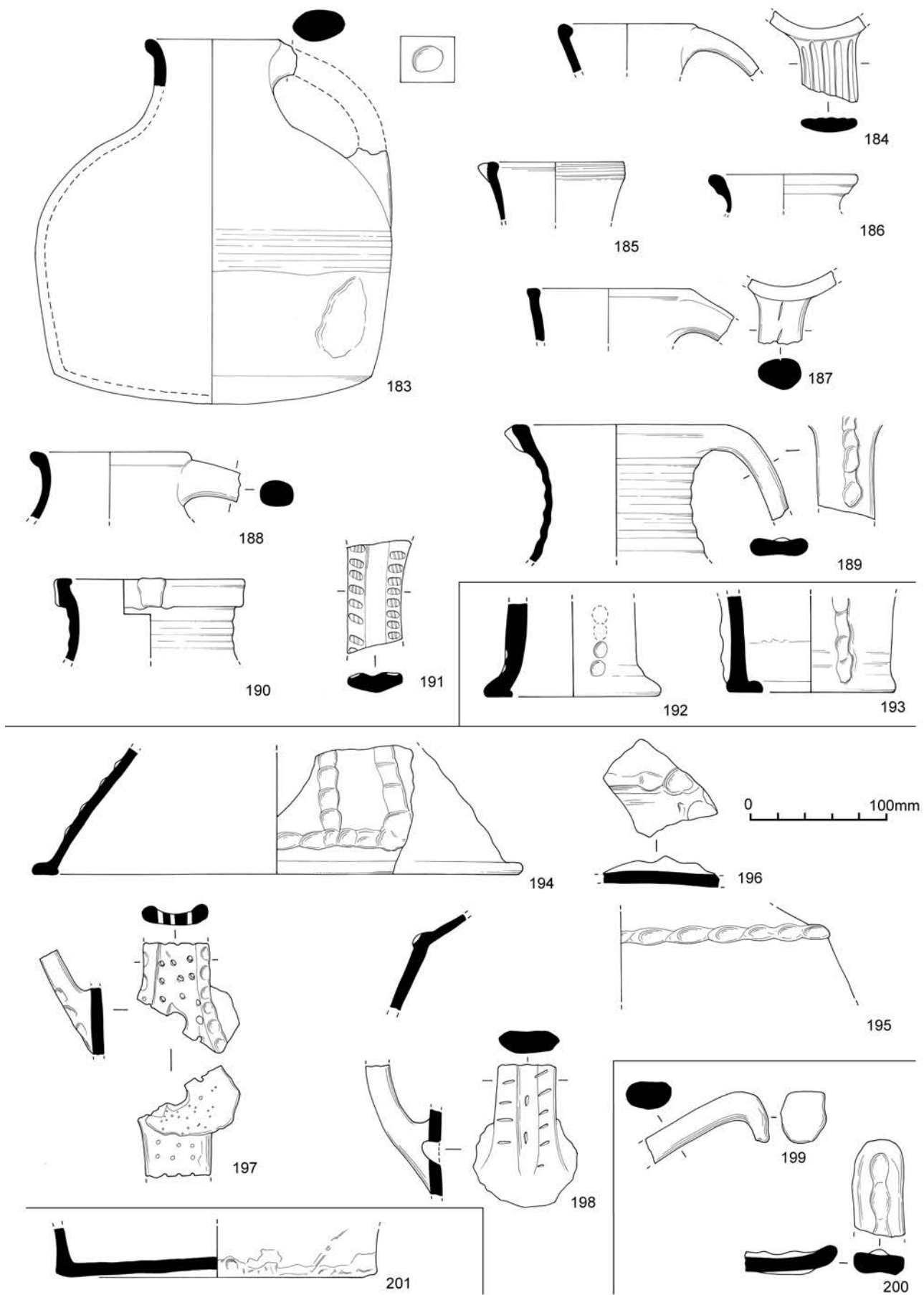


Figure 33 The coarseware typology: jugs from Clare Cottage, Nos 183–188; jugs from other production sites, Nos 189–191; chimney pots, Nos 192–193; curfews, Nos 194–198; skillet/pipkin handles, Nos 199–200; cylindrical base, No. 201

### **Curfews**

(Vessel form X21)

(Fig. 33.194–198)

Curfews, also known as fire-covers, are in the form of large upturned bowls with a broad strap handle on the top, that were placed over the hearth at night to damp down the fire. Only fragments are present, and it is not always possible to differentiate curfews from large flared bowls or storage jars.

They are not common at Hole Farm, with a total of twelve sherds weighing 645g, 18% EVES. All are abraded suggesting they could be residual. Rim diameters measure between 400 and 460mm. They are not confined to one particular kiln or stack, occurring in all kilns except for lower kiln 3. Examples are also found in The Ditch. Rims, where present, are always flanged and thickened internally (Fig. 33.194). They are decorated/strengthened by thumbled applied strips on the walls (Fig. 33.194), around the edge of the rim (Fig. 33.195), and intersecting at the top of the curfew (Fig. 33.196). Curfew handles, where identified, are perforated strap handles, thumbled at the edges. Fig. 33.197 shows a ventilation hole where the handle attaches to the top of the curfew. It also shows a series of pinpricks on the underside of the handle attachment, perhaps an aid to securing the attachment. A few examples, such as Fig. 33.194, show a row of dimpling below the rim, as found on cooking-pot rims and other vessels.

At Clare Cottage there are two possible curfew fragments showing a thumbled applied strip around the top edge, as Fig. 33.195 from Hole Farm. Fig. 33.198 from Clare Cottage shows a large strap handle with a central groove and stabbed decoration. What remains of the lower attachment shows no curvature, suggesting it comes from a large vessel. It could therefore be from a curfew, although it is also possible that it is from a very large jug or cistern. At Foxborough Hill (1962) there is a fragment of curfew similar to Fig. 33.194 from Hole Farm. The rim shows a braided thumbled applied strip around its outer edge.

### **Component parts**

(all from Hole Farm)

#### *Skillet/pipkin handles*

(Fig. 33.199–200)

Two examples of straight handles were found, i.e. handles that are attached to the pot at one end only (Fig. 33.199 and 200) both from kiln 1. Both are in a coarse red-brown fabric (hcwoxcor), which appears to be transitional between Early Medieval Ware and medieval coarseware (see Chapter 3). The angle of Fig. 33.199 suggests it may be from a pipkin, which is a small cooking vessel with a single straight handle and sometimes a tripod base, although no such bases were encountered at Hole Farm. This handle is quite distinctive because the end has been flattened into a spoon shape. Handle Fig. 33.200 may be more horizontal and could be from a skillet (a frying pan-shaped vessel). It is decorated with a thumbled applied strip along the centre of the handle.

#### *Cylindrical base*

(Fig. 33.201)

A very crudely finished flat base is illustrated, whose context was not recorded, but a second, more fragmented example occurred in kiln 2. Both are in the standard coarseware fabric (hedcw). The illustrated example is very poorly finished with gouge marks and extraneous lumps of clay around the basal angle. There are also striations on the underside that look like grass marks. The base resembles a saggarr, a large vessel in which the more delicate pots were placed during firing. However, as saggars did not come into general use until the late medieval period, such a function is unlikely. Moorhouse (1982, 99) notes that most kilns with pedestals used rough long cylindrical pots as supports so this is a possible explanation, however these vessels show no evidence of repeated firing such as vitrification or warping.

### **Catalogue of drawings**

(starts on facing page)

Fig. No.	Drawing No.	Plate No.	Record Number	Site	Vessel form, sub-form/decorative style	Fabric	
14	1	8	r.13212	Acacia House	London-style early rounded jug — complete	Fabric 4	
	2		r.11514	Hole Farm	London-style early rounded jug fragment	Fabric 1	
	3		r.11591	Hole Farm	London-style early rounded jug fragment	Fabric 6	
	4		r.11515	Hole Farm	London-style early rounded jug fragment	Fabric 2	
	5		r.11521	Hole Farm	London-style early rounded jug fragment	Fabric 2	
	6		9	r.11516	Hole Farm	London-style early rounded jug fragment	Fabric 2
	7			r.11517	Hole Farm	London-style early rounded jug fragment	Fabric 5
	8			r.11518/9	Hole Farm	London-style early rounded jug fragment	Fabric 5
	9	r.11520		Hole Farm	London-style early rounded jug fragment	Fabric 5	
	10		None	Hole Farm	Scarborough-style early rounded jug, virtually complete	Unknown	
	11		r.11532	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 5	
	12		r.11529/30	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 4	
	-	-	10	r.11706	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 1
	13	r.11523		Hole Farm	Scarborough-style early rounded jug fragment	Fabric 3	
	14	r.11528		Hole Farm	Scarborough-style early rounded jug fragment	Fabric 3	
	15	11	r.11524	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 3	
	16		r.11534	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 5	
	17		r.11535	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 5	
	18		r.11642	Hole Farm	Scarborough-style early rounded jug fragment	Fabric 5	
	19		r.13081	Starlings Hill	Lid from Scarborough-style early rounded jug	Fabric 4	
20		r.13018	Starlings Hill	Scarborough-style early rounded jug fragment	Fabric 5		
15	21		r.11631	Hole Farm	Early rounded-style jug fragment	Fabric 5	
	22	12	r.13011	Starlings Hill	Early rounded-style jug fragment	Fabric 5	
	23	13	r.11536-9	Hole Farm	Rouen-style jug fragment	Fabric 5	
	24		r.11540	Hole Farm	Rouen-style jug fragment	Fabric 5	
	25		r.11968	Hole Farm	Rouen-style jug fragment	Fabric 5	
	26	14, 15	r.11541-4	Hole Farm	Stamped strip jug fragments	Fabric 5	
	27		r.11909	Hole Farm	Stamped strip jug fragment	Fabric 5	
	28		r.13019	Starlings Hill	Stamped strip jug fragment	Fabric 5	
	29		r.13031	Starlings Hill	Stamped strip jug fragment	Fabric 5	
	30	16	r.13025	Starlings Hill	Stamped strip jug fragment	Fabric 5	
	31		r.13028	Starlings Hill	Stamped strip jug fragment	Fabric 5	
	32		r.13036	Starlings Hill	Stamped strip jug fragment	Fabric 4	
	33		r.13155	Starlings Hill Dt	Stamped strip jug fragment	hedsao	
	34		r.13158	Starlings Hill Dt	Stamped strip jug fragment	hedsao	
	35		r.13172	Starlings Hill Dt	Stamped strip jug fragment	Fabric 4	
	36	17	r.13191	Starlings Hill Dt	Stamped strip jug fragment	Fabric 5	
	37		r.13059	Starlings Hill	Combed or reeded style jug fragment	Fabric 5	
	38		r.13062	Starlings Hill	Combed or reeded style jug fragment	Fabric 5	
	39		r.13063	Starlings Hill	Combed or reeded style jug fragment	Fabric 4	
	40		r.13067	Starlings Hill	White slipped jug fragment	Fabric 4	
	41	18	r.13168	Starlings Hill	White slipped jug fragment	hedsao	
16	42		r.10646	Clare Cottage	Jug fragment not assigned a decorative style	Fabric 5	
	43		r.13053	Starlings Hill	Jug fragment not assigned a decorative style	Fabric 5	
	44	19	r.13073	Starlings Hill	Jug fragment not assigned a decorative style	Fabric 5	
	45		r.11690	Hole Farm	Jug base with vertical stab marks	Fabric 3	
	46		r.13077	Starlings Hill	Internally glazed base of dish	Fabric 5	
	47		r.10962	Hole Farm	Small dish in early medieval fabric	hedcwem	
	48		r.11076	Hole Farm	Cresset lamp in early medieval fabric	hedcwem	
	49	20	r.10987	Hole Farm	Cooking-pot in early medieval fabric	hedcwefi	
	50		r.10963/4	Hole Farm	Socketed dish	hcwoxfi	
	51		r.10965	Hole Farm	Socket from socketed dish	hcwredo	
	52		r.10966	Hole Farm	Socket from socketed dish	hedcw	
	53		r.13086	Starlings Hill	Bowl with scar of socket	hcwox	
	54	21	r.10968	Hole Farm	Slightly flared bowl with hole	hcwox	
	55		22-23	r.10969	Hole Farm	Slightly flared bowl with hole	hcwox
	17	56		r.10971	Hole Farm	Slightly flared bowl with hole	hedew

Fig. No.	Drawing No.	Plate No.	Record Number	Site	Vessel form, sub-form/decorative style	Fabric
	57		r.11294	Hole Farm	Slightly flared bowl with hole	hcwredo
	58		r.11245	Hole Farm	Slightly flared bowl	hedcw
	59		r.10972	Hole Farm	Slightly flared bowl with curved sides	hcwredo
	60		r.10970	Hole Farm	Slightly flared bowl with thumbled rim and hole	hcwox
	61		r.11298	Hole Farm	Slightly flared bowl with everted rim and hole	hedcw
	62		r.10967	Hole Farm	Slightly flared bowl with down-turned flange and hole	hedcw
18	63		r.11341	Hole Farm	Slightly flared bowl with down-turned rim	hcwredo
	64		r.11253	Hole Farm	Bowl with row of dimples	hedcw
	65		r.11382-3	Hole Farm	Bowl with hole and decoration on rim	hcwredo
	66		r.10973	Hole Farm	Vertical-sided bowl with slight neck	hcwox
	67		r.12043/4	Hole Farm	Vertical-sided bowl with flanged rim	hcwredo
	68		r.13113	Starlings Hill	Carinated bowl with flanged rim	hcwredo
	69		r.10641	Clare Cottage	Carinated bowl with flanged rim	hedcw
	70		r.10974	Hole Farm	Handled bowl	hcwox
19	71		r.10975	Hole Farm	Small thick-walled jar	hedcw
	72		r.12160	Hole Farm	Small thick-walled jar	hedcw
	73		r.10976	Hole Farm	Small thick-walled jar	hedcw
	74		r.10977	Hole Farm	Small thick-walled jar	hedcw
	75		r.10978	Hole Farm	Cooking-pot with upright squared rim	hedcw
	76		r.12868	Hole Farm	Cooking-pot with upright squared rim	hcwredo
	77		r.10980	Hole Farm	Cooking-pot with upright squared rim	hedcw
	78		r.10979	Hole Farm	Cooking-pot with upright squared rim	hcwredo
	79		r.10983	Hole Farm	Cooking-pot with B4B rim	hcwredo
	80		r.11011	Hole Farm	Cooking-pot with B2 rim	hedcw
	81		r.11012	Hole Farm	Cooking-pot rim with B2 rim	hedcw
	82		r.12760	Hole Farm	Cooking-pot with B2 rim	hcwox
	83		r.13126	Starlings Hill	Cooking-pot with B2 rim	hcwox
20	84		r.10988/9	Hole Farm	Cooking-pot with H1 rim	hedcw
	85		r.10985	Hole Farm	Cooking-pot with H1 rim and slack profile	hedcw
	86		r.10986	Hole Farm	Cooking-pot with H1 rim and slack profile	hcwredo
	87	24	r.10990	Hole Farm	Cooking-pot with H1 rim	hcwox
-	-	25	r.10996	Hole Farm	Cooking-pot with H1 rim, warped	hedcw
	88		r.10997	Hole Farm	Cooking-pot with H1 rim	hedcw
	89		r.11000	Hole Farm	Cooking-pot with H1 rim	hcwfi
	90		r.11001	Hole Farm	Cooking-pot with H1 rim	hcwfi
21	91		r.11003	Hole Farm	Cooking-pot with H1 rim	hcwfi
	92		r.11004	Hole Farm	Cooking-pot with H1 rim	hedcw
	93		r.11006	Hole Farm	Cooking-pot with H1 rim	hedcw
	94		r.10627	Clare Cottage	Cooking-pot with H1 rim	hedcw
	95		r.10628	Clare Cottage	Cooking-pot with H1 rim	hedcw
	96		r.11009	Hole Farm	Cooking-pot with H1 rim showing row of dimpling and vertical applied strips	hcwox
	97		r.12484	Hole Farm	Body of cooking-pot with vertical thumbled applied strip and row of thumbing	hcwox
	98		r.11007	Hole Farm	Cooking-pot with H1 rim showing row of dimpling	hcwfi
	99	26, 29	r.11008	Hole Farm	Cooking-pot with H1 rim showing row of dimpling	hcwredo
	100		r.10984	Hole Farm	Cooking-pot with H1 rim showing wavy line combing	hcwox
22	101		r.11013	Hole Farm	Cooking-pot with shouldered profile and H2 rim	hedcw
	102		r.11014/5	Hole Farm	Cooking-pot with H2 rim and combed decoration	hedcw
	103	27	r.11020	Hole Farm	Cooking-pot with shouldered profile and H2 rim	hcwredo
	104		r.11022	Hole Farm	H2 cooking-pot rounded profile	hcwredo
	105		r.12865	Hole Farm	H2 cooking-pot rim	hedcw
	106		r.11029	Hole Farm	H2 cooking-pot rim	hcwox
	107		r.12937	Hole Farm	H2 cooking-pot rim	hcwox
	108		r.12944	Hole Farm	H2 cooking-pot rim	hcwredo
	109		r.10625	Clare Cottage	H2 cooking-pot rim	hedcw
	110		r.10626	Clare Cottage	H2 cooking-pot rim	hedcw

Fig. No.	Drawing No.	Plate No.	Record Number	Site	Vessel form, sub-form/decorative style	Fabric	
23	111		r.11017	Hole Farm	H2 cooking-pot with row of dimpling and vertical thumbed applied strip	hcwox	
	112		r.11314	Hole Farm	H2 cooking-pot with row of dimpling and vertical thumbed applied strip	hcwredo	
	113		r.12914	Hole Farm	H2 cooking-pot rim with thumbing on rim and row of dimpling	hedcw	
	-	-	28, 30	r.11455	Hole Farm	H2 cooking-pot rim with row of dimpling	hcwredo
	-	-	31	r.11413	Hole Farm	Row of dimpling showing fingernail marks	hcwredo
	114		r.11278	Hole Farm	H2 cooking-pot rim with vertical applied strip and no dimpling	hedcw	
	115		r.10623	Clare Cottage	H2 cooking-pot rim with vertical applied strip and no dimpling	hedcw	
	116		r.11018/9	Hole Farm	H2 cooking-pot rim with squared dimpling	hedcw	
	117		r.10624	Clare Cottage	H2 cooking-pot rim with row of oblique stab marks	hedcw	
	118		r.11023	Hole Farm	H2 cooking-pot rim with row of notches	hcwredo	
119		r.11024	Hole Farm	H2 cooking-pot rim with row of vertical fingernail marks	hedcw		
24	120		r.11025-7	Hole Farm	H2 cooking-pot rim with row of wavy line combing	hedcw	
	121		r.12912	Hole Farm	H2 cooking-pot rim with decoration around rim	hcwredo	
	122		r.12913	Hole Farm	H2 cooking-pot rim with decoration around rim	hcwox	
	123		r.10629	Clare Cottage	H1/3 cooking-pot rim	hedcw	
	124		r.13139	Starlings Hill	H3 cooking-pot rim	hedcw	
	125		r.10631	Clare Cottage	H3A cooking-pot rim	hedcw	
	126		r.10632	Clare Cottage	H3A cooking-pot rim	hedcw	
	127		r.10633	Clare Cottage	E5 cooking-pot rim	hedcw	
	128		r.11244	Hole Farm	Small jar rim with combed decoration	hedcw	
	129		r.12157	Hole Farm	Small jar rim with combed decoration	hedcw	
	130		r.11047	Hole Farm	Small jar with perforated flanged rim	hedcw	
27	131		r.10634	Clare Cottage	Thin-walled jar with hollowed everted rim	hedcw	
	132		r.10635	Clare Cottage	Thin-walled jar with hollowed everted rim	hedcw	
	133		r.10636	Clare Cottage	Thin-walled jar with everted rim	hedcw	
	134		r.12947	Hole Farm	Thin-walled jar with everted rim	hedcw	
	135		r.13195	Crows Cross	Thin-walled jar with everted rim	hcwredo	
	136		r.13196	Crows Cross	Thin-walled hollowed everted jar rim	hcwredo	
	137		r.13197	Crows Cross	Thin-walled hollowed everted jar rim	hcwredo	
	138		r.13198	Crows Cross	Thin-walled hollowed everted jar rim	hedcw	
	139		r.13262	Foxborough Hill	Small jar with down-turned flanged rim	hcwfi	
	28	140		r.11049	Hole Farm	Jar with hammer-headed rim	hedcw
141		32-33	None	Crows Cross	Thetford-style storage jar	?hedcw	
29	142		r.11030	Hole Farm	Thetford-style storage jar; fragment	hcwstor	
	143		r.11043	Hole Farm	Thetford-style storage jar; fragment	hcwstor	
	144		r.11031/2	Hole Farm	Thetford-style storage jar; fragment	hcwstor	
	145		r.11311	Hole Farm	Thetford-style storage jar; fragment	hcwstor	
	146		r.11034-6	Hole Farm	Cooking-pot-shaped storage jar	hcwcarb	
	147		r.11040	Hole Farm	Cooking-pot-shaped storage jar	hcwredo	
	148		r.11037	Hole Farm	Cooking-pot-shaped storage jar	hcwredo	
	149		r.11041	Hole Farm	Cooking-pot-shaped storage jar	hedcw	
	150		r.11042	Hole Farm	Cooking-pot-shaped storage jar	hedcw	
	30	151		r.13266	Foxborough Hill	Spout from spouted pitcher	hcwox
152			r.11044	Hole Farm	Handled storage jar with wavy line combing	hcwredo	
153			r.11051	Hole Farm	Jug with tubular spout	hedcw	
154			None	Hole Farm	Complete rounded jug	Unknown	
155			r.12244	Hole Farm	Jug rim with pinched pouring lip	hedcw	
156			r.11070	Hole Farm	Jug rim and handle with two columns of thumbing along handle	hedcw	
157			r.11067	Hole Farm	Jug rim and shoulder with thumbed edges to handle	hedcw	
158			r.11074	Hole Farm	Flat-topped jug rim with wide groove along handle	hedcw	
159			r.11289	Hole Farm	Jug rim with pouring lip and very rilled neck	hcwredo	
160			r.11075	Hole Farm	Jug rim with grooved neck	hedcw	

Fig. No.	Drawing No.	Plate No.	Record Number	Site	Vessel form, sub-form/decorative style	Fabric
	161		r.11267	Hole Farm	Jug handle thickened at edges	hedcw
	162		r.11438	Hole Farm	Lower handle attachment with thumbled strip along centre	hcwredo
	163		r.11439	Hole Farm	Lower handle attachment with off-centre column of thumbing	hcwredo
31	164		r.11425	Hole Farm	Upper handle attachment, ribbed handle	hcwredo
	165		r.11069	Hole Farm	Broad strap handle with central ridge	hcwox
	166		r.11062/3	Hole Farm	Strap handle with cat's claw decoration	hcwredo
	167		r.11073	Hole Farm	Strap handle with two columns of stabbing	hedcw
	168		r.11068	Hole Farm	Lower handle attachment with pinprick decoration	hedcw
	169		r.11071	Hole Farm	Rod handle with dimpled decoration	hedcw
	170		r.11072	Hole Farm	Rod handle with stabbed decoration	hcwredo
	171		r.11435	Hole Farm	Neck and shoulder of jug	hedcw
	172		r.12594	Hole Farm	Thumbled base from jug	hedcw
	173		r.11064	Hole Farm	Jug rim with wavy line combing around shoulder	hedcw
	174		r.11065/6	Hole Farm	Shoulder of jug with wavy line combing	hedcw
	175		r.11058-61	Hole Farm	Body of jug with wavy line combing	hedcw
	176		r.12952	Hole Farm	Lower handle attachment with wavy line combing	hedcw
	177		r.11055	Hole Farm	Jug rim with pricked combing	hedcw
	178		r.11056/7	Hole Farm	Jug rim and handle with complex combed decoration	hedcw
32	179		r.10601	Clare Cottage	Complete rounded jug with decorated handle	hedcw
	180		r.10600	Clare Cottage	Complete rounded jug with plain handle	hedcw
	181		r.10612/03	Clare Cottage	Large part of jug with thumbled applied strip and stabbed handle	hedcw
	182		r.10613	Clare Cottage	Jug rim with rilled neck	hedcw
33	183		r.10614	Clare Cottage	Complete rounded jug with beaded rim	hedcw
	184		r.10615	Clare Cottage	Jug rim with ribbed handle	hedcw
	185		r.10616-7	Clare Cottage	Jug rim with horizontal grooves around rim	hedcw
	186		r.10618-9	Clare Cottage	Everted jug rim	hedcw
	187		r.10620	Clare Cottage	Jug rim with stabbed handle	hedcw
	188		r.10621	Clare Cottage	Jug rim with rod handle	hedcw
	189		r.13210	Acacia House	Jug with squared rim and thumbled applied strip along centre of handle	hcwox
	190		r.13104	Starlings Hill	Collared jug rim	hedcw
	191		r.13151	Starlings Hill	Handle with two columns of pricked combing	hcwredo
	192		r.11077	Hole Farm	Chimney pot — bell end	hcwox
	193		r.13257	Foxborough Hill	Chimney pot — straight end	hcwox
	194		r.11078	Hole Farm	Rim and sides of curfew	hcwredo
	195		None	Hole Farm	Top of curfew with thumbled applied strip around the edge	hedcw
	196		r.11079	Hole Farm	Top of curfew with intersecting thumbled applied strip	hedcw
	197		r.11080	Hole Farm	Perforated curfew handle	hedcw
	198		r.10644	Clare Cottage	Handle ?from curfew	hedcw
	199		r.11081	Hole Farm	?Pipkin handle in coarse fabric	hcwoxcor
	200		r.11082	Hole Farm	?Skillet handle with central thumbled applied strip	hcwoxcor
	201		r.11083	Hole Farm	Cylindrical base	hedcw

## Catalogue of drawings

# Chapter 5. Methods of Manufacture and Production

## Non-pottery finds connected with pottery manufacture

Non-pottery finds that may be connected with pottery manufacture were excavated from a number of the production sites and are summarised here. Artefact types occurring at more than one site are the most likely to be connected with pottery manufacture.

### Fired clay

Fired clay fragments representing the kiln superstructure were found at Hole Farm and are described in the gazetteer. A similar thick-walled fragment was also recovered from Starlings Hill Ditch. Small fragments of fired clay from Crows Cross and Holy Trinity, the latter containing chalk inclusions, may also represent kiln superstructure.

Not all fired clay appears to represent kiln superstructure. At Hole Farm, there are amorphous lumps of fired clay that do not appear to be structural and that often show finger-marks, the function of which, if any is unknown. One (from kiln 4/5) shows the imprint of a grid (Pl. 34), the excavator suggested this might be the imprint from a sieve. Sieves are used by modern-day studio potters to prepare the clay, first mixing the clay with water to form a slip and draining the slip through a sieve to remove stones and any other large impurities (John Hudson pers. comm.). Another fired clay fragment shows narrow, notched strips (Pl. 35), and its context number indicates that it is from the structure of the firing chamber of kiln 2, although it is difficult to see how part of the kiln structure would be patterned.



Plate 34 Fired clay from Hole Farm showing a grid imprint, the grid squares measure around 10 x 10mm

From Starlings Hill kiln 1, there is a small fragment of fired clay which is grass-marked and shows chalk inclusions. It has a greenish glaze on the upper surface and on the breaks, with clay adhesions also on the upper surface. It was probably used as some kind of support in the kiln.

Found at Starlings Hill Ditch and Starlings Hill (Chandlers), are a number of fired clay pieces that are thin-walled, around 10mm thick, and are flattish or slightly curved and resemble roof tile. Examples are bright orange or creamy orange in colour, often with surface striations, some show chalk and/or flint inclusions. A couple of examples have a sandy fabric. A few show patches of glaze. They may represent kiln lining or have served as some kind of support within the kiln.

### Roof tile

Small amounts of roof tile were found at Hole Farm, Clare Cottage, Starlings Hill and Starlings Hill (Chandlers), although none, apart from that at Starlings Hill, showed any sign of heating or glaze splashes, so there is no evidence they were used in the kiln. Those from Starlings Hill however, show glaze on the upper surfaces and on the breaks suggesting they were used in the kiln, either as supports or as a temporary roof. The small amount of roof tile and the fact that only one site shows evidence of tile reuse is surprising as it is a common find at other pottery production sites such as Rayleigh High Road (Walker 1990b, 92) and at the later kilns at Harlow (Davey and Walker 2009, 155–7). It has to be remembered though that nearly all the pottery from Hole Farm and Clare Cottage is



Plate 35 Fired clay showing a ribbon like pattern, from the structure of kiln 2, measuring 60 x 35mm, thickness 35mm

unglazed coarseware, so glaze splashes would not be expected.

### Worked and unworked stone and other finds

Single examples of polished pebbles were recovered from Hole Farm and Clare Cottage which could have been used in forming (the beater and anvil technique, Hodges 1976, fig. 2) or more likely as a smoothing tool, but could just as easily be natural.

A piece of lava quern or millstone was found at Clare Cottage. None were found at the other production sites but they have been encountered at non-Hedingham production sites, such as Frogs Hall, Takeley (Major 2006, 58–9) and Mill Green (Sellers and Sellers 1968, 12). It is conceivable that millstones could have been used as potters' wheels, either the flywheel or the wheel-head. Lava querns may also have been used to grind raw materials. In addition, a piece of Hertfordshire pudding-stone with one concave edge, from the structure of Hole Farm kiln 1, may be a reused piece of quern stone.

Fragments from three schist hones were collected from Hole Farm, two from The Ditch and one from kiln 2, which could have had a use in the manufacture of pottery, although none occurred at the other Hedingham sites. There is also a dowel-shaped hone (Pl. 36), which is the right size and shape to have been used to form the rows of dimpling so commonly found around the shoulders of cooking-pots and other vessels. However, it has been demonstrated that at least some of these dimples were made by thumb or finger. The dowel is also the right size to make the holes in the holed bowls, and the holes for handle insertion in the jugs.

A number of pieces of fossilised wood, which has been replaced by the mineral pyrite, were found in the Hole Farm Ditch, including a large piece weighing 830g. Such fossils occur naturally in the London Clay (Lucy 1999, 42) and they may have been found by the potters while extracting their clay and brought back as curiosities, however the potters may have found a use for them. There is also a small pyrite nodule.

A sherd from Hole Farm kiln 1 shows an iron nail adhering to it. There are several other vessel fragments with iron-staining, but as this occurs on breaks it must be post-depositional. This probably indicates that nails along with pottery were dumped into the kiln after it went out of

use. The nail may conceivably have come from ancillary buildings (such as workshops) associated with the kilns.

### Methods of pottery manufacture

Method of manufacture was not looked at quantitatively; only the largest and most complete vessel fragments were examined for clues as to how they were made. Most of the evidence comes from Hole Farm and Clare Cottage. Most production sites show similar methods of manufacture, the only distinct difference was that some of the methods of handle attachment vary from site to site and thus provide a way of differentiating the products of the various manufacturing sites.

### Manufacture of the coarsewares

#### *Vessel construction*

At Hole Farm, the cooking-pots are the most complete vessels and therefore yield the most evidence. None are definitely wheel-thrown, the definition of a wheel being a wheel-head on which the pot was formed with a flywheel attached, creating the centrifugal force to throw the pot. A rotating wheel without a flywheel is described as a turntable. However, the vessels often show very fine internal horizontal striations, sometimes these occur all the way down the profile, and sometimes they occur in bands. These could be throwing lines or could be striations left by the potters' fingers. The Hole Farm bowls often show the same fine internal striations and rilling, although other examples show completely smooth surfaces. Bowl Fig. 17.56 shows oblique internal ripple marks suggesting rotation.

Occasionally the internal surfaces are rilled inside the shoulder which is more suggestive of wheel-throwing. Jug fragments from Hole Farm, where large enough, also show fine horizontal striations or rilling on the inside of the shoulder. Below this, the internal surface is smooth. Rilling can also occur inside the necks of jugs.

The same fine internal striations and rilling were found on jugs and cooking-pots from Clare Cottage. The jugs from Clare Cottage, which were much more complete than those from Hole Farm, show fine horizontal lines and rilling from the neck downwards to around the point of lower handle attachment. The rilling is especially pronounced on the inside of the shoulder. Below the point of lower handle attachment surfaces are smooth. This may indicate the top halves are wheel-thrown and the bottom halves handmade. However, there are no tell-tale internal finger-marks where the join was made.

Several cooking-pots at Hole Farm show external rilling on the upper half, so that they superficially resemble Thetford-type ware. This horizontal rilling may serve as a guide for placing the dimples and other types of horizontal decoration. Many cooking-pots and bowls are knife-trimmed above the base and this can extend high up the vessel walls obscuring any rilling or horizontal grooves (e.g. Fig. 17.59). Oblique knife marks are sometimes visible (e.g. Fig. 20.90). One cooking-pot rim (not illustrated) shows trimming (probably done with a knife) inside the neck. Many of the vessels from Clare Cottage and Starlings Hill are also trimmed, often extending well up the sides of the vessel and like the Hole Farm examples many are rilled on the upper half. At Starlings Hill, the carinations of the carinated bowls (Fig.



Plate 36 A dowel-shaped hone from Hole Farm, perhaps used as a decorating or puncturing tool, and its impression in plasticine. The hone measures 11mm in diameter



18.68) and small thick-walled jar (not illustrated) have been formed by trimming.

Occasionally, at Hole Farm, horizontal break lines occur above the base or higher up the pot; or there is a horizontal line of thinness around the vessel wall. These factors suggest the pots were built up in sections, but cooking-pots showing these putative joining lines are not common, so either the potters were usually very good at concealing the joins or only the minority of vessels were made in sections. A similar pattern emerged with the cooking-pots from Clare Cottage where there was no evidence of the vessels being made in sections apart from cooking-pot Fig. 21.94, which shows a distinct thinning of the vessel walls about two-thirds the way down the profile. The thinning corresponds to a shallow horizontal groove on the internal surface. On neither site were there internal finger-marks to suggest joining of sections.

From the evidence that can be gleaned from the other Hedingham manufacturing sites, similar methods of vessel manufacture seem to have been used, although small jar/cooking-pot Fig. 27.139 from Foxborough Hill shows internal throwing rings and appears entirely wheel-thrown. It also shows the rounded rather than shouldered profile of wheel-thrown vessels (see Cotter 2000, 106–7). Some of the vessels at Crows Cross were complete enough to show evidence of manufacture and very similar methods to those at Hole Farm and Clare Cottage appear to have been used, a number of the illustrated sherds showing faint rilling on the interiors. Fig. 27.136 shows quite a pronounced horizontal break line around the girth suggesting it was built up in sections.

Both cooking-pots and jugs may have been manufactured using a technique called ‘coil and throw’ where the base of the vessel is beaten out on the wheel-head and successive sausages of clay added and thrown up (Newell 2005, 9).

The cooking-pots from Hole Farm and Clare Cottage tend to be thin-walled, especially those from Hole Farm kiln 2, and this may have something to do with the relative fineness of the fabric. It is noticeable that the bases from both these sites tend to be thin and the basal angles are sometimes without thickening. Elizabeth Sellers considers that the cooking-pots may have been made on a removable wooden bat placed on the wheel-head, which would have facilitated the removal of large thinly potted vessels from the wheel. Thin-section analysis also revealed evidence of manufacture from the alignment of inclusions; no relic coils were detected in the standard Hedingham Coarseware fabric, or the finer version (hcwfi), indicating the vessels are more likely to be wheel-thrown.

A manufacturing fault revealed evidence for rim formation; lamination, where the surface of the clay has flaked away, sometimes occurs as a zone inside the neck. This happens where the rim is formed by folding over the clay but does not adhere properly. The fold can sometimes be seen in section in an un-laminated part of the rim. Less often the lamination is on the outside and shows the rim has been folded the other way. Laminated rims are more common at Clare Cottage than they are at Hole Farm. An example of this was also noted at Starlings Hill.

The few vessels in early medieval fabrics that were examined are more likely to have been coil-built. For example cooking-pot Fig. 16.49 (Pl. 20), in the fine version of the early medieval fabric (hedcwefi), shows

walls of uneven thickness, some very uneven trimming and an uneven rim edge. Like the later coarsewares however, it shows fine horizontal striations around the inside of the shoulder. All the vessels in the coarse fabric at the Holy Trinity site have walls of uneven thickness and appear to be handmade. This is corroborated by thin-section analysis, which shows samples of the early medieval fabric (hedcwem) and the Holy Trinity fabric (hcwcor) to have relic coils indicating the vessels are coil-built.

The large Thetford-style storage jars show no internal rilling or striations and would have been slab-built. One fragment shows marks where fingers have been drawn along the surface.

### *Construction and joining of component parts*

#### Handles

Most evidence comes from Clare Cottage where there were a large number of coarseware jugs. Here, faulty jug rim and handles, where the handle has become detached, show how the handle was secured. A circular hole about 1cm in diameter was made in the neck, through which the handle was inserted. On most jugs a circular depression is visible on the inside of the neck at the point of handle attachment, which can be up to 1cm deep (Fig. 32.179, 180). It has been smoothed over on Fig. 33.183. This type of join is known as an inserted peg handle, the internal depression may be the result of pushing the peg back into the opening (Newell 2005, 5). There are also ?finger-made holes at the point of lower handle attachment, visible on Fig. 32.180–1. Although the exact method of attachment is unclear; the lower handle attachment may be another inserted peg, or a pushed-out peg handle, where the join is reinforced by using a finger to push the wall of the jug into the handle (Newell 2005, 5). One exception to the method of upper handle attachment was noted on jug Fig. 32.181, which shows a horizontal knife slit at the point of upper handle attachment. The fact that different methods of manufacture were used at the same site may indicate that individual potters had their own preferred methods.

At Hole Farm there is much less evidence for method of handle attachment (on jugs or handled jars) as the upper and lower handle attachments are usually covered over, although sometimes there are finger-marks and surface cracks over the lower handle attachment. Very occasionally there is a scar at the lower handle attachment where the handle has been inserted through the vessel wall. When looking at how the handles were made, it was noticeable at Hole Farm that some of the strap handles are straight on one edge and curved on the other (e.g. Fig. 30.161) this is a consequence of how the handle was held when being pulled by the potter’s hand (Newell 2005, 3).

#### Sockets and spouts

At Hole Farm, socketed dish (Fig. 16.50) shows a fillet of clay on the roof of the socket where the socket was attached (shown on drawing). This is less obvious on the other illustrated examples, although (Fig. 16.51) shows fillets of clay at the sides of the socket internally. On the outer surface, below the socket, it can be seen where the join has been smoothed over. The inside is poorly finished showing extraneous pieces of clay. The single example from Starlings Hill (Fig. 16.53) shows only the scar of the socket attachment. The spouts from the spouted jugs



Plate 37 Vessel fragment showing a row of circular dimples, possibly made with the dowel-shaped hone photographed in Plate 36, as the size and shape of the dimples match the dimensions of the hone

(found only at Hole Farm) have been inserted through the vessel wall rather than luted on. Unlike the socketed dishes/bowls, there are no filets of clay inside the tubular spouts.

#### The holes in bowls and jar rims

At Hole Farm different methods appear to have been used to make the holes, for example Fig. 16.54 has a very clean cut hole with no displaced clay as if made with something akin to a pastry cutter (see Pl. 21). Many others however, for example Fig. 16.55 (Pls 22 and 23), show displaced clay on the outer surface, showing the hole was poked through from inside either with a finger or a tool. Simple experiments with modelling clay showed that cutting the hole with a knife produced the most similar displacement pattern. Why the bowls were fired with untrimmed holes is a mystery (see under Quality control below). The holed jar rims (Fig. 24.130) also have holes pushed out from inside, with displaced clay not removed.

#### Methods of decoration

Methods of decoration are described in Chapter 4. To summarise, the potter employed very simple methods for decorating the coarsewares, mainly using thumb and finger. The only definite tool would have been a pronged comb, potters use a similar tool today fashioned from wood. No definite potters' tools were excavated, although it is possible that the dowel-shaped hone from Hole Farm may have been used for some of the dimpled decoration found on the coarseware vessels. Plate 36 shows the hone and its imprint, this compares with the dimpling on Plate 37.

#### Manufacture of the finewares

The methods of fineware manufacture have already been described in Chapter 3. To recap, the earlier fabrics (1, 2, 3 and 6) are likely to be coil-built. Plate 38 is an internal view of the lower part of a London-style early rounded jug in Fabric 2 (Fig. 14.6) showing finger-marks and a complete absence of throwing lines. However, vessels in Fabric 5, the classic Heddingham Fineware, appear to be at least partially wheel-made and like the coarsewares can show the same internal horizontal striations and rilling (see internal views of stamped strip jug Fig. 15.26, Pls 39



Plate 38 An internal view of the lower part of a London-style early rounded jug in Fabric 2 (Fig. 14.6) showing finger-marks and a complete absence of throwing lines

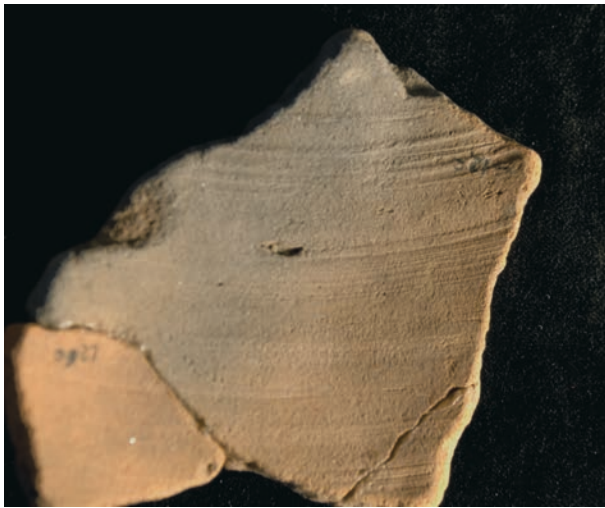
and 40). Scarborough-style early rounded jug Fig. 14.11 and several other fineware fragments show accidental oblique streaks of red slip, all at the same orientation, which would imply the decoration was carried out while the vessel was being rotated either on a wheel or turntable.

Most evidence for fineware handle attachment came from the Starlings Hill kilns and Starlings Hill Ditch, as they produced the most fineware. The best evidence for handle attachment is the top of a twisted rod handle showing remains of a definite peg attachment, with the handle poked through the vessel wall. For the most part, the insides of necks show no signs of the method of handle attachment, although one fineware jug shows the outline of a pad of clay suggesting that any attachment scar was covered over. A couple of finewares show slight sub-circular depressions at the point of lower attachment. One lower handle attachment from Starlings Hill Ditch, possibly from a pear-shaped jug, shows a vertical slot-shaped indentation at point of handle attachment.

A twisted rod handle from the Shalford Road site (Orr and Brooks 2009, fig. 3.4) also shows evidence for the method of handle attachment, demonstrated by a 9mm-deep rectangular-shaped depression 15mm below the rim where the handle joins (fig. 3.4a). This shows that an instrument has been pushed through from the interior of the pot (and slightly downwards in the direction of the centre of the handle) and appears to be another example of a peg attachment.

#### Manufacturing faults

Mistakes during manufacture and firing may shed light on firing conditions, methods of production, how production was organised and quality control. Types of fault have been assigned a code and entered onto the database. The results are given below in Table 8. For Hole Farm the



Plates 39 and 40 Internal views of jug Fig. 15.26 showing internal rilling and striations

results are shown by kiln, in order to determine whether there are any differences between kilns. Manufacturing faults were noted on about 9% of the total coarseware assemblage at Hole Farm (by weight). A greater number of faults were encountered with the finewares (25% by weight), this is to be expected as it is the glaze that causes most of the problems.

#### Clay preparation faults

A number of sherds show quite large white pebbles in the fabric that were not removed at the clay preparation stage. For example cooking-pot Fig. 19.82 shows a pebble around 8mm across (shown on illustration), and for the most part, these sit in the fabric not causing any problems. However, they often appear at the broken edges of pots, and therefore may have created a weakness causing the vessel to break at this point (fault 84). On holed bowl Fig. 16.55 there is a pebble with a laminated area around it showing it has caused surface clay to flake off (which can just be spotted on the right-hand edge of Pl. 22). There is one example of a fineware showing this fault (Fig. 14.11, not shown on drawing). This fault was only noted at Hole Farm, but could have gone unnoticed at the other sites.

Bloating (fault 85), where blisters in the clay form by the expansion of air trapped in the clay from poor wedging, is very rare with only one example from Hole Farm and none noted at the other sites.

#### Forming faults

Lamination (fault 74), where the surface of the clay has flaked away, often occurs where the rim has been folded over but does not adhere properly (see Methods of Manufacture above). As well as Hole Farm, this fault is relatively common at Clare Cottage, with a single example from Starlings Hill Ditch. Glazed sherds are sometimes laminated and occasionally show glaze spots on the laminated surface.

Vessel walls can be too thin in places (fault 76). At Hole Farm all recorded examples of this fault were from kiln 2. There is a single example from Clare Cottage. Thinning walls can occur almost anywhere on the vessel, the base, just above the base, at the girth, shoulder or around the neck (e.g. Fig. 21.91). This fault is sometimes associated with fault 82, horizontal break lines where the pot has broken along a line of weakness and may occur where parts of the vessel were joined together (see under Methods of Manufacture above).

At Hole Farm, there are several examples of coarsewares that are poorly finished showing extraneous clay adhesions (fault 78) as well as dents and nicks (fault 72), although they would have been saleable, as these faults would not have adversely affected the performance of the vessel. A slightly more extreme untrimmed finish occurs on the bowls with holes, quite often the extraneous clay from making the hole has not been trimmed off (e.g. Fig. 16.55; Pls 22 and 23), assuming these holes were for draining, the untrimmed finish would have affected the flow of liquid. This is therefore an example of poor quality control, where vessels were fired, even though they were faulty.

Very occasionally there is a pad of clay over the rim (e.g. Fig. 19.81) and this may be an attempt to repair a crack (fault 90) (as found at the Frogs Hall kilns, Walker 2006, 76, fig. 34.8,17). It was also noted that some rim fragments are thickened at one end, this could mean that the rim is about to form a spout or a handle, but these may be additional examples of repair pads. This fault was only noted at Hole Farm.

From Clare Cottage there is a single example where the handle has come away from the rim, this is a forming fault showing the handle was not properly attached.

#### Firing faults involving glaze and/or the finewares

On the finewares at Hole Farm there are two examples of clay adhesions (fault 78) where the glaze has caused vessels to stick together. Clay adhesions on the glaze are a relatively common fault at Starlings Hill kiln and Starlings Hill Ditch and hint at some kind of accident inside the kiln. From Starlings Hill Ditch a sherd from a large thick-walled ?jug shows both glaze on the breaks and a curved adhesion scar from where another vessel has stuck to it.

Interestingly, one example of fineware from the Hole Farm Ditch shows the remnant of a coarseware vessel adhering, demonstrating that finewares and coarsewares were fired together (unless the fineware sherd had been left in the kiln after the previous firing). Because there are sometimes accidental (usually matt greenish) splashes of glaze on the coarsewares, most often around the neck of the vessel (fault 77), it would seem likely that both coarse and finewares were fired together. Alternatively, the coarsewares may have been splashed with glaze while drying in the workshop. Fault 77 was also noted at Clare Cottage, Acacia House and Foxborough Hill.



Plate 41 Jug handle Fig. 15.22 showing glaze on the broken edge

A matt glaze on the finewares, where the glaze is powdery and a dull green or whitish colour (fault 79), can be due to under-firing or sulphuration of the glaze (discoloration due to sulphur). In some instances however, this matt glaze may be due to the effects of weathering. This is a very common fault and examples were noted at all but two of the production sites. Occasionally at Hole Farm the glaze is iron-stained to an orange-brown. This could be due to post-depositional weathering as many sherds are abraded, but as it also occurs on unabraded sherds, and could be a glazing or firing fault.

Blistering of glaze (fault 80) is also very common and often occurs on sherds that also show a matt glaze. Fineware sherds from Hole Farm kiln 1 are not affected by matt or blistered glazes apart from a single example with a blistered glaze. A single fineware sherd from Hole Farm shows glaze on the breaks (fault 81), either it broke in the kiln and the glaze ran or the sherd was reused in the kiln as a support of some kind. A single example of this fault occurred at Clare Cottage and it is common in the relatively large fineware assemblages at Starlings Hill and Starlings Hill Ditch, where this fault may be associated with clay adhesions (see above). One example has been photographed (Pl. 41).

Quite a number of finewares have been accidentally reduced to a grey colour (fault 88), and this fault is often associated with the matt glaze or bubbled glaze fault. This fault is commonest in the Hole Farm Ditch and in kiln 2 and also occurs at the Starlings Hill sites, Foxborough and Shalford Road (Orr and Brooks 2009, 175).

#### **Firing faults — other**

Warping (fault 71) is extremely common on the coarsewares from Hole Farm kiln 2, with a total of thirty-seven examples (Pl. 25), all but six of which were from the oven, the rest were from the west stokehole. They could therefore represent a single batch. In spite of the fact that some are warped to the point of near collapse, none appear over-fired. Most of the warped vessels possess the

standard grey-firing fabric, but around a third of the warped vessels have been classified as possessing the finer, less sandy grey ware fabric (hcwfi) and it is therefore possible that warping was caused by the potters not putting enough sand in the mix, rather than over-firing (see Brears 1989, 4), in which case this is a preparation fault. Thin-section analysis did not detect over-firing. Examples of warping were occasionally noted at some of the other production sites, (see Table 8).

Under-firing is not listed in Table 8 as this has already been covered in Chapter 3 (p.33–5). Presumably oxidised, orange, buff or reddish sherds are under-fired, but it is possible that in some cases, the oxidisation was intended (see above). It was noted however that oxidised sherds are much more likely to be abraded than grey-firing sherds, indicating that the under-firing was not intended.

Cracking can of course happen post-manufacture, but can also happen during firing (fault 73) and occurs at several sites. Not surprisingly, many of the warped vessels are also cracked. Some cracks, especially on the base, widen out and may be stress cracks. Finewares as well as coarsewares show cracking on the base.

Sometimes there are superficial surface cracks, and there is a particular type of surface cracking, occurring only at Hole Farm, which resembles mud cracks but in a vertical column, reminiscent of ladders in tights (fault 83) (e.g. Fig. 20.87 (Pl. 24) and 89). This type of fault is almost always accompanied by a vertical break-line, so that the cracks, although superficial, have caused the pot to break. This fault always occurs on cooking-pots and all but one example is from kiln 2, the other is unstratified, so this may have happened to a single batch of pottery. Elizabeth Sellers considers that the fault was caused by rainwater leaking into the kiln, and this may well be the case as, on one vessel, the surface cracking effect has also formed a circular scar on the underside of the base, suggesting the water has trickled down the side of the vessel and pooled underneath.

<i>Category of fault</i>	<i>Fault (and fault number code)</i>	<i>Hole Farm Kiln 1</i>	<i>Hole Farm Kiln 2</i>	<i>Hole Farm Kiln 3</i>	<i>Hole Farm Kiln 4/5</i>	<i>Hole Farm Non-kiln feature</i>	<i>Clare Cottage</i>	<i>Starlings Hill</i>	<i>Starlings Hill Ditch</i>	<i>Crows Cross</i>	<i>Acacia House</i>	<i>Holy Trinity</i>	<i>Foxboro'</i>
Poor clay preparation	Pebble in clay causing breakage (84)	1	8	1									
	Air in clay (85)	1											
Forming faults	Lamination (74)	7	3	3	5	5	5	1					
	Upper handle attachment coming away from neck (75)				1	1							
	Vessel walls too thin (76)	10											
	Horizontal break lines — ?along lines of weakness (82)	2	4										
	Dents in vessel wall (72)	4					2						
	Clay adhesions on poorly finished vessels (78)	3	4	2				4			1		
	Untrimmed finish (86)	7	16	1				1				1	
	Repairs (90)	1	1										
Preparation/ forming or firing faults	Warping (71)	3	37	3	3		2	1		1			1
	Cracking or tearing (73)	1	16	2	2	2		5	2	1			
Accident in kiln	Columns of surface cracking — laddered tight effect (83) — ?caused by water leaking into kiln					1							
Firing faults involving glaze and fine wares	Clay adhesions caused by glaze sticking (78)					2	1	4					2
	Glaze splashes on coarsewares, usually around neck (77)	7		1	3		3				1		1
	Matt glaze on finewares (79)		11	8	2	40	3	9	3		1		1
	Blistered or bubbled glaze (80)	1	14	2	1	29	1	3					
	Glaze on breaks (81)					1	1	7	3				
	Accidental reduction of finewares (88)	3	18	5	1	27		6	1				1

Table 8 Coarseware and fineware faults by production site/kiln quantified by number of examples



Plate 42 The stack of cooking-pots from the oven of Hole Farm kiln 2 under excavation (excavator's trowel gives scale)

### Evidence for stacking vessels inside the kiln

The only evidence of stacking vessels came from Hole Farm where cooking-pots were found *in situ* in the ovens of kilns 1 and 2. In kiln 2 a stack of unbroken cooking-pots was found, inverted and arranged mouth to base, probably left *in situ* after the last firing. These comprise Fig. 20.90, r.11002 (not illustrated because the vessel is warped, distorting the profile), and Fig. 21.91, 92. Plate 42 shows the excavation of these vessels.

The remains of kiln 1 are shallower, but as with kiln 2 there were cooking-pots left *in situ*, this time in the base of the kiln in the gaps between the pedestals. Fig. 8 shows a whole upright pot in the north flue channel, a whole inverted pot in the central flue channel, and a more fragmented vessel in the south channel. These vessels are probably Fig. 22.103 (Pl. 27) and 104, although the third example could not be located. One would not expect to find pots in the bottom of the oven; it is possible they have fallen through from the chamber above, but they appear to have been deliberately placed. As no fire-bars were found (these are ceramic bars fixed between the pedestal and the kiln wall to support the stack of pots), it is possible that these pots formed the support for the stack, or were to control the flow of gases. Some of the holed fired clay fragments found at Hole Farm may have played a role in supporting the stack (Pls 5–7).

### Firing conditions

As the majority of the medieval coarseware fabric is grey, the pottery was almost certainly deliberately reduced and the oxidised or partially reduced coarsewares were accidentally under-fired. There is very slight evidence however, that some of the socketed dishes and bowls may have been deliberately oxidised (see Chapter 3). Plate 43 is an example of a cooking-pot which shows partially reduced and partially oxidised external surfaces. Plate 27

shows the exterior of cooking-pot Fig. 22.103, one of the vessels found in the bottom of Hole Farm kiln 1. This shows a reduced upper half, oxidised lower half and the wide crack below the rim shows a red core or margin. Elliptical patches of flashing on some of bowls (e.g. Fig. 17.60) and early medieval dish Fig. 16.47 would normally indicate that these vessels were in direct contact with the fuel, but this should not be possible in a kiln. As these are both early types however (Fig. 17.60 has a thumbled rim) they may represent earlier manufacture pre-dating the kilns in which they were found. It is not uncommon for vessels to have reduced, grey surfaces, but thick often salmon-pink cores or pale grey cores where complete reduction has not taken place. Other examples have a reduced core and oxidised margin, Quinn (Appendix 1) notes that this can be the result of incomplete oxidation of organic matter due to a short firing or reduction firing followed by rapid cooling in air. Plate 44 shows the internal view of the same cooking-pot photographed in Plate 43, showing light and dark banding.

Of the glazed wares, the early Fabrics 1 and 6, the classic Fabric 5, and sandy orange fabric (hedsao) are oxidised or were intended to be oxidised and this is borne out by thin-section analysis. Thin-section analysis of Fabric 2, with its typical grey-buff colour, showed it to be fired in a neutral or reducing atmosphere. Fabric 3 with its oxidised margin and greyish margin appears incompletely oxidised, although of the examples sent for thin-section analysis, most were oxidised.

The accidental glaze splashes on some of the coarsewares and the evidence of coarseware adhesions on a fineware sherd (a sherd of Fabric 3) would indicate that the finewares and coarsewares were fired together, but this presents something of a problem as most coarsewares are reduced and most finewares are oxidised. The excavator of Hole Farm considered that the finewares inside the kiln fills were residual, so this may be the explanation.

Thin-section analysis also provides some, although not definitive, evidence of firing temperatures (see

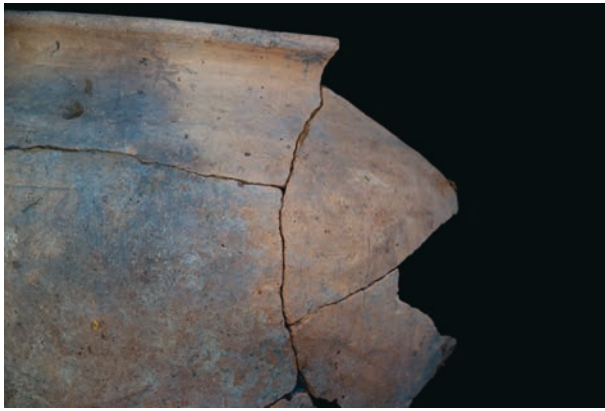


Plate 43 Cooking-pot showing partially reduced and partially oxidised external surfaces (ht from rim to basal angle 140mm, rim diameter 180mm)



Plate 44 Internal view of the same cooking-pot photographed in Plate 43 showing light and dark banding (ht from rim to basal angle 140mm, rim diameter 180mm)

Appendix 1, p.145). The evidence suggests that the early glazed wares, Fabrics 1–3 and 6, were fired at temperatures below 800 to 850°C. Fabric 5, the classic Hedingham Ware fabric was fired at around 800 to 850°C and the sandy orange fabric (hedsao) was fired at temperatures at or above 800 to 850°C. The standard grey-firing coarseware (hedcw) may have been fired to around 800 to 850°C. Something of a surprise was that thin-section analysis suggests the early medieval fabric (hedcwem) was also fired to this temperature, a lower firing temperature might have been expected. The evidence indicates that the storage jar fabric (hcwstor) was fired above 800 to 850°C.

## Comparison of Hedingham kiln sites and evidence of production and organisation

### The dating of the kiln sites

The date range of the individual production sites is given in the gazetteer entries. These are briefly compared to determine whether there is any shift in production through time. Unfortunately due to the paucity, or absence, of pottery at some sites, the evidence is somewhat lacking. Looking from north to south, Clare Cottage is the most northerly of the production sites, situated at Potter Street in Sible Hedingham. Here, production appears to be fairly long-lived with coarseware pottery spanning the earlier 13th to 14th centuries. Hawkwood Manor/Lamb Lane on the opposite side of the road do not have pottery assemblages available for study. Crows Cross on the junction between the Braintree and Halstead roads shows an even wider date range with possible Early Medieval Ware production and Thetford-style storage jars dating to not before *c.* 1200, 13th century-type cooking-pots, and a single example of a late 13th to 14th century rim type. Another mixed bag of pottery was recovered from the Foxborough kilns off the Halstead road and to the south-east of Crows Cross, again with Late Saxon forms and the latest style of fineware jug, indicating production spanned the 12th to 14th centuries, the entire lifetime of the industry.

The stratified pottery from the Hole Farm kilns, off the Braintree road and to the south-west of Crows Cross, is perhaps mid 13th century, with residual finewares and the pottery from an earlier ditch indicating production there

from the 12th century. Starlings Hill to the south of Hole Farm was another long-lived site with production spanning the later 12th to 14th centuries. Like Hole Farm, the bulk of production belongs to the 13th century, but with a significant amount of late 13th to 14th century pottery. The bulk of production waste found in the ditch near the Starlings Hill kiln is later 13th to 14th century. The only datable pottery from Broak's Wood, to the south of Starlings Hill and Foxborough, are sherds from stamped strip jugs datable, according to Cotter's typology to the earlier 13th to 14th centuries.

The meagre assemblage at Acacia House, just to the north of Gosfield, yielded pottery spanning the later 12th to late 13th to 14th centuries. Of the two sites on the outskirts of present-day Halstead and to the east of Gosfield, Attwoods has no surviving pottery assemblage (but is reportedly similar to that from Acacia House) and Holy Trinity produced late 12th to 13th century-type vessel forms. The preponderance of a very coarse fabric at Holy Trinity indicates production was at the earlier end of this date range. Kemp's Wood, just to the south-west of Gosfield, is the most southerly of the production sites. All the diagnostic pottery from this site illustrated by Petchey (1976) is of later 13th to 14th century type comprising H3 cooking-pot rims and a ribbed ?jug handle.

H3 cooking-pot rims were found at the production site at Blackmore End, well to the west of the main kiln group. This might indicate that in the later period production moved westwards. However, the most westerly production site, at Shalford Road, produced pottery spanning the later 12th to 14th centuries with the bulk of production belonging to the 13th century, so there is no evidence here of production moving westwards, as pottery making was already established there by the later 12th to 13th century.

In conclusion, no clear pattern emerges, with most production sites being long-lived. However the northernmost production site, Clare Cottage, shows no evidence of production before the earlier 13th centuries and production would seem to have begun after most of the other sites. Similarly, Kemp's Wood, the most southerly production site appears later than the others with no evidence for production before the late 13th century, the same goes for the Blackmore End kilns, well to the west. It is possible that production started somewhere in

between Clare Cottage and Kemp's Wood, possibly at Hole Farm, Crows Cross, Foxborough, or Holy Trinity, which all produced early medieval pottery and/or Late Saxon Forms. Production continued at these places but also spread out northwards, southwards and westwards. Shalford Road, the most outlying kiln, might have been expected to be earlier than the other production sites, perhaps in existence before manufacture nucleated around the Heddingham/Gosfield/Halstead triangle, or later as the industry expanded or supplies of local clays ran out. However, the pottery from Shalford Road is of a similar date to the main group of production sites. This suggests that pottery production may have been very widespread and there may be a whole swathe of undiscovered production sites in north-central Essex.

### Comparison of the kilns

Attwoods and Crows Cross kilns both had single stokeholes and a pedestal inside the oven (Musty type 1b) (Fig. 2; Pl. 1), unfortunately as illustrations of both kilns show a water-pipe cutting the kiln at exactly the same place, the two sites may have become confused. At Crows Cross and possibly also Attwoods the pedestal is attached at one end to the kiln wall. It is also unfortunate that their assemblages cannot be compared, as the Attwoods assemblage is missing and it is not known which, if any, of the 12th to 14th century assemblage from Crows Cross was found actually within the kiln. There is a plan of one of the two kilns recorded at Starlings Hill (Fig. 10). The plan shows only scanty remains; no pedestal is shown, but from the plan and description (see gazetteer entry) it had two opposing stokeholes (Musty type 2).

Of the Hole Farm kiln stacks (Fig. 3), the two uppermost kilns, 1 and 2, have opposed stokeholes. Kiln 2 has a central pedestal (Fig. 6), and kiln 1, stratigraphically the latest, shows a divided pedestal (Fig. 8). The plans of the underlying kilns are unclear as they have been partially obliterated by the later kilns (Figs 4 and 7). It appears from the original kiln plans that kiln 3 (below kiln 1) has opposed stokeholes and a single central pedestal (i.e. the same plan as kiln 2) and kiln 4 (below kiln 2) is described as having the same design as kiln 2, but from the plans it appears to show only one stokehole. The Shalford Road kiln shows opposed stokeholes and a single central pedestal (Fig. 9), and therefore has a similar plan to that of Hole Farm kilns 2 and 3. The Shalford Road kiln has an interesting modification with a drain leading from one of the stokeholes to a possible sump. Perhaps water ingress was a problem, as it seems to have been at Hole Farm where there is evidence of water damage to the pots (see Manufacturing faults, fault 83). There is no surviving plan of the kilns at Foxborough, but the report describes the kilns as having 'two tongues' probably meaning two pedestals, so this may be a second example of a divided pedestal as Hole Farm kiln 1. The gap between the divided pedestal would have provided an extra channel for the hot gases avoiding a concentration of hot gases at the fire-mouth (Brears 1971, 146), this was a technological innovation and occurs at post-medieval kilns at Potterspury and Harlow (Brears 1971, 146; Davey and Walker 2009, fig. 11).

The evidence (mainly from Hole Farm) would seem to indicate a progression:

- from a single flue kiln with a pedestal attached at one end to the kiln wall, to

- kilns with opposing stokeholes and a central pedestal, to
- kilns with opposing stokeholes and a split central pedestal.

### Comparison of assemblages

#### *Evidence of product specialisation*

There is little evidence of specialisation in certain vessel forms at individual sites. Hole Farm, which produced the largest assemblage, produced vessels types roughly in proportion with the ratios found at consumer sites, i.e. with a preponderance of cooking-pots of varying sizes followed by jugs and bowls, with a smaller amount of more specialised vessels such as storage jars, curfews and chimney pots, and a small number of finewares. All sites produced both coarse and finewares apart from Crows Cross (where part of the assemblage is missing) so there is no evidence that they were produced separately. However, with the exception of Starlings Hill, finewares form only a very small part of the assemblage. It would be interesting to know how separately the fineware and coarseware branches of production were organised. We know from the evidence of manufacturing faults outlined above that fineware and coarsewares were fired in the same kilns but as discussed more fully below, both had separate spheres of influence. It is interesting to note that the ICPS analysis found that the finewares (with the exception of the sandy orange fabric hedsao) and coarsewares were actually made from different clays.

Most of the other assemblages are too small or incomplete to look at specialisation although there are some obvious differences. The preponderance of jugs at Clare Cottage suggests that these may have been a speciality, although many other vessel forms were produced there. At Crows Cross, thin-walled jars with everted or more complex rims seem to be a speciality and although thin-walled jar forms were produced at other sites, none are quite like these. The presence of storage jar, curfew and chimney pot fragments from the small assemblage at Foxborough Hill (1962) indicate that large thick-walled vessels may have been a speciality here.

#### *Can the products of individual kilns be differentiated?*

For the most part, the products of all sites are similar but some differences in fabric, sub-form, method of manufacture and decoration did emerge. Again, looking for differences was hampered by the smallness and incompleteness of some of the assemblages.

As for fabrics, the very coarse version of the medieval fabric (hewcor) occurred only at Holy Trinity and the glazed sandy orange fabric (hedsao) only occurred at the Starlings Hill group. The products of the Clare Cottage site seem to show the most distinguishing features. For example, the variant of the blocked neck-less rim, H3A, which has an everted rim rather than a flat-topped rim, occurred only at Clare Cottage. In addition, the rows of dimpling around the shoulder, so common on the Hole Farm cooking-pots and occurring at several of the other production sites, did not occur at Clare Cottage. There was however a single body sherd at Clare Cottage showing a row of dimpling, so this type of decoration is not entirely absent. Rows of dimpling were not encountered at



Starlings Hill but this only had a small coarseware assemblage.

Clare Cottage coarseware jug handles are also quite different from those of Hole Farm and other sites. At Clare Cottage, handles are usually oval in section and without thumbing, apart from single examples of a thumb-mark at the base of the handle and thumbed 'ears' either side of the handle. Whereas at Hole Farm and the minor production sites, strap handles thickened at the edges are the norm. The edges are also commonly thumbed and sometimes have a central ridge which can also be thumbed. In addition, thumb-marks often occur on the inside of the upper handle attachment. None of these features occur on handles from Clare Cottage.

Method of handle attachment also differs at Clare Cottage and Hole Farm. At Clare Cottage there is often a circular depression where the upper handle is attached, whereas at Hole Farm there is often no evidence of method of attachment. Possibly the same method was used at Hole Farm but they took more care to cover the attachment. However, method of handle attachment can vary within each production site, as one of the Clare Cottage jugs shows a horizontal knife-slit rather than a circular depression at the point of handle attachment. There is another variation of handle attachment at Starlings Hill where the lower handle attachment from a fineware jug shows as a vertical slot.

#### **Quality control**

When looking at the vessels, most appear to be well made and of good quality although the only proof of this would be in using them. The most obvious examples of poor quality control are the bowls with untrimmed drainage holes. At Hole Farm there are a total of twenty-one examples where extraneous clay from making the holes was not trimmed off. This would presumably have affected the performance of the vessel and made them less

attractive to the purchaser, yet such vessels went on to be fired. At Hole Farm, bowls with untrimmed holes occur mainly in the oven and west stokehole of kiln 2, but were also relatively common in the other kiln stack, in the west stokehole of kiln 1, so they are unlikely to be the result of a single batch. In addition, there are single examples of bowls with untrimmed holes at Starlings Hill and Holy Trinity, so perhaps such vessels were perfectly serviceable. The only other notable examples of poor quality control are the warped cooking-pots from kiln 2, and as they do not appear over-fired this may be the result of not putting enough sand in the mix.

#### **Level of organisation**

For the most part, all the production sites were making similar wares, for example, nearly all centres were producing stamped strip jugs, with some of the differences noted above perhaps due to changes over time rather than different centres making different products. Individual potters may have had their own methods of attaching handles *etc.* but to the consumer the vessels would have looked the same. Production was probably at the level of nucleated workshops (Peacock 1982) where individual workshops were grouped together to form a clustered industrial community with standardisation of products across all workshops. The advantages of nucleation include mutual co-operation and the benefit of wider sales through a wider distribution network.

Documentary research gleaned little evidence as to the nature of the Hedingham pottery industry, however in the mid 14th century there is a reference to a potter who also made tiles (see Ryan, Appendix 4, p.165) and the remains of a tile kiln were found to the north of Crows Cross (Appendix 4, Table 18). The practice of making tiles and pottery may have been widespread, it certainly occurs at the Mill Green Ware pottery industry (Sellers and Sellers 1968, 12; Meddens 2003, 3).

# Chapter 6. Origins and affinities of Hedingham Ware

## Comparison with other Essex coarsewares

It is important to compare Hedingham Coarseware with other grey wares of the region in order to determine whether Hedingham Coarseware is readily distinguishable, as this has repercussions for examining the distribution of Hedingham Coarseware. The general conclusion that can be drawn is that while Hedingham Coarseware can be distinguished from products of other industries in terms of fabric, vessel form and decoration, most unfeatured sherds can only be distinguished by examination under the microscope and it is clearly not practical to do this for every sherd.

Grey-firing coarseware occurs throughout Essex, although much of southern and central Essex is supplied by Mill Green Coarseware and west Essex is supplied by Medieval Harlow Ware (Pearce *et. al.* 1982, 289–92; Davey and Walker 2009, 12–13;), both of which are typically oxidised to a red-brown or orange colour. In the very south of the county, on sites bordering the River Thames, shelly wares fill the coarseware niche well into the 13th century, but medieval grey wares do occur. In addition, oxidised coarsewares similar to Mill Green Coarseware were manufactured at Rayleigh High Road in south-east Essex (Walker 1990b). It is probably accurate to say that medieval grey wares predominate in the northern half of the county, and this is also noted by Cotter (2000, 92). On grounds of colour alone, Medieval Harlow Ware, Mill Green Coarseware and Rayleigh High Road Ware are readily distinguishable from Hedingham Coarseware.

Hedingham Coarseware is readily distinguishable from the pottery made at the Frogs Hall kilns, Takeley (Ennis 2006), the latter belonging more to the early medieval ware tradition and with a much coarser fabric. Very few production sites in Essex are known to have made medieval grey wares. There are sites at Tiptree Heath and Tollesbury to the south-east of Hedingham, situated on London Clay with head deposits and glacial sands and gravels. At both sites, although no kilns have been found, there are concentrations of grey-firing coarseware together with documentary evidence of pottery manufacture (Cotter 2000, 93, 369). Medieval grey ware pottery was also found at Danbury tile kiln, near Chelmsford (Drury and Pratt 1975), but the report does not say whether the pottery was actually manufactured there.

The best evidence for grey ware manufacture in Essex outside of the Hedingham area is at Mile End and Great Horkeley to the north of Colchester, around 20km to the east of Sible Hedingham and like Sible Hedingham situated in the greater Colne valley. The geology is similar to that of the Hedingham area, with both sites situated on, or close to, Kesgrave Sands and Gravels, head deposits and London Clay exposed in a stream valley. From

examination of sherds in the author's reference collection and the fabric description given by Cracknell (1975, 37), the fabric can be described as having a tempering of white and clear quartz sand, mica and sparse iron oxides. Under-fired examples sometimes show un-tempered clay particles. The fabric is thus similar to that of Hedingham Coarseware, but both the tempering and the matrix of the Mile End sherds are much coarser than typical Hedingham examples. Comparison by elemental analysis of Hedingham and Great Horkeley grey wares showed that these industries could be distinguished chemically (see Hughes, Appendix 2). In hand specimen however, both the Mile End and Hedingham Coarsewares are similar and it might not be practicable to tell them apart without examining them under the microscope.

No kilns were excavated at Mile End, but much kiln debris and charcoal were recovered from pits and other features (Drury and Petchey 1975, 33). The catalogue of illustrated pottery from this site (Cracknell 1975, figs 4–11) reveals both similarities and differences between the Mile End and Hedingham products.

The medieval grey ware from Great Horkeley, also published by Drury and Petchey (1975) again represents waster dump material, unfortunately without accompanying kiln structures. Much less pottery is illustrated, but is evidently later than that from Mile End, producing the developed E5 rim type (Drury and Petchey 1975, fig. 13.73–6) also manufactured in Hedingham Coarseware (Fig. 24.127). The results of this comparison, summarised in Table 9, are somewhat ambiguous with many similarities and differences and given that there is quite a lot of variation within the Hedingham production sites, it does not help clarify whether there are clear distinctions between the Hedingham and Mile End/Great Horkeley production sites in terms of vessel forms, sub-forms and decoration. (There is no evidence of fineware production at Mile End and Great Horkeley, perhaps because the Lower London Tertiaries do not outcrop here, although a sandy orange ware, Colchester Ware, was manufactured at Great Horkeley).

## Comparison with South Hertfordshire Greyware

South Hertfordshire Greyware is a tradition rather than a specific industry, with a number of production sites in Hertfordshire, Middlesex and Buckinghamshire (Turner-Rugg 1988, 17–18) and it could be argued that Hedingham and Mile End/Great Horkeley are part of this tradition. A number of Hertfordshire Greyware sherds are present in the author's reference collection, and not surprisingly, because they are part of a tradition, there is some variation in fabric and appearance. However under the (binocular) microscope they are clearly different from Hedingham Coarseware. The fabric is usually tempered with white

grey or colourless sub-angular sands not unlike Hedingham, but they are coarser and poorly sorted with a silty matrix quite unlike that of Hedingham products. One Hertfordshire Greyware sherd shows sparse chalk inclusions and a couple are iron-stained. Several, but not all, are more highly fired and harder than Hedingham Coarseware and a number have dark grey surfaces but paler cores (this can also occur in Hedingham Coarseware, but is probably not deliberate). This description fits that given by Havercroft *et al.* (1987, 32), who consider that the Hertfordshire pots were fired in an oxidising atmosphere, but with a late stage reduction to produce the darker surfaces. Perhaps demonstrating this, a couple of sherds have narrow pale grey margins. However, like the Mile End pottery, when these sherds are placed on a table with examples of Hedingham Coarseware the differences are not at all obvious.

It is difficult to compare the products of the Hertfordshire and Hedingham industries as of course only a fraction of the output of both industries is available for study. Comparisons have been made however, by examining illustrated examples of Hertfordshire Greyware published by Havercroft *et al.* (1987), the largest corpus of published Hertfordshire Greyware to date. These are shown on Table 9. Comparisons show few significant differences between vessel forms; a row of dimpling around the shoulder is absent in Hertfordshire Greyware and the jugs tend to be squatter and more bulbous. The deeply thumbed and pierced handles commonly found on Hertfordshire Greyware (but absent from Hedingham and Mile End/Great Horkesley products) are considered to be particularly characteristic of this industry (Havercroft *et al.* 1987, 45).

### Comparison to Suffolk grey wares

Medieval coarsewares were also made in Suffolk and the best known industry is Hollesley-type ware, part of an east Suffolk tradition, with a known production site at Hollesley Bay on the Suffolk coast (West forthcoming). A row of dimpling below the rims of cooking-pots and bowls, as produced in Hedingham Coarseware, is also characteristic of Hollesley-type ware. However, there are other traits which are unlike; for example, heavily skewered handles which feature on almost all the illustrated Hollesley-type ware jugs in West's forthcoming publication, are virtually absent at the Hedingham production sites where there was only a single example (Fig. 31.169).

Hollesley-type fabric is pale to dark blue-grey or buff, showing much variation in colour, but is generally much paler in colour than Hedingham Coarseware. Inclusions comprise common to abundant, white and clear, sub-rounded sand, with very sparse mica, iron oxide and grog, and occasional large quartz or flint grains (Anderson 2004a, 19–22; Anderson and Newman 1999, 149–51). Apart from the grog, the fabric description is similar to that of Hedingham Coarseware, but Hollesley-type ware can easily be separated from Hedingham Coarseware on visual grounds, the key difference being the paleness of the Hollesley fabric, the very sparse mica, and the much denser sand inclusions, which are usually clearly visible on the surface (Sue Anderson pers. comm.).

### Comparison with Thetford-type ware

Thetford-type ware is a wheel-thrown Saxo-Norman grey ware flourishing in the 10th and 11th centuries and continuing to the mid-12th (Hurst 1976, 314–8). It is known as Thetford-type ware because kilns producing this ware were first discovered at the town of Thetford, but the earliest manufacture was at Ipswich in Suffolk, developing out of Middle Saxon Ipswich Ware. Thetford-type ware was also made at Norwich, rural sites in Norfolk, and perhaps at other towns in Suffolk. Because both Hedingham Coarseware and Thetford-type ware are relatively fine grey wares and Hedingham is close to the Suffolk border, it is possible that Hedingham Ware evolved from Thetford-type ware in the early to middle 12th century. There are indeed similarities, but also many differences, these are listed below:

- Thetford-type ware jars are tall and ovoid with narrow, often flat bases and thickened everted flanged rims or wedge-shaped rims. Hedingham vessels show the typical squat cooking-pot shape with a sagging base. Some jar forms show everted rims (e.g. Fig. 24.130), but these are not typical
- both show rilling on the upper half of jar forms (e.g. Fig. 20.84, 86–7; Hurst 1976, fig. 7.14.1)
- both often show a band of decoration above the shoulder, on Hedingham Coarseware this is most often a row of dimpling, whereas on Thetford-type ware it is normally rouletted decoration (*cf.* Hurst 1976, fig. 7.14.4)
- both industries produced spouted jars (Fig. 30.151; Rogerson and Dallas 1984, fig. 161. 193–201) and large storage jars with vertical, diagonal or intersecting thumbed applied strips (Fig. 28.141; Rogerson and Dallas 1984, fig. 166.250, fig. 169.272; Dallas 1993, fig. 148.161, fig. 149), although the thumb-marks on the Thetford-type ware examples tend to be larger and more widely spaced.

The most striking forms are the large storage jars. Perhaps the most similar jar to near complete Hedingham example Fig. 28.141 is published by Rogerson and Dallas (1984, fig. 166.250). Both have diagonal thumbed applied strips, thumbing around the rim and incised decoration between the strips. However these are by no means exact parallels. The Thetford example is ovoid with an everted rim, whereas the Hedingham example is slightly shouldered and has an upright rim. The thumbed strips on the Thetford example do not intersect, although this does occur on other Thetford-type ware storage jars (see above). The incised decoration (or rather surface treatment as it does not look very decorative) consists of straight horizontal lines, whereas the Hedingham example is decorated with bands of wavy line combing, which does not appear to be a characteristic of large Thetford-type ware storage jars.

The Hedingham industry was undoubtedly copying Saxo-Norman forms but there is no real evidence that it evolved out of the Thetford-type ware industry. The production centre at Frogs Hall also copied Late Saxon-style storage jars and spouted pitchers (Walker 2006, figs 36 and 37), although these were coil-built vessels in an early medieval fabric and much less like Thetford-type

<i>Heddingham</i>	<i>Mile End</i>	<i>South Herfordshire Greyware</i>	<i>Suffolk, especially Hollesley-type ware</i>
<b>Methods of manufacture</b> Rilling on upper half of vessels suggests wheel-throwing, although horizontal join marks suggest they were built in sections — the coil and throw technique	No evidence available	Vessels are thought to be wheel-thrown with rilling marks on the upper body and turning marks on the base and lower wall (Havercroft <i>et al.</i> 1987, 34)	No evidence available
<b>Finewares</b> Finewares make up a small but significant component of most Heddingham assemblages	Finewares absent, although a sherd of coarseware jug shows splashes of dark green glaze indicating that glazed finewares may have been fired with it (Cracknell 1975, 45)	Finewares absent although greywares with areas of dark green glaze have been found (Havercroft <i>et al.</i> 1987, 32)	A glazed ware fabric also made, which is much coarser than Heddingham Fineware (Anderson 2004a, 20; Sue Anderson pers. comm.)
<b>Bowls</b> Large flared bowls produced, some with necks and some with a carination below the neck, many of these bowls have holes below the rims  Bowls with a row of dimpling below the neck produced	Similar large flared bowls produced, although none have holes, compare Fig. 16.54–5, Fig. 17, Fig. 18.63–69 with Cracknell 1975 fig. 6.31–3, fig. 7 and fig. 8.36–7 and 45. The Mile End basket-handled bowl did not occur at Heddingham (Cracknell 1975, fig. 36b)  Similar bowls showing a row of dimpling below the neck, compare Cracknell 1975 fig. 7.36a, b and fig. 8.36c with Fig. 18.64	Comparable large flared bowls including socketed bowls, (Havercroft <i>et al.</i> 1987, 41, fig. 6.77–8, 80–1)  Bowls are undecorated and none have holes	Large flared bowls with squared rims, some with a carination below the neck ( <i>cf.</i> Anderson 2004a, fig. 13.10; West forthcoming)  Bowls with a row of dimpling below the rim produced
<b>Cooking-pots and jars</b> Rounded and shouldered profiles, many show rilling on the upper half  Both Mile End and Heddingham produced cooking-pots with: upright, squared rims, with H1 rims, (compare Fig. 19.75–6 with Cracknell 1975 fig. 6.27; Fig. 19.82 with Cracknell 1975 fig. 6.24, Fig. 20.89 with Cracknell 1975 fig. 6.23 and fig. 1052–4)  A row of horizontal dimpling below the rim of the cooking-pot is the most common form of decoration at the Hole Farm Heddingham site	Rounded and shouldered profiles (Cracknell 1975 fig. 5)  The majority of illustrated cooking-pots from Mile End have turned over or cavetto rims (Cracknell 1975, fig. 5), this type is absent at Heddingham. H3 and E5 rims occur at Great Horkesley but not Mile End (e.g. Drury and Petchey 1975, fig. 13)  A row of dimpling on cooking-pots is absent Horizontal thumbbed applied cordons with vertical applied strips that originate at the cordon occur at both sites, compare Cracknell 1975 fig. 5.19B with Fig. 29.149	Rounded and shouldered profiles, many show rilling on the upper half (e.g. Havercroft <i>et al.</i> 1987, fig. 4.65 and fig. 4.66)  Rim types equivalent to B2, H2 and H1 (Havercroft <i>et al.</i> 1987, fig. 4.71, 70, 65). A pipkin rim is closely paralleled by a Clare Cottage example (compare Fig. 27.131 with Havercroft <i>et al.</i> 1987, fig. 5.2 misc. second from left)  Dimpling is absent although horizontal and vertical applied strips are known (Havercroft <i>et al.</i> 1987, fig. 4.70–2)	Cooking-pots and jars produced often with rounded profiles (West forthcoming)  Everted rims, squared rims and a rim with an external groove produced (West forthcoming; Anderson and Newman, 1999, fig. 3.16–20) the latter comparable to Fig. 22.106 from Hole Farm  A row of dimpling below the rim of Suffolk cooking-pots is common
<b>Jugs</b> Rounded or slightly shouldered profiles  Jugs with pouring lips, thickened flat-topped rims and waisted rilled necks, some Heddingham sites have produced collared rims more like the finewares (Fig. 33.189–90)	No profiles present  Jugs with pouring lips, thickened flat-topped rims and waisted rilled necks, (compare Cracknell 1975 fig. 4.1 with Fig. 30.158–9) collared necks absent	Jugs tend to be squatter and more bulbous around the middle  Jugs with pouring lips, occasionally thickened flat-topped rims, but most illustrated examples have collared rims, necks tend to be plain and the angle between the body and the neck of the jug is less distinct than on Heddingham and Mile End products	A complete example in West (forthcoming) has a slightly pear-shaped profile, a less complete example may have a rounded profile  Some illustrated jugs (in West forthcoming) have pouring lips and thickened sometimes everted rims, a carination below the rim is sometimes present, necks are plain

Jug handles show a large variation in decoration, strap handles thickened or thumbbed at the edges, sometimes with a central ridge are the most common, but absent at Mile End, occasional use of slashed decoration on handles	Jug handles show a large variation in decoration, as both Heddingham and Mile End employed a double column of thumbing, compare Cracknell 1975, fig. 4.14 and Fig. 30.156, both sites also produced ribbed handles, Cracknell 1975 fig. 4.13 and Fig. 33.184, occasional use of slashed decoration on handles	Jug handles show a large variation in decoration, as with Heddingham, strap handles with thickened or thumbbed edges occur, sometimes with a central ridge (Havercroft <i>et al.</i> 1987, fig. 2.20, 24–5, 28), greater use of slashed decoration with some similarities to Heddingham (compare Fig. 31.167 and 170 with Havercroft <i>et al.</i> 1987, fig. 2, 16, 18); distinctive deeply thumbbed and pierced handles ( <i>cf.</i> Havercroft <i>et al.</i> 1987 fig. 3.35–45) do not occur at Heddingham or Mile End/Great Horkelesley	Ribbed and bifid handles (with a central groove) are typical and show abundant skewer marks, either rounded or angular, often arranged in columns (West forthcoming)
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### Chimney pots

Cylindrical chimney pots with either a column of vertical thumb-marks or vertical applied strips	Biconical chimney pots decorated with columns of vertical thumb-marks (compare Cracknell 1975, fig. 11.61–4 and Fig. 33.192–3), it is difficult to compare the chimney pots because of the fragmentary nature of the Heddingham examples	Not found in Hertfordshire Greyware	None published
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Table 9 Comparison of Heddingham Coarseware products to those of Mile End, near Colchester, South Hertfordshire Greyware and Hollesley-type ware from Suffolk

ware than the Hedingham examples. It is just as likely that Hedingham Ware evolved from Frogs Hall pottery as it is that it evolved from Thetford-type ware.

### The fineware origins and affinities

The similarities of Hedingham Fineware to the products of the London-type and Scarborough pottery industries, have been outlined by Cunningham *et al.* (1983, 54–67), Drury *et al.* (1993, 86) and Cotter (2000, 86–9). This study corroborates their findings with further examples of similarity, but has nothing new to add. However, it is interesting to note that the Hedingham potters, in making the stamped strip jug, created a style that was more their own. Admittedly, vertical applied strips on the body are a common form of decoration on medieval jugs, and similar cartwheel stamps are found on London-type ware and Surrey Whiteware jugs. Cartwheel stamps occur on London-type highly decorated style jugs (e.g. Pearce *et al.* 1985, fig. 43.145), where they are arranged within a circular border. There is also an example where a cartwheel stamp appears to form part of a stylised flower (Pearce *et al.* 1985 fig. 44.146), but they are not arranged in rows around the neck or shoulder. They are not common on Surrey Whiteware jugs and only one example is published (by Pearce and Vince 1988, 44, pl. 28c). In both the Surrey and London-type cartwheels, the hub is raised rather than shown with an axle hole as found on the Hedingham Ware examples.

The Hedingham stamps are rather accurate depictions of cartwheels, with hubs of different sizes and some that show round axle holes and some showing square axle holes, which would imply an intimate knowledge of cartwheels (see Fig. 15.26, 28, 30–33). It is possible that the cartwheel had a special significance to the Hedingham potters. Making cartwheels is a traditional industry of the Hedingham area (Smedley 1976, 25–8), although it is not known whether the tradition existed as far back as the Middle Ages. If so, it is possible that there was a direct connection between potters and wheelwrights. Both industries required a knowledge of different woods and their properties, and making wheels produced waste wood (Smedley 1976, 25–7), that could have been used by the potters as fuel. Both industries also required expertise in hearth temperatures, as iron wheel rims were fitted by heating them to make them malleable. This is of course speculation, but has been mentioned in case such a connection is later revealed from other sources.

Cartwheels were used as potters' wheels in 13th century France (McCarthy and Brooks 1988, fig. 8.1–2) and it is possible that they had such a use here. The cartwheel also had a symbolic meaning, 'the wheel of fortune', a potent symbol in the medieval mind depicting the fickle nature of fate. Spoked wheels are also a Christian symbol, the wheel of eternity, which sometimes features on stained glass windows (Spavold 2009, 38–40) and it may be significant that there is a wheel window in the Norman church at Castle Hedingham. Thus the cartwheel stamp could have both a real world and symbolic meaning. The gridiron stamp (Fig. 15.35–6 and Pl. 17), which is found on other types of pottery including Thetford-type ware, may also have religious significance, perhaps depicting a communion wafer, the representation of the body of Christ (Spavold 2009, 43–4). By the late 13th century the Hedingham potters are once again

copying the designs of other industries, this time the vertical combing found on Mill Green Ware jugs.

### Comparison with other kilns in the region

Comparing kiln designs helps further to unravel possible relationships between neighbouring industries. As most of the pottery from the Hedingham kilns comprises coarseware, emphasis is on the coarseware-producing kilns of the region. Comparisons between Hedingham, and what must have been in the later period its main competitor, the Mill Green industry, are not possible as surprisingly, no actual pottery kilns have been recorded, either in the area of Mill Green, or at a second production site at Noak Hill, both situated to the south of Chelmsford (although the remains of tile kilns have been excavated at both locations) (Pearce *et al.* 1982; Sellers and Sellers 1968; Meddens 2003).

Comparisons can however be made with a series of kilns at Frogs Hall near Takeley, only about 25km southwest of Sible Hedingham (Ennis 2006, 43–49; Timby *et al.* 2007, 169–175). As at Hedingham, single stokehole and double stokehole kilns were excavated, producing unglazed coarseware dated *c.* 1200. There is also a more primitive design here without a pedestal (Musty's type 1a) which was not encountered at Hedingham. The single stokehole kilns at Frogs Hall have a distinctive horseshoe shape (Ennis 2006, fig. 15), (a kiln design which also occurs at Middleborough, Colchester (Cunningham 1984, fig. 171). The horseshoe-shaped kilns were not found at Hedingham but were similar in that both Frogs Hall and Hedingham kiln plans show tongue-shaped pedestals attached to the kiln wall at the opposite end to the stokehole. As at Hedingham, the Frogs Hall double-stokehole kilns have a central pedestal and opposing stokeholes. In addition, both sites have examples of kilns lined with chalky clay. Unlike Hedingham, the Frogs Hall kilns showed no signs of progression of kiln design through time, with all three types producing very similar pottery indicating they were all in operation concurrently. No kiln structures were excavated at the production sites of Mile End and Great Horkesley (near Colchester).

The split pedestal design of kiln 1 at Hole Farm does not occur at Frogs Hall, but it does occur at Mill Street, Harlow (Davey and Walker 2009, 15–16, fig. 11). The Mill Street kiln produced pottery dating to the 16th century, some three centuries later than that from Hole Farm, so it would seem that this is a long-lived design. There are significant differences in the design however, the oven of the Mill Street design being much rounder, brick-lined, and larger, measuring around 5m x 3m (as opposed to the dimensions of 3m x 2m for Hole Farm kiln 1). The occurrence of the split pedestal kiln could mean that the Harlow and Hedingham industries are related, but the only similarity in the pottery is that both industries produced a slip-painted sandy orange fabric. In addition, there are significant differences in the design of the kiln, although the design may have continued to evolve over the centuries.

Hedingham was not the only industry to encounter problems with drainage; there is a possible drain running from one of the Frogs Hall kilns (Ennis 2006, fig. 15) and a more sophisticated drain was excavated at Mill Street, Harlow, made of interlocking ceramic pipes (Davey and Walker 2009, fig. 11). Such problems have been

encountered at pottery production sites elsewhere in the country, particularly where kilns are built into clay (Moorhouse 1982, 100).

Kilns producing South Hertfordshire Greyware are known. A kiln at Chandlers Cross is described as double-ended with a central oval pedestal (Turner-Rugg 1993, 32), which probably corresponds to Musty's type 2b (i.e. of the same basic ground plan as some of the Hedingham kilns). A kiln of type 2b was also excavated at Nettleden, the walls of which were reported to have been plastered with mortar and the central pedestal was arched (Renn 1964, 6, fig. 2, pl.1), neither feature occurred at the Hedingham kilns, so there is no reason to believe the industries are related. Most of Musty's kiln types are not

confined to geographic regions, the type 2b kiln for example occurs in Gloucestershire (Musty 1974, fig. 1), so that very close similarities would be required before any connections between industries could be implied. Kilns producing Hollesley-type ware are recorded as being clamps, although this may not be accurate (Sue Anderson pers. comm.).

The Thetford-type ware kilns are of Musty's type 1b (a type which occurs in the Hedingham industry), but are unlike those at Hedingham, having three or four transverse arches and one longitudinal arch at the rounded end (Dallas 1993, 58–9, fig. 86). This dissimilarity constitutes evidence that Hedingham Ware did not evolve from Thetford-type ware.

# Chapter 7. The distribution of Hedingham Ware products

## Introduction

Previous work by Cotter (2000, 88–90, fig. 53) shows that Hedingham Ware enjoyed a wide distribution throughout northern Essex and East Anglia. One of the aims of this present project was to build upon Cotter's work, to find further find-spots of Hedingham Ware, both coarse and fine, that have come to light since Cotter compiled his data in the 1990s. To this end, find-spots of Hedingham Ware were extracted from recent datasets and pottery reports (published and unpublished). This work was carried out by the author and by a number of other pottery specialists working on pottery assemblages from sites in the greater East Anglia area (see 'Acknowledgements'), and there are now some 249 find-spots of Hedingham Fineware and 69 finds-spots of Hedingham Coarseware. Problems of misidentification of Hedingham Ware have been avoided by using data from ceramic specialists who are familiar with pottery of East Anglia. The current study also takes into account the quantities of pottery found (rather than just presence), the earliest and latest date, and the type of site from which it came. This information has been plotted on maps showing geographical features including roads and rivers, with the hope of showing evidence for the routes used and how the pottery was distributed and marketed.

## Methodology

### Quantification

The method of quantification chosen was sherd count. This is because nearly all assemblages, even those with minimal quantification, use sherd count. In order to show the amount of pottery by graduated symbol, the sherd counts have been divided into bands, the banding values differ between fine and coarsewares as coarseware tends to be more abundant on site than fineware. Sites with unquantified Hedingham Ware are also shown on the plots as they at least show the presence of Hedingham Ware.

#### The fineware banding

Fineware band 1	1–4 sherds
Fineware band 2	5–9 sherds
Fineware band 3	10–24 sherds
Fineware band 4	25–99 sherds
Fineware band 5	100–1000 sherds

#### The coarseware banding

Coarseware band 1	1–9 sherds
Coarseware band 2	10–49 sherds
Coarseware band 3	50–99 sherds
Coarseware band 4	100–499 sherds
Coarseware band 5	500–3000 sherds

### Date banding

As for dating, it was originally intended to examine the find-spots by phase, but this proved impractical for a number of reasons. There is also the risk that the Hedingham Ware could be residual or intrusive in its context. The easiest method of dating for the fineware was by decorative style (according to Cotter's typology, 2000) and for the coarseware, by cooking-pot rim type (after Drury *et al.* 1993, 81–4). Using this method, plots were produced showing the earliest and latest types present, in order to show whether there is any change in the pattern of distribution through time. In addition to decorative style, the fineware has been dated by certain non-jug forms such as internally glazed flat wares, which are likely to be later. Unfortunately, due to the fragmentation of fineware sherds and the lack of data in some instances, the decorative style is often not recorded. Because of the lack of data the resulting plots conveyed little information and have not been published, although the date bandings are shown in the gazetteer of find-spots. The information that could be gleaned from the data is discussed later on in this chapter.

#### The dating categories for the fineware

London-style early rounded	mid 12th C to 1200	Category 1
Scarborough-style early rounded	later 12th C to 1250	Category 2
Early rounded general	"	"
Rouen-style	early to mid 13th C	Category 3
Stamp strip jugs	c.1225–1300/25	Category 4
Combed/reed jugs	late 13th or 14th C	Category 5
White slipped jugs	"	"
Later non-jug forms (including bottles and internally glazed flat wares)	"	"

#### The dating categories for the coarsewares (by cooking-pot rim type)

Bead rims	12th C	Category 1
B2, B4 rims	c.1200	Category 2
H2 rims	early to mid 13th C	Category 3
H1 rims	throughout the 13th C	Category 4
H3/E5 rims	late 13th or 14th C	Category 5

### Negative evidence

There have been a large number of excavations in London and all over Essex during the last thirty years and it is felt that the pattern of distribution is valid without showing negative sites, i.e. excavated pottery assemblages that do not contain Hedingham Ware. For the more rural East Anglian counties where there have been fewer excavations, the picture is less comprehensive, and as this data has been supplied, negative sites have been shown for the counties of Cambridgeshire and Suffolk. Negative



sites are not included in the gazetteer of find-spots, although site details are available in the archive. Negative sites are shown as an 'x' on the plots.

There are a large number of variables when looking at distribution and this study does not take into account the size of the total pottery assemblage or the proportion of the assemblage that is Hedingham Ware. In addition, to get a clear, mathematical measurement of distribution, archaeological excavations would need to be carried out at regular spacings preferably on a grid system, but archaeological excavation is never uniform. Neither does this study take into account the variations in population densities, which would have affected pottery consumption. Nevertheless these plots should show any obvious patterns of distribution.

### Site type

Sites have been assigned a site-type with the aim of looking at mechanisms of distribution. For example, if the amounts of Hedingham Ware at a religious site or a castle site differ markedly from other sites in the same town, then these institutions may have obtained their pottery via a different mechanism from the rest of the town. Similarly, a lack of Hedingham Ware at rural sites could mean the pottery was not widely available. The following site types have been designated.

<i>Site type</i>	<i>Comments</i>
farmstead/other rural	includes moated sites unless they are known to be manors or other high status sites
village/hamlet	-
urban/sub-urban	includes villages that were towns in the Middle Ages such as Pleshey and Stebbing
hall/manor	-
church/religious house	includes medieval hospital sites
castle/other high status	-
mill/other industrial	-
port/quay/waterfront	-

### The transport system

Although some medieval roads are mentioned in contemporary documents, no medieval road maps survive. An overview of Hedingham Fineware distribution has been produced showing old roads (Fig. 34). The routeways for Essex shown on this figure are based on the Chapman and André 1777 map of Essex. Although late 18th century, it is thought to show a road network little changed from the medieval period (Hunter 1999, 91). Other maps have also been used in compiling Fig. 34, namely, Powell's modern map of Essex in Domesday, compiled in 1989, the John Norden map of 1594, the John Ogilby and William Morgan map of 1678, and the John Cary map of 1787. Minor roads are only shown where they are the likely route for Hedingham transportation. For the Tendring peninsula, the maps showed conflicting evidence as to the roadways, therefore apart from the main road to Harwich, the roads in the Tendring peninsula have been omitted.

The Suffolk routes shown on Fig. 34 are based on John Kirby's 1737 map of Suffolk and the 1825 map of the turnpike roads of Suffolk. Most of the turnpike roads

follow the river valleys or old Roman roads as they did in the Middle Ages, so like Essex, it would appear that the medieval road system in Suffolk survived with little change into the post-medieval period.

The Cambridgeshire roads are based on an early-modern map of Cambridgeshire (Frearson 2000, unnumbered fig.) and the extent of the fenland islands and waterways are based on Darby (1977, 24–5, figs 8 and 9). The Suffolk to Norwich routes are also based on John Kirby's map. The north–south Peddars Way in Norfolk is also shown along with parts of drovers' routes. For ease of orientation for the reader, the maps of distribution by county are based on the modern OS map (Figs 35, 37, 38, 41–43).

### Distribution within Norfolk

(Figs 34, 35, 36)

A modest total of thirteen sites produced Hedingham Fineware and of these only the main towns produced significant amounts. The single find-spot from King's Lynn is in band 3, and Thetford and Norwich, although producing Hedingham Ware at several sites (a total of nine sites at Norwich), only have a total value of band 4. This dearth may be due in part to lack of excavation, but may also be real as only small amounts of Hedingham Ware occur in north-east Suffolk in spite of the fact that there have been a number of excavations in this area (see below). Hedingham Ware may be lacking in west Norfolk due to competition from other pottery industries in the Fens, such as Grimston Ware located to the east of King's Lynn, and industries centred at Bourne in Lincolnshire and Colne in Cambridgeshire (Leah 1994; Healey 1969; Watson 1991). The find-spots of Hedingham Ware at Norwich were dotted around the medieval town suggesting the pottery was bought at the market. However two sites at Fishergate and a site in Coslany Street are by the River Wensum, suggesting that some pottery may have been traded directly from the riverside, although more data would be needed to verify this.

The most westerly find-spot is at the village of West Walton on the River Nene. This site, together with King's Lynn and Wisbech in Cambridgeshire (see below) form a small cluster near the Wash. In addition, to the south of King's Lynn are finds from the village of Marham in the Nar valley, which joins the River Great Ouse at King's Lynn, and to the south-east of Marham are find-spots at the villages of Hilborough and Great Cressingham, both on the River Wissey, which like the River Nar, also drains into the Fenland Basin (Silvester 1988, 1). The town of Thetford, well to the south of the Wissey, produced several find-spots of Hedingham Ware. Thetford is on the Little Ouse river, and on the intersection of a number of road ways, so that the Hedingham Ware could have arrived by any number of routes.

Small numbers of finds also occur elsewhere in the county, with finds at North Elmham, an ecclesiastical site in the north of the county, situated on the River Wensum which flows eastward to Norwich. The site is also on a north–south road to Dereham. Norwich is the most easterly find-spot in Norfolk, and finds are relatively common. Norwich was the second most important town in England in the Middle Ages, it was a port, and like Thetford was on the intersection of many roads, so that the Hedingham Ware could have arrived by several routes.

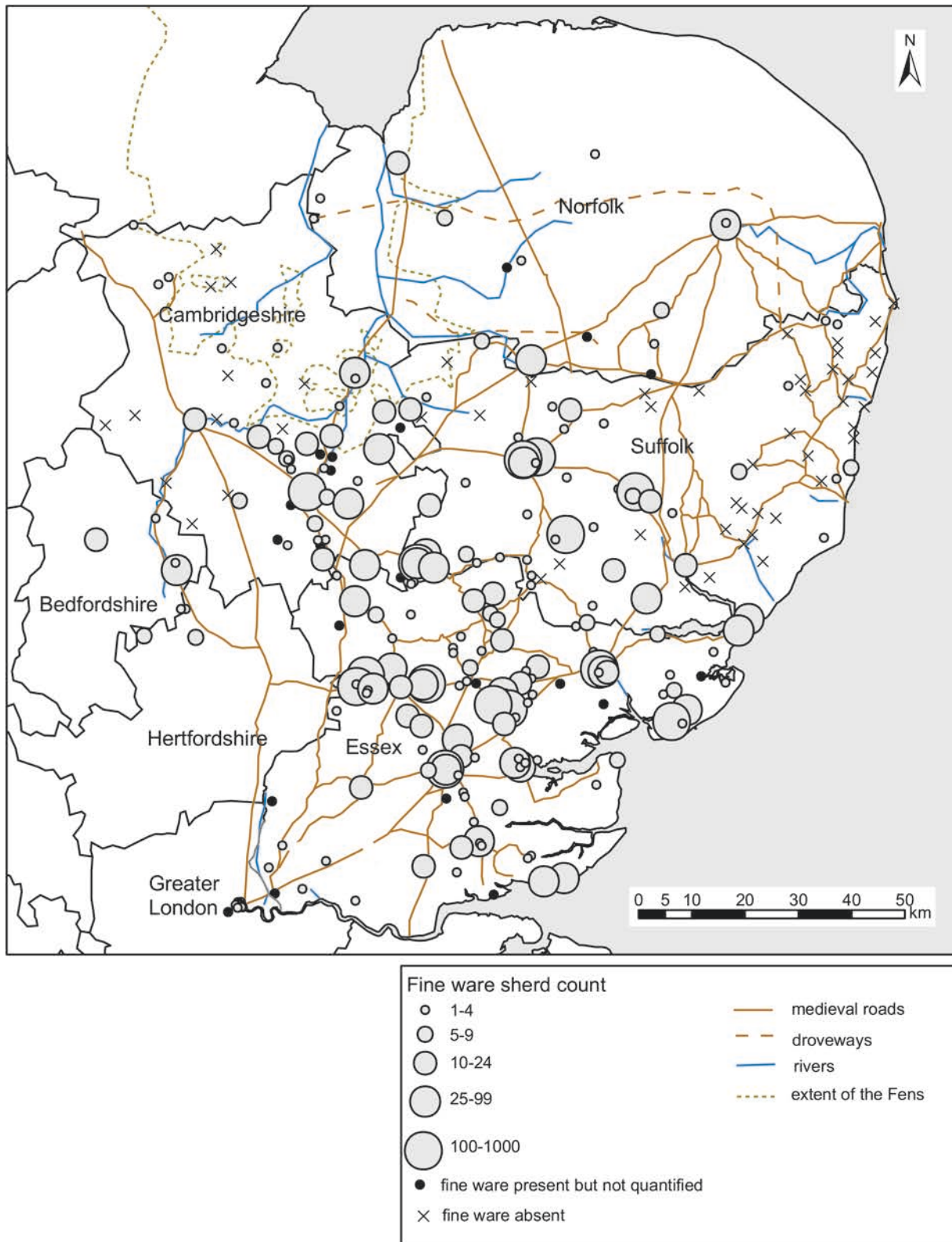


Figure 34 Overview map of fineware distribution in East Anglia by graduated symbols, showing county boundaries, old roads and routeways, and major rivers. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

There are three rural or village sites, not on main roads, that produced Hedingham Ware, Carleton Rode, Harling and Winfarthing. All lie between Norwich and Thetford and are close to minor roads (in the present day) which lead to the Suffolk towns of Bury St Edmunds and Ipswich. A find spot at Roydon, near Diss, is also in this area.

No Hedingham Coarseware has been identified in Norfolk.

Fig. 36 shows distribution by site type. Norfolk has too few find-spots for any discernible patterns to emerge, Hedingham Fineware being found at rural sites, villages and towns, with find-spots also at Norwich Cathedral and an ecclesiastical site at North Elmham. North Elmham is

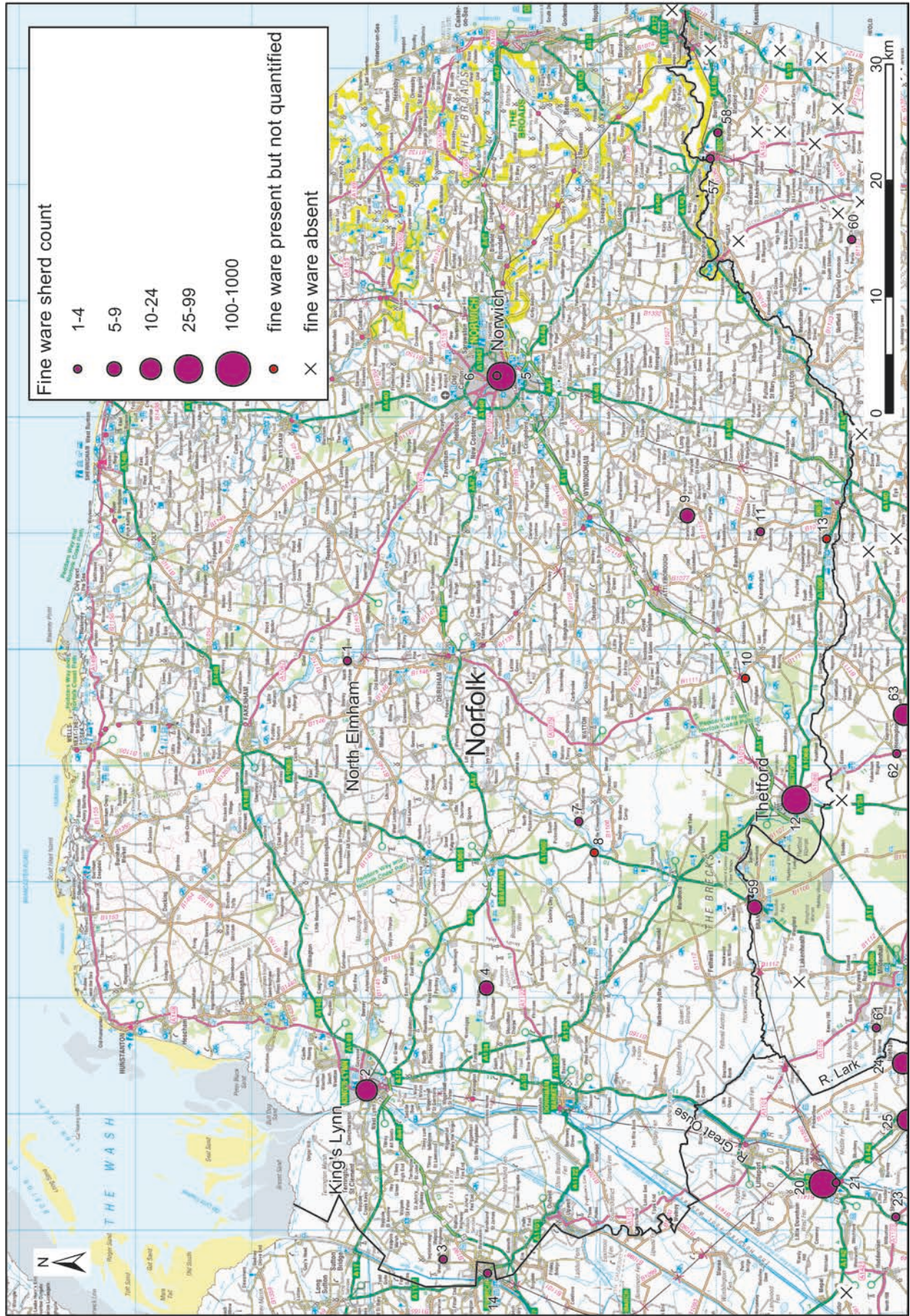
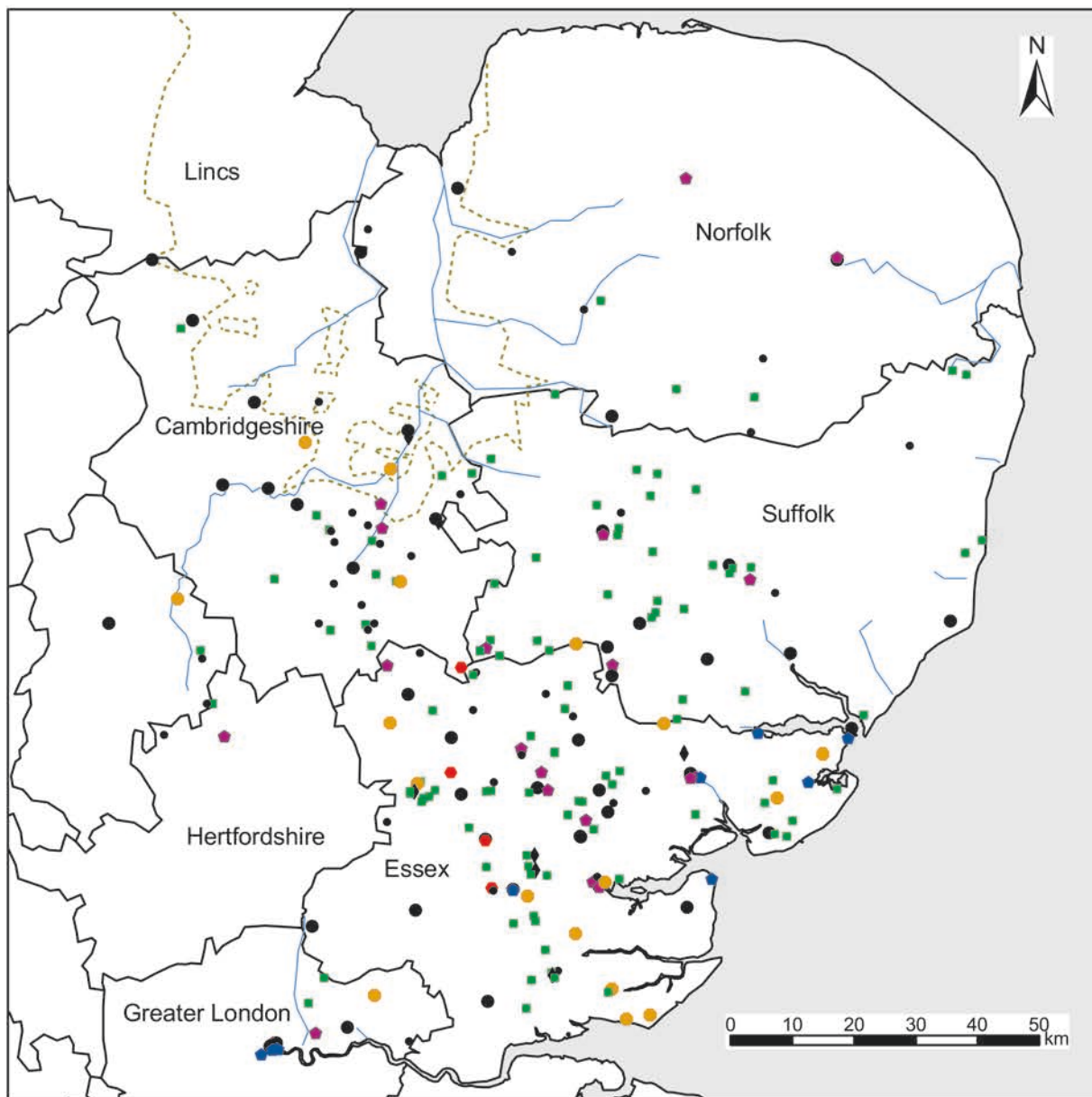


Figure 35 Fineware distribution in Norfolk by graduated symbols plotted onto modern OS map  
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Key	
● (Red)	Castle/other high status
● (Purple)	Church/religious house
■ (Green)	Farmstead/other rural
● (Yellow)	Hall/manor
◆ (Black)	Mill/other industrial
• (Black)	Other/unknown
● (Blue)	Port/quay/waterfront
● (Black)	Urban/suburban
• (Black)	Village/hamlet

Figure 36 Fineware distribution in East Anglia by site type  
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one of the furthest and most isolated find-spots and it is therefore likely that the Hedingham Ware was brought or ordered here directly rather than purchased from local markets. It is possible there was a connection with a religious house in the Hedingham area.

### **Distribution within Cambridgeshire**

(Figs 34, 36, 37)

A total of forty-two sites produced Hedingham Fineware. Of these only one, Cambridge, has quantities within band 5, with three sites at band 4; eight at band 3; five at band 2, and the remaining twenty-five sites designated as band 1, or as present without quantification. There are few sites in the north of the county, as evidenced by the negative find-spots (see Fig. 37), partly because much of this was thinly populated fenland. Wisbech, on the River Nene close to the Wash, is the most northerly find-spot in Cambridgeshire, with finds also at Peterborough at the fen edge, and the nearby settlements of Maxey and Orton Longueville. Finds also occur at the fenland settlements of Chatteris and Ramsey. All these northern sites have quantities within band 1, i.e. between one and four sherds, so trade in Hedingham Ware was unlikely to have been important in this area. At Ely, further south but still in the Fens, or to be more precise, an island in the Fens, Hedingham Ware is more common with two find-spots, one at band 3. As Wisbech was actually in the Fens, and Chatteris and Ely were on islands within the Fens, part of the journey must have been by water.

To the south of Ely and out of the Fens or on the fen edge, find-spots of Hedingham Ware increase and sherds occur in greater numbers. Huntingdon is the most westerly find-spot and all sites to the south-west of Huntingdon are negative (see Fig. 37), although Hedingham Ware does reappear in the county of Bedfordshire, which is to the south-west. There is something of a concentration around Soham (band 3), Isleham (band 3) and Burwell (sites at band 3 and 4) with another unquantified assemblage at Fordham. All these sites are to the north of the Suffolk town of Newmarket, from which roads lead into north Essex, so that Newmarket may have acted as something of a hub (no Hedingham find-spots are recorded at Newmarket, but this is because medieval assemblages have yet to be excavated, Sue Anderson pers. comm.).

Finds of Hedingham Ware at Cambridge, an important town and close to the border with Essex to the south-east, are not surprisingly, abundant. There are also large numbers of find-spots encircling Cambridge within a 10km radius (but with a slight dearth to the west), i.e. within walking distance of the town and its market (see below under 'Mechanisms of Distribution'). These sites are, from approximately north to south: Denny Abbey, Cottenham, Longstanton, Landbeach, Waterbeach, Oakington, Milton, Girton, Horningsea, Bottisham, Cherry Hinton, Fulbourn, Barton, Great Shelford and Sawston. If the radius is expanded to 15km, (around 9½ miles), then this brings in the settlements of Swavesey to the north-west of Cambridge, Bourn to the west, and Barrington, Whittlesford, Foxton and Duxford to the south of the town. Presumably the inhabitants of all these satellite settlements are buying their Hedingham Ware from Cambridge market. There is no particular pattern to the density of finds, with some of the most northerly sites, such as Swavesey, Waterbeach and Cottenham within

band 3, but sites closer to Cambridge, such as Milton and Girton within band 1, i.e. there is no evidence of quantities decreasing with distance from Cambridge.

Figure 37 shows an apparent arc of find-spots between Cambridge and Huntingdon at Girton, Oakington, Longstanton, Swavesey and St Ives. The first three sites are connected in the present day by minor road and track that, from their configuration, would appear to follow old field edges. However, Swavesey and St Ives are not connected by road and would have been separated by fen in the medieval period. It would also have been more sensible to transport the pottery along the Roman road (*Via Devana*) to the south of these sites, the present day A14.

Also revealed in Figure 37 is a line of find-spots along the Saffron Walden to Cambridge road, at Great Shelford, Sawston and Duxford, and this is the probable route the pottery took from the production sites. This is not the expected result as there is a more direct route along the old A604 from Sible Hedingham to Cambridge. Perhaps this pottery was being transported from the outlying, westerly production sites at Shalford Road and Blackmore End. The most south-easterly find-spot is at Castle Camps, on the border with Essex and Suffolk. This site does lie close to, but not on, the former A604.

Examples of Hedingham Coarseware have been identified at Cottenham to the north of Cambridge (where fineware also occurs). Hedingham Coarseware may occur elsewhere in Cambridgeshire, but due to the problem of differentiating the coarsewares, Oxford Archaeology East, the main archaeological unit in this area, now prefer the generic term Essex Reduced Wares (Paul Sperry pers. comm.).

Figure 36 shows that most of the find-spots surrounding Cambridge are rural or village sites. Further west they are more likely to be urban sites, i.e. Huntingdon and St Ives. Sites in the Fens and around the fen edge are also more commonly from towns, e.g. Wisbech, Peterborough, Ramsey, Ely and Swavesey. Other site types are less well represented; the neighbouring religious sites of Waterbeach and Denny abbeys on the fen edge produced moderate quantities of Hedingham Ware. There are finds from hall/manor sites at the fenland settlements of Colne and Stretham and at Dunmowes Manor, Fulbourn, near Cambridge, which unlike the fenland hall/manor sites produced considerable quantities of Hedingham Ware (band 4). Castle Camps in the south-eastern corner of Cambridgeshire was the only castle site in the county to produce Hedingham Ware.

### **Distribution within Suffolk**

(Figs 34, 36, 38, 39, 40)

A total of fifty sites produced Hedingham Fineware, comprising five sites in band 5, five sites in band 4, five sites in band 3, six sites in band 2 and the remaining twenty-nine sites in band 1. The most noticeable feature of the Suffolk distribution map (Fig. 38) is the scarcity of finds in the north-eastern half of the county and the large number of negative find-spots in this area. Of the sites that do occur in the north-eastern half, all are on or near the coast, or would have been on the coast in the medieval period (Leiston, Aldringham and Orford), or are on the River Waveney (Beccles and Worlingham) a navigable river at this point and close to the coastal port of

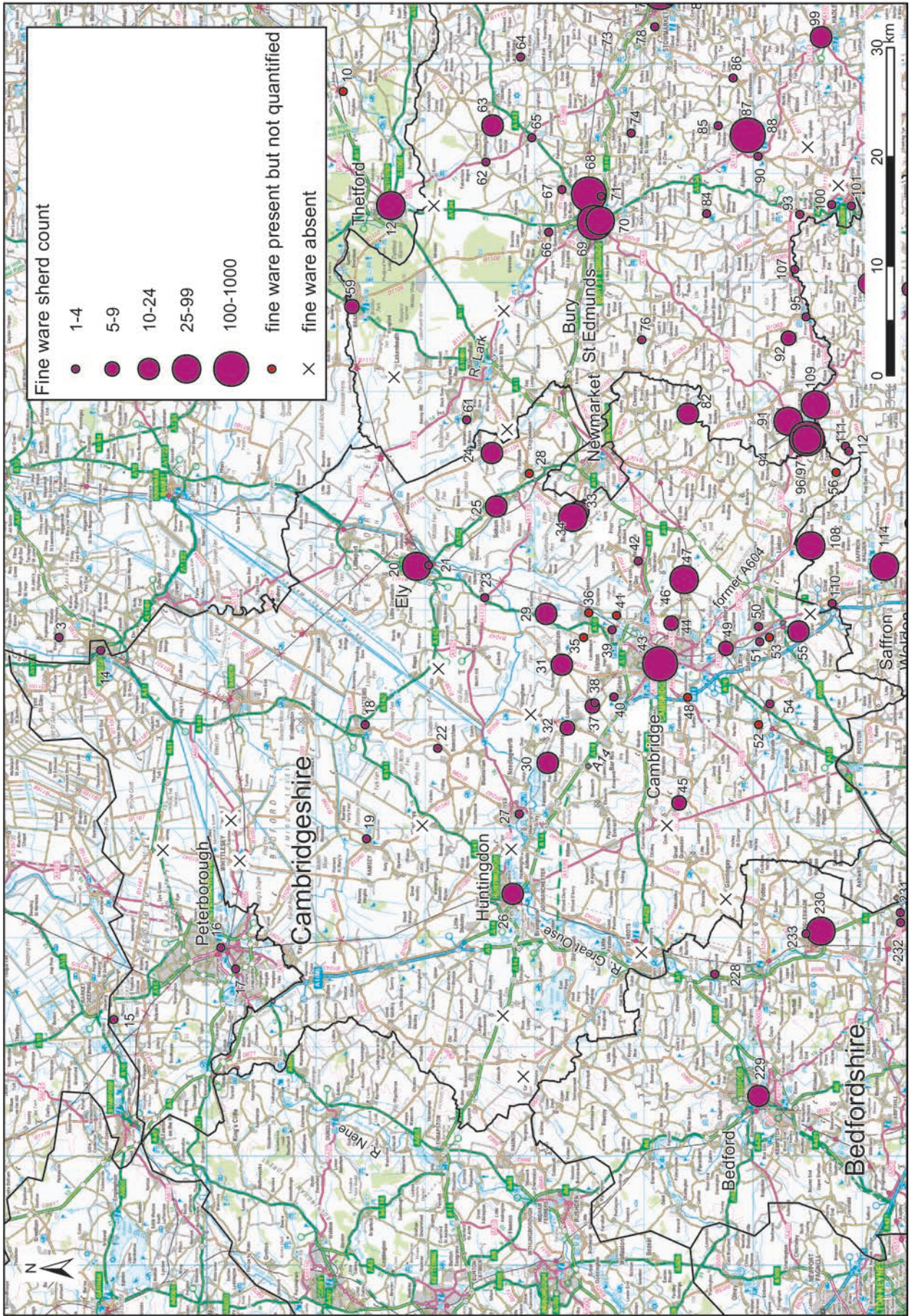


Figure 37 Fineware distribution in Cambridgeshire by graduated symbols plotted onto modern OS map  
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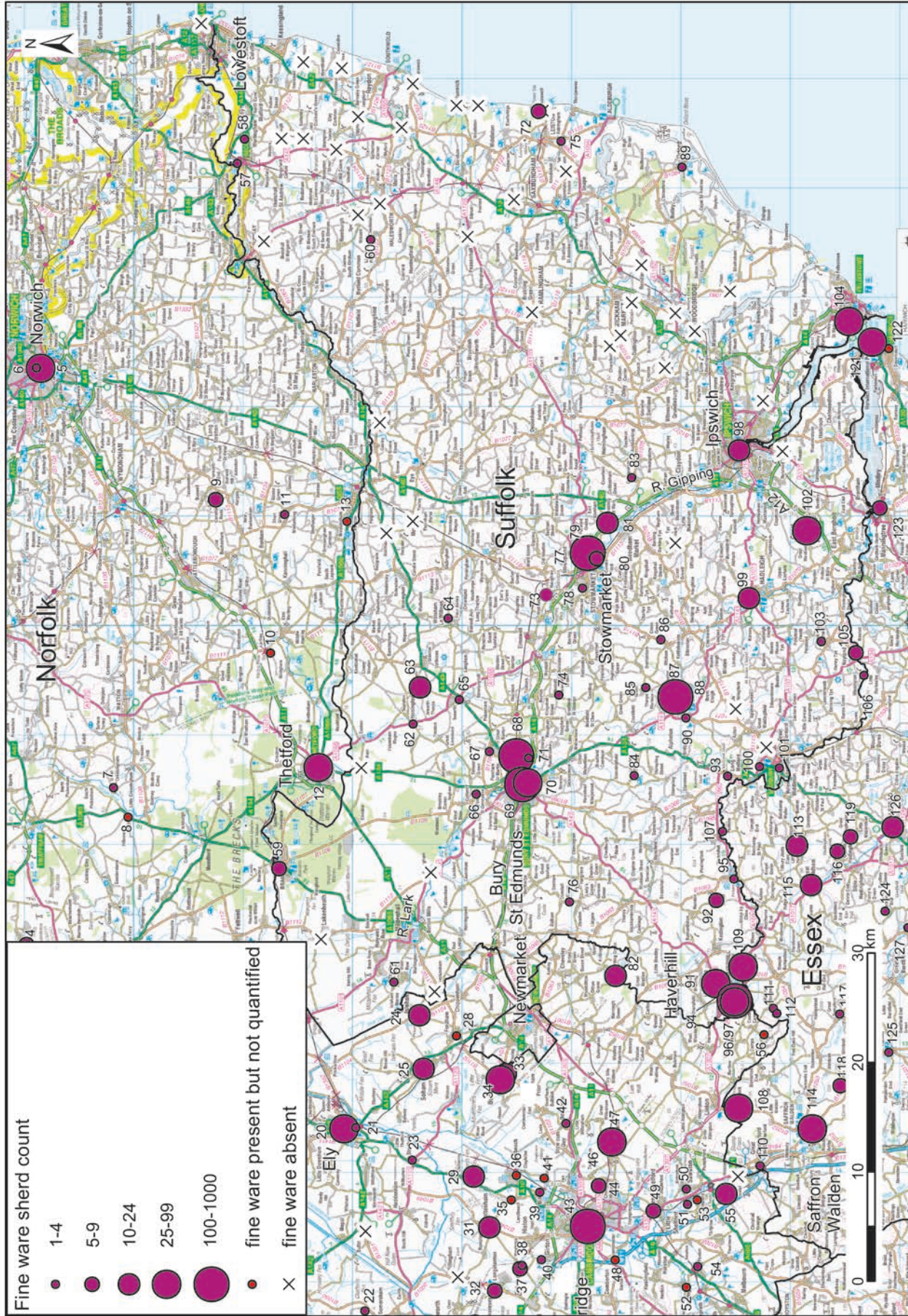


Figure 38. Fineware distribution in Suffolk by graduated symbols plotted onto modern OS map Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

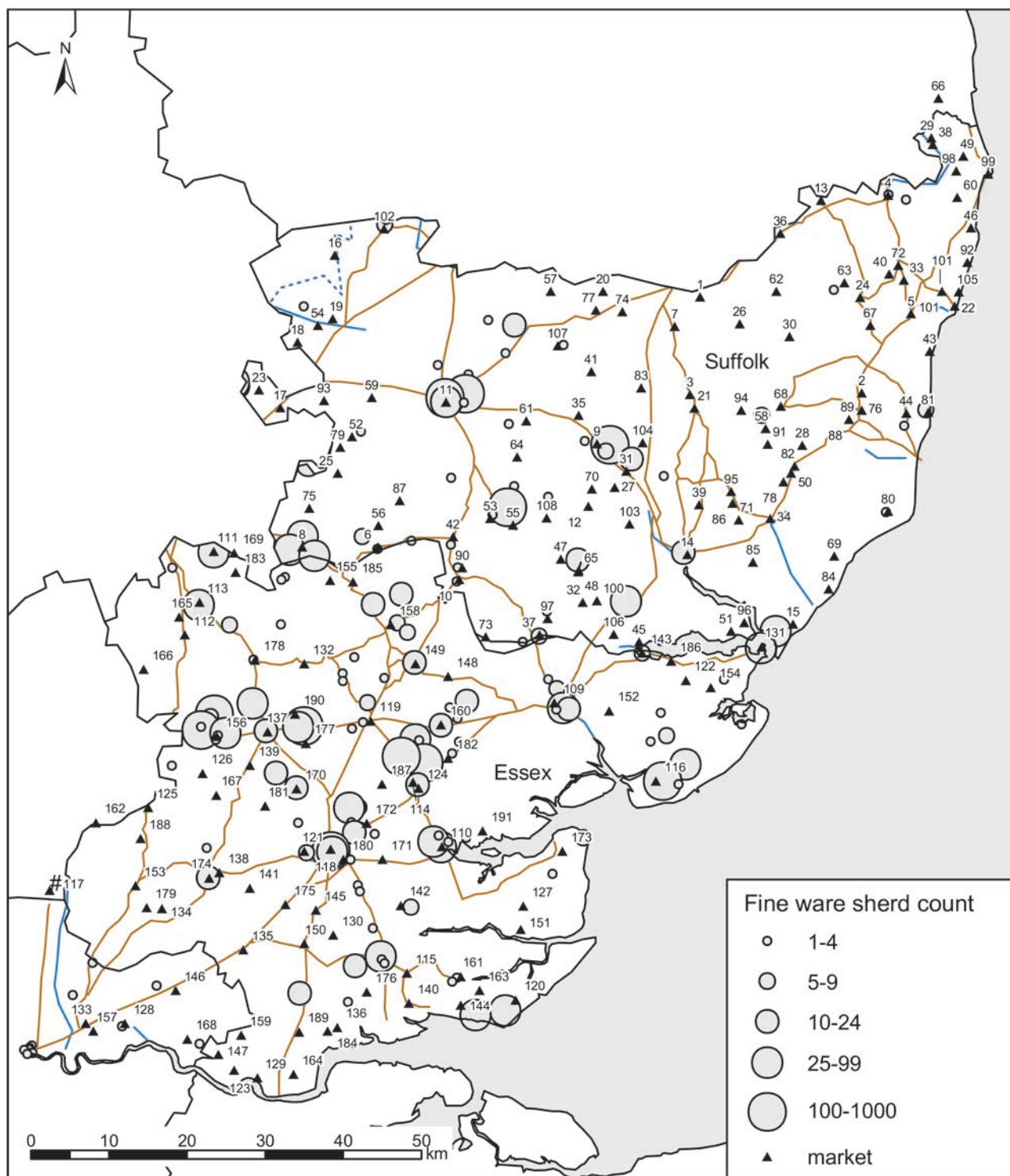


Figure 39 Fineware distribution by graduated symbols plotted against medieval markets in Suffolk and Essex, also showing old roads; see gazetteer for names of markets. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

Lowestoft. The only inland site is at Chediston, although this is on the river system of the River Blyth, which drains out at Southwold, so again this may have come via the coast. Figure 39 shows that north-east Suffolk was well-endowed with markets, so lack of a distribution network is not the reason for the scarcity of Hedingham Ware. The lack of Hedingham Ware may be explained by the 'Gipping Divide', a topographical and cultural boundary, whereby the land south of the River Gipping is similar to Essex and the land north of the River Gipping is like

Norfolk (Martin 2008, 198–206). North of the 'Gipping Divide', there were the Hollesley and Waveney valley pottery industries of north-east Suffolk, which may have kept out Hedingham Ware (Sue Anderson pers. comm.).

Hedingham Ware trade along the Gipping is evidenced by a number of finds on either side of the valley (at Ipswich, Coddendam, Creeting St Mary, Stowmarket and Haughley), although as the Gipping is not navigable much beyond Ipswich (Bailey 2007, 164) transport must have been by land not water. In the present day, the A45 runs



along the Gipping valley. Finds at Trimley St Mary near Felixstowe suggest that the pottery was traded up the coast, along the River Orwell to Ipswich and then along the Gipping valley, the final part of its journey by road. A find at Capel St Mary shows that Hedingham Ware may also have reached Ipswich from Colchester via what is now the A12.

Very large quantities of Hedingham Ware have been found at Bury St Edmunds, from a total of twenty-four sites. Bury was an important town during the Middle Ages and well connected by road to the other major towns of Newmarket and Cambridge to the west, Thetford to the north and Stowmarket and the port of Ipswich to the east. There is also a direct north–south road to the Hedinghams, and finds along this road suggest this was the main artery of transportation (with finds at Sudbury, Long Melford and Lawshall).

All the find-spots in Bury St Edmunds are scattered within the medieval town, with much from the cathedral, which was close to the medieval market place. There is no evidence of Hedingham Ware being sold directly from the Hedingham road as it enters Bury, so it appears that Hedingham Ware was brought into the town and then sold at the market, rather than sold from the roadside. Unlike Cambridge, the evidence for Hedingham Ware at satellite villages is lacking but this is because there have been few excavations in the area. All the sites that have been excavated within a 10km radius of Bury (i.e. within marketing distance) have produced Hedingham Ware: Ixworth, Great Barton, Fornham St Genevieve, Eldo House Farm and Hesselst.

Ixworth, Honington and Bardwell to the north-east of Bury are on the Black Bourn, which drains northwards to the Little Ouse River. Walsham le Willows is on a tributary of the Black Bourn, but also on a number of east–west and north–south routes.

Bury is on the River Lark, which drains north-westwards into Ely and the Fens, and therefore is not a route by which Hedingham Ware could have entered the town. A small amount of Hedingham Ware occurs at Mildenhall, also on the Lark and closer to Ely, and this may have been traded via Bury, which would mean the Hedingham Ware was traded by land, and then off-loaded onto boats. The most northerly find of Hedingham Ware in Suffolk is at Brandon to the west of Thetford, on the Little Ouse River.

Lavenham, Thorpe Morieux, Hitcham, Preston St Mary and Hadleigh are all find-spots in the valley of the River Brett, which drains into the River Stour just to the west of Stratford St Mary, so this is another route for Hedingham Ware distribution. The Stour is only navigable as far as Cattawade Bridge, just beyond Manningtree (Bailey 2007, 164) so water transport is unfeasible, however there are present-day roads that run the length of the Brett valley (A1141, B1070). Kirtling Green and Dalham are find-spots in west Suffolk about 10km to the east of Newmarket and both on the River Kennett, which also drains southwards into the Stour.

There are a number of finds along the east–west Stour valley, which forms the boundary between Suffolk and Essex, at Clare, Sudbury, Nayland and Haverhill, the latter on a tributary of the Stour, where Hedingham Ware is extremely common. There may have been some trade along the valley as evidenced by a number of markets along the Stour, but like all rivers, the Stour must have

been something of a barrier to trade and all these sites are at crossing points. There are also a number of find-spots on the Essex side of the Stour, at Pentlow Hall and Stratford St Mary (below).

Examples of Hedingham Coarseware have been found at nineteen sites in Suffolk (Fig. 40), although some of these identifications are tentative. The coarseware is not as ubiquitous as the fineware, but it is spread far and wide, getting as far north as Bury St Edmunds. For the most part it occurs at the same sites as the finewares. The additional find of coarseware at Great Blakenham provides another find-spot along the Gipping valley. A find at Farnham near Saxmundham is north of the ‘Gipping Divide’, but like the fineware is relatively close to the coast. Finds of coarseware are only abundant at the sites of Haverhill, Cedars Park near Stowmarket and at Preston St Mary where both coarse and finewares are abundant.

The distribution of Hedingham Ware in Suffolk would appear to be mainly a function of geography as the Stour valley, the Gipping/Lark valleys and the Waveney/Little Ouse valleys, which penetrate deep into the central areas of the county, shape the three main east–west routes across the south, middle and north of the county respectively (Bailey 2007, 2). Hedingham Ware is also to be found on the tributaries of these rivers which form many of the north–south routes (Bailey 2007, 2).

It is noticeable in Suffolk that the majority of sites are farmsteads or other rural site types (see Fig. 36). Often the quantities of pottery at these rural sites are just as great, or greater, than at urban sites. Four rural sites — Moreton Hall at Great Barton, Cedars Park near Stowmarket, Priory Farm at Preston St Mary and Burton End near Haverhill — are all within band 5. This reflects the efficient marketing systems in place and the importance of the rural economy in Suffolk (Bailey 2007, 152–5).

## Distribution within Essex

(Figs 34, 36, 39, 40, 41)

A total of 121 sites produced Hedingham Fineware, comprising: eight sites within band 5, eighteen sites within band 4, fourteen sites within band 3, thirteen sites within band 2, fifty-five sites within band 1, and thirteen sites where pottery is present but unquantified (see Fig. 41).

Although common in the very northernmost parts of Essex, the greatest concentrations are along the A120, the Roman road of Stane Street, running from Bishops Cleeve in the west to Colchester in the east. The large number of finds must be partly due to the numerous excavations especially in the area of Stansted, Takeley, Dunmow and Stebbingford, which took place due to the expansion of Stansted Airport, the construction of the new A120, and new housing. Further to the eastern end of the A120, there have been smaller numbers of finds, at Braintree and Coggeshall. Fineware is also very common at Colchester, situated both on Stane Street and the old road to Cambridge (previously the A604), which passes close to the production sites at Sible Hedingham. North of the A120, although common, find-spots of Hedingham Ware are not as dense, although this could be due to lack of excavation in this very rural part of Essex. Finds occur on the:

- Dunmow to Cambridge road (Great Easton, Thaxted, Saffron Walden, Great Chesterford)

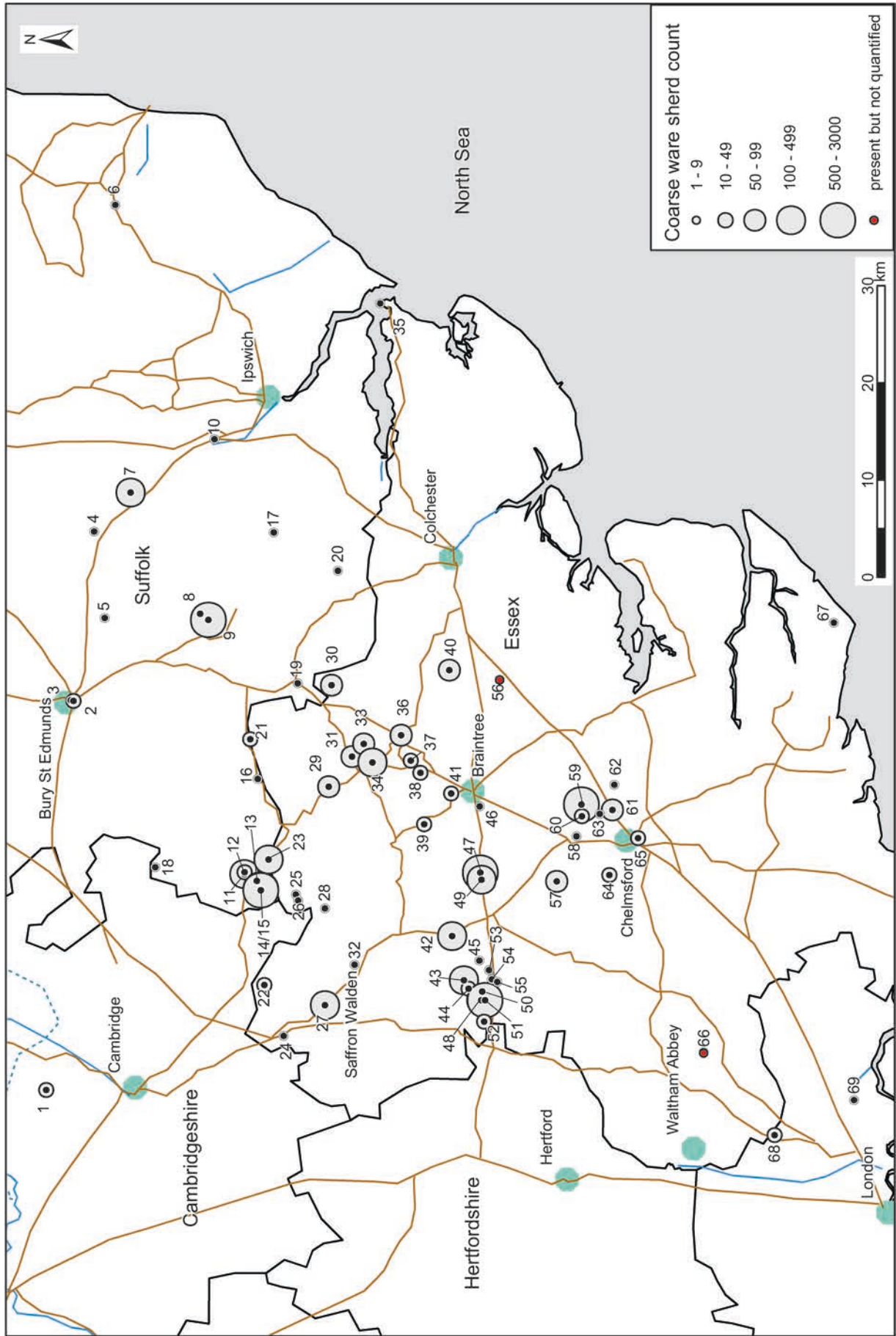


Figure 40 Coarseware distribution by graduated symbols showing county boundaries and routeways (all sites)  
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- Braintree to Saffron Walden road, which for most part follows the River Pant, and is close to the outlying production site at Shalford Road (Shalford, Wethersfield, Great Sampford, Wimbish)
- Braintree to Haverhill road, which passes through the main Hedingham Ware production sites (Bocking, Gosfield, Halstead, Castle Hedingham, Great Yeldham, Sturmer).

There are also a number of sites at the northern border, all on roads that lead into Cambridgeshire or Suffolk (Hadstock, Helions Bumpstead, Sturmer, Pentlow Hall, Stratford St Mary). Finds are also common at the Stour estuary ports on the Essex side, at Manningtree and Harwich.

There are a relatively large number of find-spots in the Tendring peninsula, part of the hinterland of Colchester and to the east of the town (Great and Little Bentley, Weeley, and further towards the coast, at Little Oakley, Beaumont, Kirby-le-Soken and at St Osyth where large amounts of Hedingham Ware have been found). The finds around the coast are more likely to have arrived via rivers and coastal transport rather than overland via Colchester. There are three sites with small amounts of Hedingham Ware at locations that could also be considered part of Colchester's hinterland, Langenhoe to the south of Colchester, Great Tey to the west and Mile End to the north.

Finds of Hedingham Ware are also frequent, sometimes in large quantities, at sites along the old Roman road from London to Colchester (now the A12) between Colchester and Chelmsford (at Feering, Kelvedon, Witham, Boreham, Springfield and Chelmsford). Large amounts of Hedingham Ware were also found at Cressing Temple and sites at Rivenhall, both situated close to the road between Braintree and Witham, which follows the Brain valley (the present-day B1018).

Further finds of Hedingham Ware in the northern half of the county occur at Writtle just to the west of Chelmsford and at High Easter and Pleshey, north-west of Chelmsford and in the Can and Chelmer valley systems.

Frequent finds at the port of Maldon on the Blackwater estuary, and neighbouring Heybridge and Goldhanger are further evidence of coastal and riverine trade. The Tiptree ridge, an area of high ground to the east of the A12 between Maldon and Colchester, is virtually devoid of finds. It is also devoid of markets (Fig. 39) and it is likely that this area of marginal heathlands was only sparsely populated at this time. Likewise the Dengie peninsula is sparsely served by markets and finds of Hedingham Ware are rare, with the exception of Bradwell and Tillingham, both near the coast.

In the southern half of Essex there are quite a large number of finds along the route of the A130 between Chelmsford and Canvey Island on the Thames estuary, most of which came to light during recent excavations for the A130 bypass (Dale *et al.* 2005) (at Great Baddow, Sandon, West Hanningfield, Runwell, Rawreth, Shotgate and Canvey). There are also finds at Horndon-on-the Hill and in the area of Wickford and Basildon in south Essex, although they did not necessarily come via Chelmsford. Places such as Basildon, Horndon and Canvey would have had easy access to the River Thames and perhaps acquired their pottery via riverine trade. Finds in this area are

unexpected as this is in the heartland of Mill Green Ware distribution. Finds of Hedingham Ware at Rochford on the River Roach and the hall sites at North Shoebury and Southchurch on the Thames estuary constitute more definite evidence of riverine and coastal trade.

Finds are much more scarce in the south-western corner of Essex although unlike the Dengie and Tiptree ridge this area is reasonably well-served with markets and not under-populated. One exception to this is at Chipping Ongar on the Chelmsford to Epping road and at the intersection of a north-south road up to Dunmow on Stane Street, another possible trade-route that bypasses Chelmsford. There are reportedly finds at Waltham Abbey on the River Lea and several sites within that part of Essex, which is now in Greater London, but all with very small amounts of Hedingham Ware (i.e. within band 1). Two of these sites, Collier Row and Stratford, are on the London to Colchester Roman road (the A12).

Finds of Hedingham Coarseware are, as would be expected, common in Essex, with a total of forty-nine find-spots (Fig. 40). The distributions are not as reliable as those of the fineware, as for assessment reports, coarsewares are not always identified by place of manufacture but lumped under the general category of medieval coarseware or medieval grey ware, so that Hedingham Coarseware might be much more abundant than the data suggests. The most striking feature of the coarseware distribution map for Essex is the lack of find-spots in the southern half of the county, with finds only at North Shoebury near Southend, a couple of tentative identifications in that part of Essex which is now in Greater London, and one find-spot at Theydon Mount near Epping. Neither is there any Hedingham Coarseware identified in the Tendring peninsula, apart from at the port of Harwich. For the most part, coarsewares occur at sites where there are also finewares, but there are some additional find-spots with coarsewares only. In the very north of Essex these are at Hempstead and Great Henny. There are find-spots close to the production sites at Sible Hedingham and Great Maplestead. In fact it is possible that Great Maplestead is another production site, as out of the 170 medieval sherds present, all but two are of Hedingham Coarseware. Finds at Rayne and Bocking provide additional find-spots along Stane Street and further south the coarseware occurs at Little Waltham between Chelmsford and Braintree. The density of finds does not appear to follow any particular pattern with the greatest concentrations around Stansted/Takeley and Stebbingford in the area of Stane Street, and at Boreham near Chelmsford. These concentrations are no greater than those at some of the Suffolk sites (see above).

Figure 36 shows that in Essex, as in Suffolk, find-spots at farmstead or other rural sites (forty-nine sites) by far outnumber finds at urban sites (twenty sites) and like Suffolk, the pottery can be just as abundant at rural sites as it is at town sites. Finds at villages/hamlets are far less common but this is because there are few villages in Essex as settlement tends to be dispersed. Finds are relatively common at hall/manor sites (twelve sites) especially those near the coast or on navigable rivers, i.e. Little Oakley Hall, Heybridge Hall, and Rochford Hall (all within band 1), and North Shoebury Hall and Southchurch Hall in the Thames estuary (both in band 4). At a number of towns, Hedingham Ware occurs at different site types within the town, i.e. urban, castle and religious sites. These have

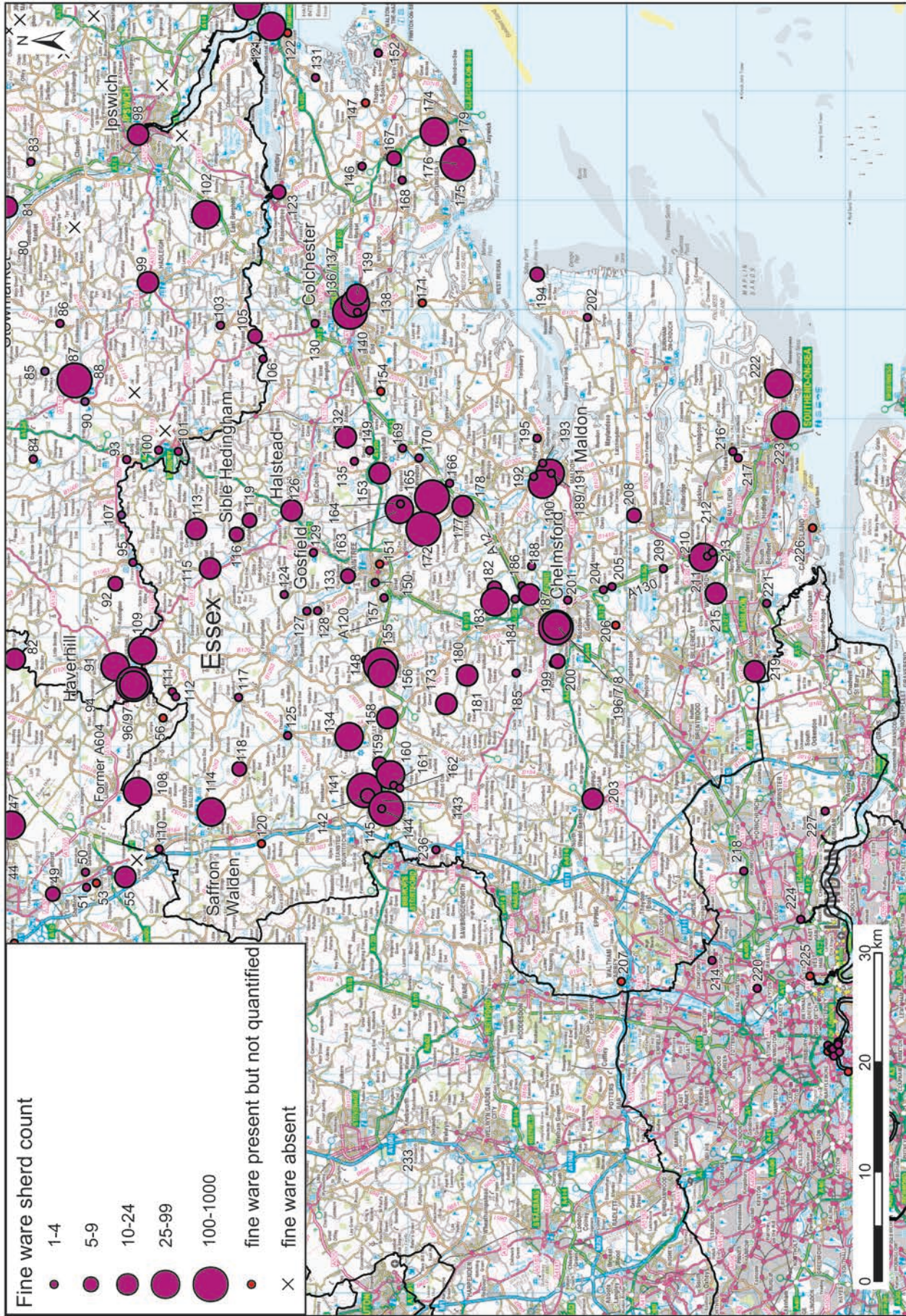


Figure 41 Fine ware distribution in Essex (including historic Essex) by graduated symbols plotted onto modern OS map Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

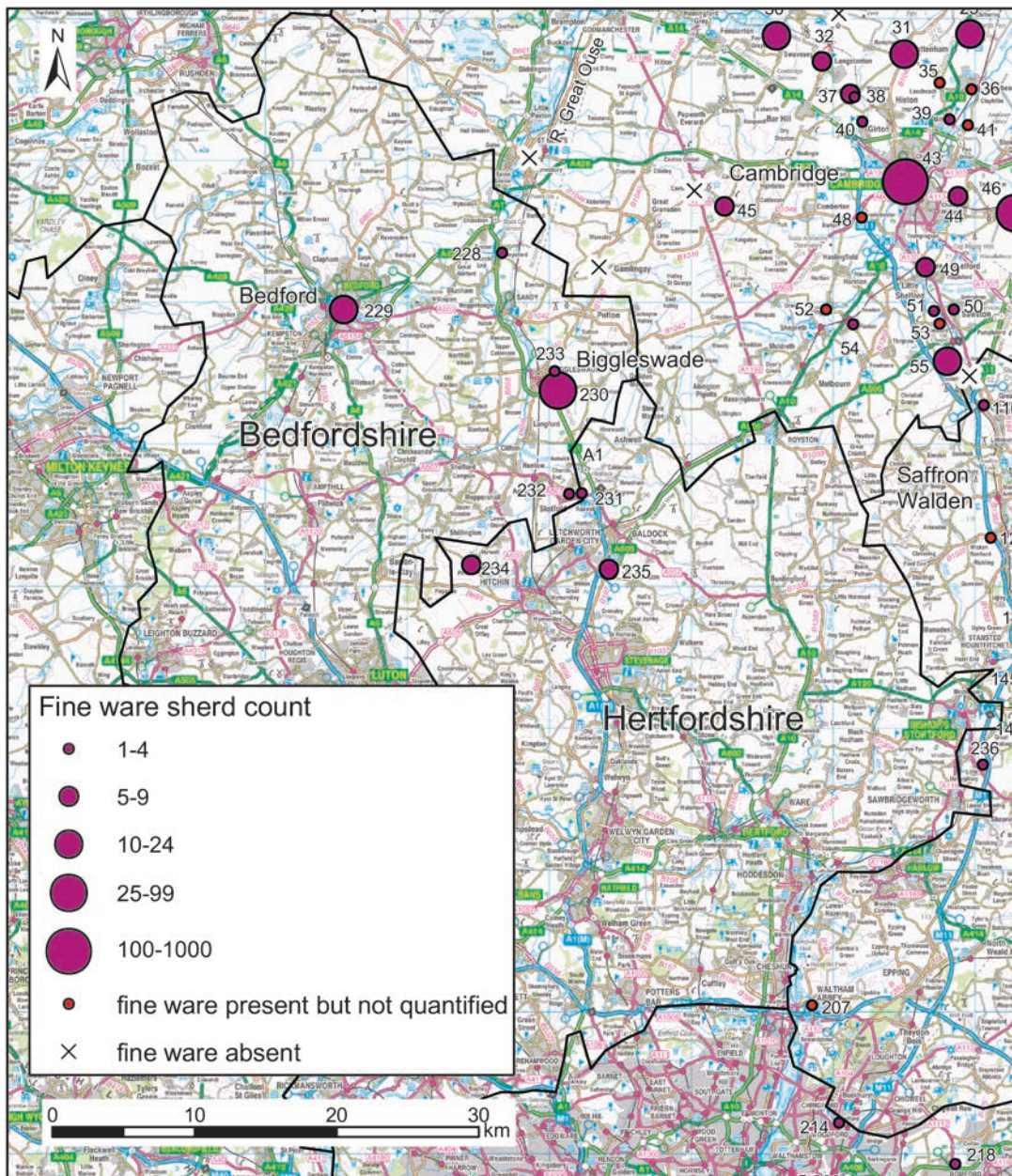


Figure 42 Fineware distribution in Bedfordshire and Hertfordshire by graduated symbols plotted onto modern OS map  
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been briefly compared to see whether there are any differences by site type, but few definite patterns emerged. In general, if Hedingham Ware is common in a town, it tends to be common at all site types within the town, as at Chelmsford. Discrepancies did however emerge, for example there was very little Hedingham Ware at the Carmelite friary in Maldon, but a great deal at Beeleigh Abbey in the same town. This can be explained by the fact that the Carmelite friary was not founded until the late 13th century, when in this part of Essex Hedingham Ware was in decline. The size of excavation is also a factor in the amount of pottery produced.

Finds of Hedingham Ware at church/other religious sites in Essex are not uncommon, with a total of eleven such sites. Three castle sites, Great Easton, Pleshey and Colchester, and another high status site, King John's Hunting Lodge at Writtle, all produced Hedingham Ware. Hedingham Ware has also been found at five industrial

sites, three of which are windmill complexes. From the evidence, Hedingham Ware occurs at all site types regardless of function or status.

### Distribution within Bedfordshire (Figs 34, 42)

Bedfordshire is at the western limit of Hedingham Ware distribution, and a total of only six excavations have produced finds of Hedingham Ware. It has been found at several sites in Bedford, situated to the west of Cambridge and on the River Great Ouse (with a total quantity within band 3). Small amounts were found at a hall site at Tempsford Park near Sandy, also on the River Great Ouse and the Great North Road (the A1, formerly a Roman road). Two find-spots (Kings Reach and Stratton) are near Biggleswade, and there are another two sites at Stotfold,

one of which is within band 4, indicating that Hedingham Ware was reaching this site in significant quantities. Both Stotfold and the sites near Biggleswade are on the A1 and on the River Ivel, which drains into the River Great Ouse. No coarsewares have been identified in Bedfordshire.

### Distribution within Hertfordshire

(Figs 34, 42)

Although closer to Essex than Bedfordshire, very few finds of Hedingham Ware have been found in Hertfordshire. This may be partly due to lack of excavation, but the lack of Hedingham Ware may be real as the River Lea which forms the border between Hertfordshire and Essex appears to act as a barrier — very little Essex pottery of any type gets into Hertfordshire and *vice versa*. Hedingham Ware certainly gets very close to the Hertfordshire border, its most westerly Essex find-spot being Little Hallingbury only 2km from the Hertfordshire border. In Hertfordshire, Hedingham Ware has been found at two sites, Pirton, a village site not on a main road, but only about 10km to the south-west of Stotfold in Bedfordshire (see above). The second site is a Leper hospital at Clothall, just to the south-east of Baldock, which again is on the A1, so that for Bedfordshire and Hertfordshire there appears to be a cluster around the A1, something of a puzzle as this north–south route passes well to the west of Essex and the Hedingham kilns. However, Clothall is on an east–west road into Essex which intersects with the road to Cambridge at Newport, Essex. The pottery at the other, more northerly, sites in Bedfordshire and Hertfordshire could also have travelled westwards from Cambridge. No coarsewares have been identified in Hertfordshire.

### Distribution in London

(Figs 34, 43)

Hedingham Ware has been found at thirteen sites in London, but only in small amounts, all within band 1 (where quantified), and in some cases the identification is tentative. All but two of the thirteen sites are in the City of London, with one at London Wall and one at Westminster. About half the sites are on the Thames waterfront, and the remaining sites are less than 1km from the Thames, some considerably less, the London Wall site being the furthest out. The find at Little Britain is from a priory site (St Bartholomew's). This distribution suggests that most, if not all, of the pottery arrived via the Thames. No coarseware has been identified in London.

### Changes in distribution patterns over time

As noted in the methodology, an attempt was made to plot the sites with datable types of Hedingham Ware in order to see how distribution changes through time, but due to the paucity of data, the plots did not show any discernible patterns. It might be expected that the earliest types of Hedingham Ware would occur not too far from the production sites and as the industry developed, later types would be expected further afield as trade expanded, but the data do not show this.

Fragments from London-style early rounded jugs (date category 1, mid 12th to *c.*1200) were found as far

north as King's Lynn and Marham in Norfolk. In addition, there are several examples of Scarborough-style and undifferentiated early rounded jugs (of date category 2, late 12th century to 1250) in Suffolk (Walsham le Willows, Bury St Edmunds, Stowmarket, Haverhill) and Cambridgeshire, including fenland Cambridgeshire (Ely, Stretham, Isleham, Denny Abbey, Burwell, Densett). Conversely at some sites in northern Essex not far from the kilns (e.g. Shalford and Halstead), the earliest Hedingham Ware to appear belongs in date category 5, the late 13th or 14th century.

It was hoped that the data would show whether trade in Hedingham Ware continued later in some areas than others. Again no particular pattern emerged due to the lack of data. Of the two sites in Norfolk with datable Hedingham Ware, the latest is an example from a stamped strip jug from Winfarthing (date category 4). At a number of Cambridgeshire sites, trade must have continued into the late 13th or 14th century as there are three sites in date category 5, including the relatively northern site of Ely (the others being Fulbourn and Sawston) and two sites within category 4 (Denny Abbey and Burwell). In Suffolk, Haverhill and Sudbury close to the Essex border produced late 13th to 14th century pottery (category 5), as did Cedars Park near Stowmarket. Further north at Walsham le Willows, Ixworth, Great Barton and Bury St Edmunds, the latest pottery belongs to date category 4, so this is slight evidence of trade to north Suffolk falling off in the later period of Hedingham production.

In central and southern Essex, the amount of Hedingham Ware is thought to decline from the mid 13th century because of competition with Mill Green Ware (Drury *et al.* 1993, 89), and although this may be largely the case, category 5 find-spots do occur in this area, at Chelmsford, Chipping Ongar and Horndon. No datable fineware types were found in London or Hertfordshire, but in Bedfordshire there are examples of late 13th to 14th century Hedingham Ware.

Coarseware cooking-pots can be dated by rim type. Unfortunately, there was only one site outside Essex with datable coarseware, at Bury St Edmunds, where H1 cooking-pot rim-types occur which were current throughout the 13th century (coarseware date category 4). The data therefore applies almost exclusively to Essex. There are only two sites with 12th century coarseware (date category 1), at Pentlow Hall in the north of the county and Little Dunmow on Stane Street. The scarcity is unsurprising as these types must represent the very beginnings of Hedingham Ware production. Rim types datable to *c.*1200 are rather more widespread, occurring at sites at Boreham in central Essex, well away from the kilns, even at this early date. Late 13th to 14th century rim types, although common at sites on Stane Street and to the north of Stane Street, do not occur in central Essex, so unlike the finewares this would provide evidence for Drury's observation that Hedingham Ware declines in central Essex from the mid 13th century.

Although this exercise of looking at changes in distribution over time has been of limited usefulness, it does show that the earliest type of Hedingham Ware appears at two of the furthest sites (King's Lynn and Marham), suggesting that this was an important industry from the outset.

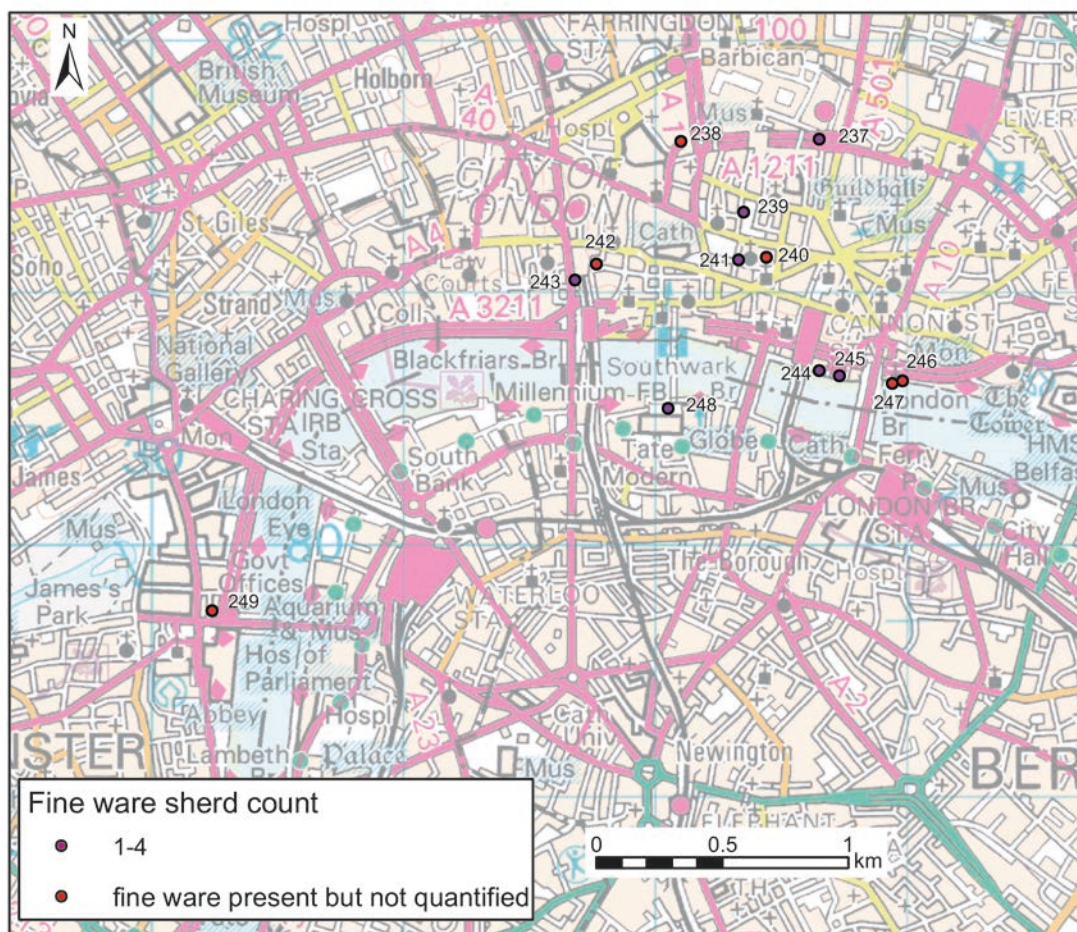


Figure 43 Fineware distribution in London by graduated symbols plotted onto modern OS map. Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no. LA100019602

## Discussion of distribution

This additional distribution data confirms the pattern already outlined by Cotter's study (Cotter 2000, 90, fig. 53) whereby finds are concentrated in north Essex, the southern half of Cambridgeshire and south-west Suffolk. Cotter's observation that the triangular area between Chelmsford, Cambridge and Ipswich defines its principal market area still holds true. This study has also shown that Hedingham Ware was moved around the Fenland Basin, albeit in small quantities and that there was significant distribution in central southern parts of Essex.

The most northern site is North Elmham, around 93km from Sible Hedingham. Bedford is the most westerly at 75km from the production centres. Sites on the Suffolk coast are the most easterly (75km distant) and Westminster the most southerly (73km distant). There is no evidence of Hedingham Ware in Northamptonshire (Paul Blinkhorn pers. comm.) and it has yet to be definitely identified in Lincolnshire (Anne Boyle pers. comm.). A small amount of Hedingham Ware has been found on the continent at Bergen in Norway (Nita Farmer pers. comm. to John Cotter) and it has also been found at sites in Ireland (Clare McCutcheon pers. comm. to John Cotter) but there is no evidence of significant foreign trade.

Its occurrence at North Sea coastal sites and sites on navigable rivers that drain into either the North Sea or the

Fenland Basin also show water transport was important. Where there are no navigable rivers, roads or tracks must have been used. It may be possible that small, flat bottomed craft were used on minor rivers. As many roads follow river valleys it is not possible to tell from the distribution plots whether roads or rivers were used. However as there was a network of roads and tracks in the medieval period, it is most likely that these were used.

## The mechanisms of distribution

### *Distribution by the potters*

The distribution plots show a widespread distribution indicating sophisticated marketing systems and the use of middlemen. However, it is worth starting by saying something about how the potters may have distributed the pottery themselves. The most obvious method was for the potters to take their wares to the local markets to sell, especially as both Essex and neighbouring Suffolk had an extensive network of markets in the medieval period (see Fig. 39).

The maximum distance allowed between markets was defined by Bracton, a 13th century lawyer, as  $6\frac{2}{3}$  miles (around 10km), this being the distance which a person could walk, transact business and return in one day (Walker, W., 1981, 7). Documentary evidence for the market at Aveley (Essex) shows that in the 17th century, trading began at 9am and not before (Walker, W., 1981, 15). If such hours were kept in the medieval period, then

during the long hours of daylight in the summer months, traders could travel for some distance and still be in time for the start of the market, although the distances covered in the winter would be considerably less, due to the condition of the roads, as well as the short period of daylight.

If the potters travelled this maximum distance of  $6\frac{2}{3}$  miles, this would bring the potters at Sible Hedingham, Halstead, Gosfield and Shalford within the reach of Thaxted market in the west, Ridgewell market in the north, Earls Colne market to the east and Braintree and Coggeshall markets on Stane Street to the south, not to mention the markets less than  $6\frac{2}{3}$  miles distant.

If the potters carried their wares on their backs, as did the Staffordshire crate men of the 17th century (Brears 1971, 41) their range would have been rather more limited. If however, they had a horse and cart, as did the potter in the ballad of Robin Hood (Dobson and Taylor 1976), they could go somewhat further. Considering the breakable cargo, and the unevenness of medieval roads and trackways, the horse would probably go at walking pace, no more than 4mph. Another factor is how many hours the potters were prepared to travel. Our pedestrian market-goer, walking the maximum stipulated distance of  $6\frac{2}{3}$  miles, even at a brisk walking pace of 3mph with no breaks, would have taken around  $2\frac{1}{4}$  hours, demonstrating that people were prepared to travel for some time. Our putative potters' horse and cart would have travelled a maximum of 9 miles (14km) in this time, which would have taken them as far as Sudbury and, just about, to Haverhill markets in Suffolk, and to Takeley market in the west (which would have serviced the Stansted sites). To the south-east the horse and cart would have taken the potters to markets on the London to Colchester road at Witham and Kelvedon. In addition, Pleshey market to the south may have been just within range. If there were pottery production sites all over the Colne Basin, then this would increase the potters' range still further, so that they could have covered much of the northern half of Essex themselves (but not to the east of Colchester), without the need for middlemen, although this does not mean that middlemen were not used.

It is also possible that the potters journeyed for several days to reach markets and seasonal fairs further afield. This may not have made economic sense, but perhaps the potters did it because they enjoyed it; it made a welcome break from potting and there were numerous entertainments and diversions at these fairs. However, this would not account for the widespread distribution revealed in these plots, nor the large quantities found in some Suffolk and Cambridgeshire towns.

#### *Distribution further afield*

Third parties of some description are certain to have been involved in the transport and distribution of Hedingham Ware. One mechanism of long distance trade were the drovers' routes, driving livestock across country to sell at market. One such drovers' route in East Anglia is published by Wadling (1992) and is reproduced on Fig. 34. The route comes eastwards through Cambridgeshire, into Norfolk, to the east of Norwich (possibly along an old Roman road known as Fen Road), where the drovers' route turns south-west down through Suffolk to Bury St Edmunds, Sudbury and Halstead, where it would have passed close to the kilns. The route continues to

Chelmsford from where it appears to follow the London to Colchester road to east London. Wadling notes that the drovers brought trade goods to sell on their journey and that long distance travellers attached themselves to droves for protection and company. It is possible that these goods included Hedingham Ware and even that the potters travelled with them, but if the drovers did trade in significant amounts of Hedingham Ware, it would be expected that more Hedingham Ware would be found in Norfolk and north-east Suffolk. In addition the drovers would have used the same routeways as any other trader, making them invisible in terms of the map evidence.

Cotter (2000, 90) has suggested that Hedingham Ware distribution was associated with the East Anglian wool trade. This may well be the case as in 1200, Bury St Edmunds and Sudbury were both important wool towns, to be followed later by Clare, Ipswich, Hadleigh and Lavenham (Bailey 2007, 158). These are all towns with finds of Hedingham Ware, and apart from Sudbury and Clare, it is present in significant quantities. So there does seem to be an association with the wool trade, at least for a time; the wool trade rose to greater prominence in the late medieval period but Hedingham Ware seems to have disappeared by the mid 14th century. There was also a textile industry in the Hedingham area (see above p.31), so this may have reinforced trading links. Colchester, in Essex, was also an important wool town and large quantities of Hedingham Ware have come from excavations within the town (Cotter 2000, 90). Perhaps, once the wool merchants had delivered their cargo to London, they called at the Hedingham potteries on their return journey to fill their empty wagons with goods to sell on the way back. This would also explain why so little Hedingham Ware finds its way to London, the traffic was one way, and that way was north (or east in the case of Colchester).

Suffolk was a commercialised and industrialised county in the Middle Ages with safe and well maintained roads, an extensive regulated market network and a high population. Carters plied the roadways and boatmen the waterways (Bailey 2007, 154). Carting of goods was extremely common, much more so than in other counties. Low value goods were generally carted short distances, but high value goods travelled much further, for example wine from Ipswich was regularly carted to Lakenheath, then shipped to Ely (Bailey 2007, 167). Occasionally, low value goods such as food stuffs were transported long distances (Bailey 2007, 175). These Suffolk traders evidently had an entrepreneurial spirit, and may have traded in any goods that would sell. To make a profit they would have wanted a full cartload, thus Hedingham Ware could have piggy-backed a ride with any number of traded goods, not just wool.

Documentary evidence gives examples elsewhere in the country of pottery being carted long distances from production site to consumer, not in association with any other goods (summarised by Moorhouse 1982, 110). At a production site at Farnborough, a carter was hired to transport pottery 24km over rough terrain to Windsor Castle and at Toynton, Lincolnshire, potters sent cartloads of pots to markets 50km distant, although from this reference it is not clear whether the potters hired carters or carted the pottery themselves.

Cambridge and Huntingdon on the uplands of Cambridgeshire, which have significant amounts of



Hedingham Ware, were both administrative centres, as were Chelmsford and Colchester in Essex and Bury St Edmunds in Suffolk. Cambridge stood where the *Via Devana*, the Roman road from Colchester, crossed the River Cam on its way north-west. Huntingdon stood where Ermine Street crossed the Ouse, so both stood on major roads and navigable rivers (Darby 1977, 37). The Hedingham Ware found in Bedfordshire and Hertfordshire probably came through Huntingdon, either via Ermine Street or the River Ouse. The *Via Devana* passed close to Sible Hedingham and would have been a major artery for Hedingham Ware distribution. Other find-spots along this route (previously the A604), for example at Great Yeldham, Haverhill and Hadstock, attest to its use.

Commercial links via waterways between the Fens and Cambridge were important (Darby 1977, 32). It is likely that most of the Hedingham Ware in the Fens came via Cambridge. Travel by waterway was of course much cheaper than transport overland, one reason why Hedingham Ware is so widespread around the Fens. Although such trade would have had the disadvantage of the extra work and expense of transferring cargo between carts and boats at the Cambridge waterfront. There are alternative routes to the Fens; from Suffolk principally via Bury St Edmunds, first overland and then by boat on the River Lark, which was navigable from Mildenhall (Bailey 2007, 164).

The wool industry did not become important in Cambridgeshire until the late Middle Ages (Darby 1977, 23). However, in the early 13th century, there was trade in grain from Ely and Ramsey abbeys in the Fens (both towns with Hedingham Ware find-spots) to Cambridge (Darby 1977, 37), giving rise to the possibility of reciprocal trade in Hedingham Ware from Cambridge to the Fens. There is a record of fenland grain being exported from Cambridge to Norway at this time (where there have also been finds of Hedingham Ware). There are three other fenland settlements with religious sites that also produced finds of Hedingham Ware — Peterborough, Chatteris and Swavesey. All the religious houses held markets or seasonal fairs, the most likely outlet for Hedingham Ware sales. Peterborough, on the River Nene, produced only a little Hedingham Ware, but this may be because it is on the northern edge of the Fens. Wisbech, another find-spot in the northern Fens, contained only minor amounts of Hedingham Ware, but this may have been because it was concerned with the fishing industry rather than commerce.

However, the main reason why Hedingham Ware was only of minor importance in the Fens is probably because there were a number of other pottery industries in the area, namely Grimston Ware, Ely Ware and pottery from Lincoln.

Coastal distribution of Hedingham Ware is significant. The scarcity of Hedingham Ware on the north Norfolk coast suggests it is not getting to the coast via the Fens. The most likely outlet is from the port of Colchester and along the River Colne to the sea. Again, this is likely to have been controlled by middlemen and opportunistic fishermen may also have carried out some casual trade.

What little Hedingham Ware there is in London appears to have arrived via the Thames and was therefore the result of coastal trade. The few finds of Hedingham Ware in parts of greater London suggests some of the pottery arrived by the London to Colchester road. The lack of significant trade of Hedingham Ware to London may have been because the industry looked north for its long distance trade (see above), and because London was already well supplied with pottery, both by London-type ware, which is very similar to Hedingham Ware, and from sources from outside the city, so that there was no niche for Hedingham Ware. There were certainly no geographical barriers between the Hedinghams and London.

The lack of Hedingham Ware in south-west Essex is more difficult to explain; it may be because it is outside the sphere of influence of Chelmsford, the most southerly Hedingham Ware distribution hub. It may also be because of the predominance of Mill Green Ware in the southern half of Essex, but Hedingham Ware is relatively common in certain areas of the south-eastern quarter of Essex, where finds of Mill Green Ware are also common.

## **Gazetteer of find-spots of Hedingham Fineware in East Anglia, by county and from north to south**

(overleaf)

Abbreviations: NAU = Norfolk Archaeology Unit; Access Camb. A. = Access Cambridge Archaeology; B'ham Arch. = Birmingham Archaeology; J. Samuels Arch. Consultants = John Samuels Archaeological Consultants; SCCAS = Suffolk County Council Archaeology Service; EAA = East Anglian Archaeology; HAT = Hertfordshire Archaeological Trust; CAT = Colchester Archaeological Trust; ECC FAU = Essex County Council Field Archaeological Unit

## Gazetteer of find-spots of Hedingham Fineware in East Anglia, by county and from north to south

Site no.	Parish/borough/ town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
<b>Norfolk</b>							
1	North Elmham	North Elmham Park	Church/religious house	1	-	-	Wade 1980, 452
2	King's Lynn	Vancouver Centre	Urban/sub-urban	3	1	1	P. Blinkhorn for Oxford Archaeology (377720KLY); J. Cotter pers. comm.
3	West Walton	West Walton	Village/hamlet	1	-	-	Blinkhorn 2005a
4	Marham	The Old Bell	Village/hamlet	2	1	2	Archaeological Solutions Report 3241 (2008)
5	Norwich	All urban/sub-urban sites (total 8 sites)	Urban/sub-urban	4	-	-	S. Anderson, various reports for NAU; P. Blinkhorn for Northamptonshire Archaeology; Dallas 1994, 22
6	Norwich	Cathedral Hostry	Church/religious house	1	-	-	S. Anderson 2008 Assessment for NAU
7	Gt Cressingham	Priory Drove	Farmstead/other rural	1	-	-	S. Anderson 2008 Assessment for NAU
8	Hilborough	Hilborough	Village/hamlet	present	-	-	A. Rogerson pers. comm. (from John Cotter's gazetteer)
9	Carleton Rode	Test pits and fieldwalking	Village/hamlet	2	-	-	P. Blinkhorn for Access Camb. A. (CR08; CR09)
10	Harling	Harling	Farmstead/other rural	present	-	-	A. Rogerson pers. comm. (from John Cotter's gazetteer)
11	Winfarthing	West of Wilderness Farm	Farmstead/other rural	1	4	4	J. Cotter pers. comm.
12	Theford	Theford (various sites)	Urban/sub-urban	4	-	-	Rogerson and Dallas 1984, 124; Anderson 2004b, 68, 74
13	Roydon, near Diss	Roydon	Village/hamlet	present	-	-	A. Rogerson pers. comm. (from John Cotter's gazetteer)
<b>Cambridgeshire</b>							
14	Wisbech	Market Mews	Urban/suburban	1	-	-	Spoerry 2012
15	Maxey	Maxey	Urban/suburban	1	-	-	P. Blinkhorn for CAMARC (MAXWBF04)
16	Peterborough	The Still, Cumbergate	Urban/sub-urban	1	-	-	Spoerry and Hinman 1998
17	Orton Longueville	Botolph Bridge	Farmstead/other rural	1	-	-	Oxford Archaeology East (ORLBB99)
18	Chatteris	Chatteris	Village/hamlet	1	-	-	P. Blinkhorn for CAMARC (CHANEER06)
19	Ramsey	Test pit 5, yr 2009	Urban/suburban	1	-	-	P. Blinkhorn for Access Cambridge Archaeology (RAM09)
20	Ely	49-55 Lynn Road and Jubilee Terrace	Urban/suburban	4	2	5	Anderson, S. 2000, (HAT report 410); P. Spoerry, Oxford Archaeology East Archive report
21	Ely	Potters Lane, pottery production site	Mill/other industrial	1	-	-	Spoerry 2008
22	Colne	Manor Farm	Hall/manor	1	-	-	Oxford Archaeology East (COLMAN09)
23	Stretham	Stretham Rectory	Hall/manor	1	2	2	Oxford Archaeology East (STR90)
24	Isleham	Fordham Road	Farmstead/other rural	3	2	2	Archaeological Solutions Report 2390 (2006)
25	Soham	All sites in Soham area (total 3 sites)	Farmstead/other rural	3	-	-	Oxford Archaeology East (SOHSAH03; SOHCLD04); P. Blinkhorn for Oxford Archaeology (SOHLM07)
26	Huntingdon	all sites with the town (total 4 sites)	Urban/suburban	3	-	-	Oxford Archaeology East (HUNWHS05; HUNHAR05; HUNSR99; HUNOMD09)
27	St Ives	East Street	Urban/sub-urban	1	-	-	Oxford Archaeology East (STIEST07)
28	Fordham	Fordham	Village/hamlet	present	-	-	A. Rogerson pers. comm. (from John Cotter's gazetteer)
29	Waterbeach	Denny Abbey	Church/religious house	3	2	4	Coppack 1980 (see also Cotter 2000, 83)
30	Swavesey	Black Horse Lane	Urban/sub-urban	3	-	-	Oxford Archaeology East (SWABL99)

Site no.	Parish/borough/ town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
31	Cottenham	all sites within village (total 2 sites)	Village/hamlet	3	-	-	P. Blinkhorn, Access Camb. A. test pit (COT09); Oxford Archaeology East (COTDR96)
32	Longstanton	Field 7 Phase 2B	Farmstead/other rural	2	-	-	S. Anderson. 2010, Assessment for B'ham Arch. (BA1987)
33	Burwell	Kingfisher Drive and Isaacson Road	Mill/other industrial	3	-	-	Oxford Archaeology East (BURKFD07; BURISR07)
34	Burwell	Burwell, unspecified site and Reach Road	Urban/suburban	4	2	4	P. Blinkhorn for Northamptonshire Archaeology (BYB03)
35	Landbeach	Landbeach	Village/hamlet	present	-	-	Oxford Archaeology East (BURRR02)
36	Waterbeach	Waterbeach Abbey	Church/religious house	present	5	5	A. Rogerson pers. comm. (from John Cotter's gazetteer) Hurst 1966 (see also Cotter 2000, 84)
37	Oakington	Coles Lane	Farmstead/other rural	2	-	-	Powell, A. forthcoming
38	Oakington	Oakington, unspecified site	Village/hamlet	1	-	-	P. Blinkhorn for CAMARC (OAKQUW07)
39	Milton	Ely Road	Farmstead/other rural	1	-	-	Oxford Archaeology East (MILMHA08)
40	Girton	Test pit 2, yr 2009	Village/hamlet	1	-	-	P. Blinkhorn, Access Camb. A. test pit (GIR.09)
41	Horningsea	Horningsea	Village/hamlet	present	3	3	Rackham 1972, pl. 33
42	Bottisham	Bottisham	Village/hamlet	1	-	-	P. Blinkhorn for Northamptonshire Archaeology (BFB09)
43	Cambridge	Cambridge	Urban/sub-urban	5	-	-	Edwards and Hall 1997, Rackham 1972, pl.41; Hurst 1966
44	Cherry Hinton	69-115 Church End	Farmstead/other rural	2	-	-	Hertfordshire Archaeological Trust report 734
45	Bourn	Densett	Farmstead/other rural	2	2	2	Oxford Archaeology East (BUODS04/5)
46	Fulbourn	Land off The Chantry	Farmstead/other rural	1	5	5	Essex CC/FAU Report 1634 (2006)
47	Fulbourn	Dunmowes Manor	Hall/manor	4	-	-	Oxford Archaeology East (FULME01)
48	Barton	Barton Mounts	Village/hamlet	present	-	-	A Rogerson pers. comm. (from John Cotter's gazetteer)
49	Great Shelford	Test pits 4, 6, 7, 8 yr 2008	Village/hamlet	2	-	-	P. Blinkhorn for Access Cambridge Archaeology (GTS/08)
50	Sawston	Sawston, unspecified site	Village/hamlet	1	-	-	P. Blinkhorn for J. Samuels Arch. Consultants (SAW1)
51	Sawston	Borough Hill	Farmstead/other rural	1	5	5	P. Blinkhorn for J. Samuels Arch. Consultants (JSAC685)
52	Barrington	Barrington, unspecified site	Village/hamlet	present	-	-	Cambridgeshire Museum AA accession no.1947.610, identified by J. Cotter
53	Whittlesford	Whittlesford	Village/hamlet	present	-	-	Rackham 1972, pl.88, identified by J. Cotter
54	Foxton	Mortimers Lane	Farmstead/other rural	1	-	-	Oxford Archaeology East (FOXMOLO7)
55	Duxford	Hinxton Road	Farmstead/other rural	3	3	3	Oxford Archaeology East (DUXHR02)
56	Castle Camps	Castle Camps	Castle/other high status	present	-	-	A. Rogerson pers. comm. (from John Cotter's gazetteer)
<b>Suffolk</b>							
57	Beccles	Newgate Manor House	Farmstead/other rural	1	-	-	R. Goffin in Gardner, R., SCCAS Report 2007/64
58	Worlingham	Worlingham	Farmstead/other rural	1	-	-	S. Anderson 2000, Report for SCCAS (WGM 007, 008)
59	Brandon	Stanch Meadow and Sports Centre sites	Farmstead/other rural	2	-	-	P. Blinkhorn for SCCAS (BRD071)
60	Chediston	Chediston Green test pit 7 yr 2007	Village/hamlet	1	-	-	P. Blinkhorn, Access Camb. A. test pit (CHE/07)
61	Mildenhall	Former Depot, Beeches Road, West Row	Farmstead/other rural	1	-	-	R. Goffin in Craven, J., SCCAS Report 2008/104
62	Homington	Adj. 8 Troston Road	Farmstead/other rural	1	-	-	S. Anderson 2009, report for SCCAS (HINN014)
63	Bardwell	Land adjacent Holly House	Farmstead/other rural	3	-	-	R. Goffin in Tester, A., SCCAS Report 2008/105

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64	Walsham le Willows	Elmside Farm	Farmstead/other rural	1	2	4	R. Goffin in SCCAS report
65	Ixworth	12 Stow Road	Farmstead/other rural	1	4	4	R. Goffin in Gill, D., SCCAS Report 2008/001
66	Fornham St Genevieve	Ingham Quarry	Farmstead/other rural	1	-	-	S. Anderson 1998, Report for SCCAS (FSG 013)
67	Great Barton	Vicarage Garden	Village/hamlet	1	4	4	J. Cotter pers. comm. (banding is an estimate)
68	Great Barton	Moreton Hall	Farmstead/other rural	5	-	-	S. Anderson 2003, Report for SCCAS (BRG 027)
69	Bury St Edmunds	All urban/sub-urban sites (total 23 sites)	Urban/sub-urban	5	2	4	S. Anderson and R. Goffin, various reports for SCCAS; Archaeological Solutions report 3082
70	Bury St Edmunds	Cathedral	Church/religious house	4	-	-	S. Anderson 2002, SCCAS Report (BSE 052)
71	Bury St Edmunds	Eldohouse Farm	Farmstead/other rural	1	-	-	S. Anderson pers. comm.
72	Leiston	Leiston Substation 132kv Cable Route, Sizewell	Farmstead/other rural	2	-	-	S. Anderson 2009, Report for SCCAS (LCS 150)
73	Haughley	School playground and Duke Street sites	Farmstead/other rural	2	-	-	S. Anderson 2000, Report for SCCAS (HGH 015); Goffin, R. in Everet, L., The Old Mill, Duke Street, Haughley, SCCAS Report 2009/178
74	Hessett	Shrubbery Farm	Farmstead/other rural	1	-	-	R. Goffin, in Tester, A., SCCAS Report 2008/118
75	Aldringham	Land West of Parrot and Punchbowl	Farmstead/other rural	1	-	-	S. Anderson 2000, Report for SCCAS (ARG 021)
76	Dalham	Moat End	Farmstead/other rural	1	-	-	R. Goffin, in Nichols S., SCCAS Report 2007/080
77	Stowmarket	The Waterworks	Urban/sub-urban	1	-	-	P. Blinkhorn for John Moore Heritage Services (SMSW04)
78	Stowmarket	The Kingsfield Centre	Farmstead/other rural	1	2	2	R. Goffin, in Strik, D., SCCAS Report 2009/67
79	Stowmarket	Cedar's Park	Farmstead/other rural	5	5	5	S. Anderson 2006, Report for Archaeological Solutions; H. Walker Essex CC FAU Report 2031
80	Stowmarket	Cedars Field	Farmstead/other rural	2	-	-	Anderson 2004a
81	Creething St Mary	St Olave's Church	Church/religious house	3	-	-	S. Anderson 2003, Report for SCCAS (CRM 006)
82	Kirtling Green	Kirtling Green to Wixoe pipeline	Farmstead/other rural	3	-	-	S. Anderson 2008, Report for B'ham Arch. (WIX020)
83	Coddensham	test pit 4, 07; test pit 5, 08	Village/hamlet	1	-	-	P. Blinkhorn for Access Camb. A. (COD/07)
84	Lawshall	Lawshall Hall	Farmstead/other rural	1	-	-	S. Anderson 2002, Report for SCCAS (LWL 028)
85	Thorpe Morieux	Moat Farm	Farmstead/other rural	1	3	3	R. Goffin, in Craven, J., SCCAS Report 2005/69
86	Hitcham	Syers Farm	Farmstead/other rural	1	-	-	R. Goffin in prep. (HTC062)
87	Preston St Mary	Old Thatches	Farmstead/other rural	1	-	-	S. Anderson 2009, Report for SCCAS (PSM 031)
88	Preston St Mary	Priority Farm	Farmstead/other rural	5	-	-	S. Anderson 2003; 2004, Report for SCCAS (PSM 002)
89	Orford	Castle Hill	Urban/sub-urban	1	-	-	S. Anderson 2001, Report for SCCAS (ORF 032)
90	Lavenham	50 High Street	Urban/sub-urban	1	-	-	S. Anderson 2000, Report for SCCAS (LVM 038)
91	Haverhill	Land north-west of Haverhill/at Little Wratting	Farmstead/other rural	4	4	4	R. Goffin, in Craven, J., SCCAS Report 2007/140
92	Haverhill	Land at Boyton Hall/Little Wratting	Farmstead/other rural	2	2	2	R. Goffin, in Craven, J., SCCAS Report 2007/144
93	Long Melford	List House	Urban/sub-urban	1	-	-	R. Goffin, in Beverton, A., SCCAS Report 2009/110
94	Haverhill	St Botolphs	Church/religious house	1	-	-	R. Goffin pers. comm. ?Hertfordshire Archaeological Trust rep.
95	Clare	Nethergate Street	Farmstead/other rural	1	4	4	R. Goffin, in Caruth, J., SCCAS Report 2007/079
96	Haverhill	Burton End	Farmstead/other rural	5	-	-	S. Anderson 1999, Report for SCCAS (HVV 035)

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97	Haverhill	Hazel Stub bypass HVH022 and 024	Farmstead/other rural	4	3	5	H. Walker 1994, unpublished report for SCCAS
98	Ipswich	Cobbold Street and Handford Road	Urban/sub-urban	3	-	-	S. Anderson, 2009, Report for SCCAS (IAS 8520); and pers. comm.
99	Hadleigh	Aldham Mill Hill	Urban/sub-urban	3	-	-	S. Anderson 1999 and 2002, Reports for SCCAS (HAD 059)
100	Sudbury	St Bartholomew's Priory	Church/religious house	1	-	-	S. Anderson 2004, Report for SCCAS (SUY 002)
101	Sudbury	Subury: all urban sites (total 4 sites)	Urban/sub-urban	1	5	5	S. Anderson 2003 and 2004; R. Goffin 2005, unpublished reports for SCCAS
102	Capel St Mary	Days Road	Farmstead/other rural	4	-	-	S. Anderson 2010, Assessment for CAMARC (CSM 030)
103	Polstead	Steps Farm	Farmstead/other rural	1	-	-	S. Anderson 1998, Report for SCCAS (PLS 031)
104	Trimley St Mary	Parker Avenue	Farmstead/other rural	4	-	-	S. Anderson 2001, Rep for SCCAS (TY 021, 026, 027, 029)
105	Nayland	Court Knoll	Farmstead/other rural	2	-	-	S. Anderson 2002, Report for SCCAS (NYW 006)
106	Nayland	Wiston Hall, Wissington	Hall/manor	1	-	-	S. Anderson 2003, Report for SCCAS (NYW 007)
<b>Essex</b>							
107	Pentlow	Pentlow Hall	Hall/manor	1	4	4	Walker 1991a
108	Hadstock	Field E of St Botolph's Church	Village/hamlet	4	3	4	Essex CC FAU Report 1427 (2005)
109	Sturmer	North of Sturmer Barrow	Farmstead/other rural	4	1	2	Essex CC FAU Report (STUHB95)
110	Great Chesterford	All Saints Church	Church/religious house	1	-	-	Essex CC FAU Report 945 (2001)
111	Helions Bumpstead	Helions Bumpstead village sites	Village/hamlet	1	4	4	Essex CC FAU Reports (HEB92; HEBWL08)
112	Helions Bumpstead	Helions Farm	Farmstead/other rural	1	5	5	Walker 2001, 162-5
113	Belchampt Walter	Near Hopkins Farm	Farmstead/other rural	3	4	4	Essex CC FAU Report (BW90) (1991)
114	Saffron Walden	Various sites within the town	Urban/sub-urban	4	3	5	Cunningham 1982b; Ravetz and Spencer 1961; Walker 2002a; Essex CC FAU Reports 1419, 1448; 1967
115	Great Yeldham	Old Post Office Cottages, High Street	Village/hamlet	3	-	-	Walker 1995a
116	Castle Hedingham	Maplecroft, Sudbury Rd	Farmstead/other rural	2	-	-	Walker 1991b
117	Great Sampford	Monks Cottage	Village/hamlet	1	4	4	Eddy 1980, 70, fig. 11
118	Wimbish	Parsonage Farm	Farmstead/other rural	2	2	5	Walker 2000b, 303-5
119	Great Maplestead	Church Street	Village/hamlet	2	-	-	Essex CC FAU Report (GMCS96)
120	Wicken Bonhunt	Bonhunt Farm	Hall/manor	present	-	-	Information from C.M. Cunningham
121	Harwich	Church Street and George Street	Urban/sub-urban	4	2	5	Walker 1990a, 72-86
122	Dovercourt	Dovercourt	Port/quay/waterfront	present	-	-	Barford 1986
123	Manningtree	Old Slaughterhouse, Stour Street	Port/quay/waterfront	2	-	-	Thompson 2008, 147
124	Wethersfield	Adj. Wrights Farm, Lower Green	Farmstead/other rural	1	-	-	Essex CC FAU Report 1785 (2007)
125	Thaxted	Weaverhead Lane and Town Street sites	Urban/sub-urban	1	4	4	Essex CC FAU Report (TX6) (1993); Walker 1996a, 332-5

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126	Halstead	Parsonage Street/Colchester Road, former Bayer Site	Urban/sub-urban	3	5	5	Essex CC FAU Report 1888
127	Shalford	St Andrew's Church	Church/religious house	1	5	5	Essex CC FAU Report 1896 (2008)
128	Shalford	Braintree Road	Village/hamlet	1	5	5	Essex CC FAU Report 2181 (2010)
129	Gosfield	Aylewards Farm	Farmstead/other rural	1	-	-	Essex CC FAU Report 1881 (2008)
130	Mile End	Mile End pottery production site	Mill/other industrial	1	-	-	Drury and Petchey 1975, 46
131	Little Oakley	Little Oakley Hall	Hall/manor	1	-	-	Information from C.M. Cunningham
132	Great Tey	Brook House Road	Farmstead/other rural	3	-	-	Essex CC FAU Report (GTEBR98)
133	Bocking	Bocking Deanery sites	Church/religious house	2	-	-	Essex CC FAU Report s 600 (1999) and 1804 (2007)
134	Great Easton	Gt Easton motte and bailey	Castle/other high status	4	2	4	Walker in prep.
135	Coggeshall	Palmers Farm, Anglian waterpipe line	Farmstead/other rural	1	-	-	Essex CC FAU Report (CGPM98)
136	Colchester	Colchester Castle	Castle/other high status	2	-	-	Cunningham 1982a
137	Colchester	Colchester, all urban sites	Urban/sub-urban	5	1	5	Cotter 2000
138	Colchester	St Mary Magdalen's Hospital, Brook St	Church/religious house	4	4	4	Walker 2003a
139	Colchester	79 Hythe Hill	Port/quay/waterfront	3	2	5	Walker 2000c
140	Colchester	Colchester Garrison Village/St John's Abbey	Church/religious house	1	-	-	Colchester Archaeological Trust Report 438
141	Stansted	Mole Hill Green areas A and C	Farmstead/other rural	5	2	4	Walker 2004a
142	Stansted	Colchester Hall	Hall/manor	2	2	4	Walker 2004a
143	Stansted	Mid-term car park windmill	Mill/other industrial	1	-	-	Mephram 2008
144	Stansted	Longborder Road and Roundwood sites	Farmstead/other rural	5	2	4	Walker 2004a
145	Stansted	The Wilderness and Forward logistics base	Farmstead/other rural	1	-	-	Walker 2004a; Mephram 2008
146	Little Bentley	Hall Farm, cropmark enclosures project	Farmstead/other rural	1	-	-	Walker 2002b
147	Beaumont-cum-Moze	Beaumont-cum-Moze	Port/quay/waterfront	present	-	-	Colchester Museum finds (from John Cotter's gazetteer)
148	Stebbing	Stebbing	Village/hamlet	present	-	-	Information from C.M. Cunningham
149	Coggeshall	Houchins moated farmhouse	Farmstead/other rural	1	-	-	Colchester Archaeological Group Bulletin 38 (1995), 30
150	Braintree	51-57 Rayne Road and College Road	Urban/sub-urban	1	4	4	Drury 1976b, 108; Essex CC FAU Report 274
151	Braintree	Lake & Elliott's foundry, Chapel Hill	Church/religious house	present	-	-	Drury 1976b, 109
152	Kirby-le-Soken	Devereux Farm	Farmstead/other rural	1	-	-	Essex CC FAU Report 1961(2008)

Site no.	Parish/borough/ town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
153	Coggeshall	East Street and Corner of Stoneham and Church Street sites	Urban/sub-urban	3	-	-	Walker 1988a; Essex CC FAU Report (CG6)
154	Copford	Copford	Village/hamlet	present	-	-	From John Cotter's gazetteer
155	Felsted	Stebbingford Farm	Farmstead/other rural	5	2	4	Walker 1996b
156	Little Dunmow	Blatches	Farmstead/other rural	4	2	2	Mephram 2007
157	Braintree	Naylinghurst	Farmstead/other rural	1	2	4	Drury 1976a
158	Great Dunmow	Chequers Lane and High Street sites	Urban/sub-urban	3	4	5	Essex CC FAU Reports 638, 1752, 1872, 2193
159	Takeley	Frogs Hall	Farmstead/other rural	2	1	5	Walker 2006
160	Takeley	Priors Green all phases	Farmstead/other rural	4	4	5	Essex CC FAU Reports 1478, 1761, 1795; P. Blinkhorn for John Moore Heritage Services (TATW07)
161	Takeley	Land adjoining Dunmow Road	Farmstead/other rural	1	-	-	Sudds forthcoming
162	Takeley	Hatfield Park Golf Course	Farmstead/other rural	1	-	-	L. Mephram, Oxford/Wessex client report 56340
163	Rivenhall	Rivenhall Quarry WB	Farmstead/other rural	4	1	5	Essex CC FAU Report 1368 (2001)
164	Rivenhall	Recycling and Composting Facility	Farmstead/other rural	1	-	-	Essex CC FAU Report 1559 (2006)
165	Rivenhall	Rivenhall Churchyard Rodwell and ECC FAU excavations	Church/religious house	5	1	5	Drury <i>et al.</i> 1993; Walker 2004b
166	Rivenhall	Woodfield opposite Rose Cottage	Farmstead/other rural	1	-	-	H. Walker, unpublished incidental find
167	Weeley	Gutteridge Hall	Hall/manor	2	3	3	Walker 2008
168	Great Bentley	Aingers Green	Farmstead/other rural	1	-	-	Essex CC FAU Report 2065 (2009)
169	Feering	Drummonds	Village/hamlet	1	-	-	Information from C.M. Cunningham
170	Kelvedon	Kelvedon, Rodwell's site	Urban/sub-urban	1	-	-	Cunningham 1988, 129
171	Langenhoe	Langenhoe	Farmstead/other rural	present	-	-	Colchester Archaeological Trust Site X566
172	Cressing	Cressing Temple farming complex	Farmstead/other rural	5	3	4	ECC unpublished catalogue
173	High Easter	Maidens Tye moated farm	Farmstead/other rural	3	4	4	Walker 1988b
174	St Osyth	Langford Lodge	Farmhouse/other rural	4	3	5	Essex CC FAU Report 21 (1994)
175	St Osyth	St Osyth urban sites	Urban/sub-urban	1	-	-	Essex CC FAU Report 1416 (2004); Wessex client report 55753.01
176	St Osyth	Lodge Farm Reservoir	Farmhouse/other rural	5	2	4	Walker forthcoming a
177	Witham	Chipping Hill Camp, Rodwell excavations	Urban/sub-urban	1	4	4	Rodwell 1993
178	Witham	Witham: all urban sites	Urban/sub-urban	3	-	-	Essex CC FAU Reports (WH5, WH9, WHML00); Wessex client report 72781.02
179	Clacton-on-Sea	Bishops Park College, Jaywick Lane	Farmstead/other rural	1	-	-	Essex CC FAU Report (2002)
180	Pleshey	Pleshey: all urban sites	Urban/sub-urban	3	4	4	Walker 1988c, 1997, 1999a, Essex CC FAU Report 1346
181	Pleshey	Pleshey Castle	Castle/other high status	present	-	-	Williams 1977
182	Boreham	Bulls Lodge Quarry Windmill	Mill/other industrial	2	-	-	Walker 2003b

Site no.	Parish/borough/ town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
183	Boreham	Bulls Lodge Quarry 2008-9	Farmstead/other rural	4	2	3	Essex CC FAU Report 1975, 1133, 1704
184	Springfield	Greater Beaulieu Park	Farmstead/other rural	1	-	-	Essex CC FAU Report 1905
185	Chignall St James	Roxwell Quarry Area A	Farmstead/other rural	1	-	-	Walker 1992b
186	Boreham	Springfield link main, Tryells Cottages	Mill/other industrial	1	-	-	Essex CC FAU Report 1865
187	Boreham	Chelmer Valley Survey, Boreham interchange	Farmstead/other rural	3	-	-	Walker 1999b
188	Boreham	Old Hall; Generals Farm	Farmstead/other rural	1	-	-	Essex CC FAU Reports 1568, 1732
189	Maldon	Maldon: all urban/sub- urban sites (total 9 sites)	Urban/sub-urban	4	1	4	Essex CC FAU Reports MD20; MD22, MD27, MD33, MD38; CAT rep MD39; Walker forthcoming b
190	Maldon	Beeleigh Abbey	Church/religious house	4	1	5	Walker forthcoming c
191	Maldon	Maldon Carmelite friary	Church/religious house	1	-	-	Walker 1999c
192	Heybridge	Land adjoining Langford Road	Village/hamlet	1	1	1	Essex CC FAU Report 87 (1993)
193	Heybridge	Heybridge Hall	Hall/manor	1	-	-	Colchester Archaeological Trust Report 439
194	Bradwell	Othona Roman fort	Port/quay/waterfront	2	-	-	Drury 1976c, 237
195	Goldhanger	Chigborough Farm	Farmstead/other rural	1	-	-	Walker 1998, 158
196	Chelmsford	Chelmsford: all urban sites (total 7 sites)	Urban/sub-urban	4	2	5	Essex CC FAU Report project 917
197	Chelmsford	Dominican priory	Church/religious house	5	2	3	C.M. Cunningham unpublished report
198	Chelmsford	Kings Head Meadow, 23-33 Baddow Road	Port/quay/waterfront	4	5	5	Essex CC FAU Report project 917
199	Writtle	King John's Hunting Lodge	Castle/other high status	present	-	-	Rahtz 1969
200	Writtle	Writtle, HEFA test pits 1, 2, 5, 6 yr 2009	Village/hamlet	2	-	-	P. Blinkhorn for Access Camb. Archaeology (WRI/09)
201	Great Baddow	Manor Farm Enclosure	Hall/manor	1	-	-	Essex CC FAU Report 104
202	Tillingham	Vicarage Lane	Urban/sub-urban	1	-	-	Essex CC FAU Report 1376
203	Chipping Ongar	Library site and Banson's Lane	Urban/sub-urban	3	5	5	Walker 1999d; Walker forthcoming d
204	Sandon	Sandon Brook	Farmstead/other rural	1	4	4	Essex CC FAU A130 excavation report
205	West Hanningfield	Downhouse Farm	Farmstead/other rural	1	-	-	Essex CC FAU A130 excavation report
206	West Hanningfield	'Galleyview' Bakers Lane	Farmstead/other rural	present	-	-	Essex CC FAU Report
207	Waltham Abbey	Waltham Abbey	Urban/sub-urban	present	-	-	Information from C.M. Cunningham
208	Woodham Ferrers	Edwins Hall, Edwins Hall Lane	Hall/manor	2	1	2	Essex CC FAU Report 1362
209	Runwell	Gorse Wood	Farmstead/other rural	1	2	4	Essex CC FAU A130 excavation report
210	Rawreth	Rawreth	Village/hamlet	1	-	-	Colchester Archaeological Trust Report 127
211	Rayleigh	Shotgate Farm	Farmstead/other rural	4	3	3	Essex CC FAU A130 excavation report
212	Rayleigh	Windmill Hill	Mill/other industrial	1	4	4	Essex CC FAU A130 excavation report
213	Rayleigh	Dollymans Farm	Farmstead/other rural	1	3	3	Essex CC FAU A130 excavation report



Site no.	Parish/borough/town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
214	Woodford Green	Harts Hospital	Farmstead/other rural	1	-	-	Telfer, A. 1996, unpublished report for Newham Museum Service
215	Basilton	Nevedon Road, Wickford	Farmstead/other rural	3	-	-	P. Blinkhorn for John Moore Heritage Services (NENR08)
216	Rochford	Rochford Hall (RF7)	Hall/manor	1	-	-	Walker 2003c
217	Rochford	Westbarrow Hall Farm EX	Farmstead/other rural	1	-	-	Essex CC FAU Report 412
218	Barking and Dagenham	Marks Warren Farm, nr Collier Row	Hall/manor	1	-	-	Essex CC FAU Report 1574
219	Horndon	Corner of Mill Lane/High Road (HH1 and HH3)	Urban/sub-urban	3	5	5	Walker forthcoming e
220	Leyton	819-847 Leyton High Road	Farmstead/other rural	1	-	-	A. Douglas 1995, unpublished report for Newham Archaeology
221	Basilton	Vange Marsh North	Farmstead/other rural	1	3	3	Essex CC FAU Report 1613
222	North Shoebury	North Shoebury	Hall/manor	4	-	-	Walker 1995b
223	Southchurch	Southchurch Hall	Hall/manor	4	-	-	Gaimster 2006
224	Barking	London Road/North Street	Urban/sub-urban	1	-	-	Museum of London Archaeology Service archive report
225	Newham	Langthorne Abbey, Stratford	Church/religious house	present	-	-	Museum of London Archaeology Service archive report
226	Canvey Island	Unspecified	Other/unknown	present	-	-	Find by local group
227	Havering	Lauder's Lane, Rainham	Village/hamlet	1	-	-	Howell <i>et al.</i> in prep.
<b>Bedfordshire</b>							
228	Tempsford Park	Tempsford Park	Hall/manor	1	-	-	Blinkhorn 2005b
229	Bedford	Several sites in the town	Urban/sub-urban	3	5	5	Baker <i>et al.</i> 1979
230	Stratton	Stratton	Village/hamlet	4	-	-	Albion Archaeology excavation (ongoing)
231	Stofold	Queens Street	Farmstead/other rural	1	-	-	Mepham forthcoming
232	Stofold	Land south of Stofold	Village/hamlet	1	-	-	Albion Archaeology excavation (ongoing)
233	Nr Biggleswade	King's Reach	Farmstead/other rural	1	-	-	Albion Archaeology excavation (ongoing)
<b>Hertfordshire</b>							
234	Pirton	Test pits 5, 6, 8, 10, yr 2009	Village/hamlet	2	-	-	P. Blinkhorn for Access Cambridge Archaeology (PIR/09)
235	Clothall	Baldock bypass/Leper hospital	Church/religious house	2	-	-	Phillips 2009
236	Little Hallingbury (actually just within Essex)	Test pit 11, yr 2009	Village/hamlet	1	-	-	P. Blinkhorn for Access Cambridge Archaeology (LHA/09)
<b>London</b>							
237	London Wall	Moor House, 119 London Wall	Urban/sub-urban	1	-	-	Blackmore 2006
238	City of London	Little Britain	Church/religious house	present	-	-	Museum of London Archaeology Service archive report
239	City of London	14-18 Gresham Street/25 Milk Street	Urban/sub-urban	1	-	-	Museum of London Archaeology Service archive report
240	City of London	64-66 Cheapside	Urban/sub-urban	present	-	-	Schofield and Maloney 1998

<i>Site no.</i>	<i>Parish/borough/ town/village</i>	<i>Site name</i>	<i>Site type</i>	<i>Banding by sherd nos</i>	<i>Earliest date category</i>	<i>Latest date category</i>	<i>Source of data</i>
241	City of London	Bow Bells House, Bread Street	Urban/sub-urban	1	-	-	Museum of London Archaeology Service archive report
242	City of London	10–13 Ludgate Broadway	Urban/sub-urban	present	-	-	Blackmore 1993, 123–6
243	City of London	Pilgrim Street, 35 Black Friars Lane, 106 New Bridge Street	Urban/sub-urban	1	-	-	Schofield and Maloney 1998
244	City of London	90 Upper Thames Street	Port/quay/waterfront	1	-	-	Museum of London Archaeology Service archive report
245	City of London	Upper Thames Street	Port/quay/waterfront	1	-	-	Museum of London Archaeology Service archive report
246	City of London	Lower Thames Street	Port/quay/waterfront	present	-	-	Schofield and Maloney 1998
247	City of London	New Fresh Wharf, 1–6 Lower Thames Street	Port/quay/waterfront	present	-	-	Schofield and Maloney 1998
248	City of London	Peter's Hill, St Pauls vista	Port/quay/waterfront	1	-	-	Ayre and Wroe-Brown 2002
249	Westminster	1 Bridge Street	Port/quay/waterfront	present	-	-	Museum of London Archaeology Service archive report

### Gazetteer of find-spots of Hedingham Coarseware in East Anglia, by county and from north to south

<i>Site no.</i>	<i>Parish/borough /town/village</i>	<i>Site name</i>	<i>Site type</i>	<i>Banding by sherd nos</i>	<i>Earliest date category</i>	<i>Latest date category</i>	<i>Source of data</i>
Norfolk — no Hedingham Coarseware identified							
Cambs							
1	Cottentham	Denmark Road	Farmstead/other rural	2	-	-	Oxford Archaeology East (COTDR96)
Suffolk							
2	Bury St Edmunds	44–47 St Andrew's Street	Urban/sub-urban	1	-	-	S. Anderson 2004, report for SCCAS (BSE 219)
3	Bury St Edmunds	Risbygate Street, former livestock market	Urban/sub-urban	2	4	4	Archaeological Solutions Report 3082 (2008)
4	Haughley	Duke Street	Farmstead/other rural	1	-	-	R. Goffin, in Everet, L., SCCAS Report 2009/178
5	Hessett	Shrubbery Farm	Farmstead/other rural	1	-	-	R. Goffin, in Tester, A., SCCAS Report 2008/118
6	Farnham	Land adj. George and Dragon	Farmstead/other rural	1	-	-	S. Anderson 2001, report for SCCAS (FNM014)
7	Stowmarket	Cedar's Park	Farmstead/other rural	4	-	-	S. Anderson 2006, report for Archaeological Solutions
8	Preston St Mary	Old Thatches	Farmstead/other rural	2	-	-	S. Anderson 2009, report for SCCAS (PSM 031)
9	Preston St Mary	Priory Farm	Farmstead/other rural	5	-	-	S. Anderson 2004, report for SCCAS (PSM 007)
10	Great Blakenham	Addison Way	Farmstead/other rural	1	-	-	S. Anderson 2009, report for SCCAS (BLG 024)
11	Haverhill	Land north-west of Haverhill/ at Little Wrating	Farmstead/other rural	4	-	-	R. Goffin, in Craven, J., SCCAS Report 2007/140
12	Haverhill	Land at Boyton Hall/Little Wrating	Farmstead/other rural	2	-	-	R. Goffin, in Craven, J., SCCAS Report 2007/144
13	Haverhill	St Botolphs house	Church/religious house	2	-	-	S. Anderson for Hertfordshire Archaeological Trust

Site no.	Parish/borough /town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
14	Haverhill	Burton End	Farmstead/other rural	5	4	5	S. Anderson 1999, report for SCCAS (HVH 035)
15	Haverhill	Hazel Stub bypass HVH022 and 024	Farmstead/other rural	5	2	5	H. Walker 1994, unpublished report for Suffolk County Council
16	Clare	Clare Castle	Castle/other high status	1	-	-	S. Anderson 2000, report for SCCAS (CLA 035)
17	Hadleigh	Aldham Mill Hill	Urban/suburban	1	-	-	S. Anderson 1999, 2002, reports for SCCAS (HAD 059)
18	Kirtling Green	Kirtling Green to Wixoe pipeline	Farmstead/other rural	1	-	-	S. Anderson 2008, report for Birmingham Archaeology (WIX020)
19	Sudbury	39 Walnut Tree Lane and Priory walk sites	Urban/sub-urban	1	-	-	R. Goffin, SCCAS report; S. Anderson 2004, report for SCCAS (SUY 069)
20	Polstead	Steps Farm	Farmstead/other rural	1	-	-	S. Anderson 1998, report for SCCAS (PLS 031)
Essex							
21	Pentlow	Pentlow Hall	Hall/manor	2	1	5	Walker 1991a
22	Hadstock	East of St Botolph's Church	Village/hamlet	2	3	3	Essex CC FAU Report 1427 (2005)
23	Sturmer	North of Sturmer Barrow	Farmstead/other rural	4	2	4	Essex CC FAU Report (STUHB95)
24	Great Chesterford	All Saints Church	Church/religious house	1	-	-	Essex CC FAU Report 945 (2001)
25	Helions Bumpstead	Whiteknights (house name)	Village/hamlet	1	-	-	Essex CC FAU Report (HEB92)
26	Helions Bumpstead	Helions Farm	Farmstead/other rural	1	-	-	Walker 2001, 162-5
27	Saffron Walden	Saffron Walden: all urban sites	Urban/sub-urban	4	4	5	Walker 2002a
28	Hempstead	Little Hempstead Mill Mound/motte	Mill/other industrial	1	-	-	Essex CC FAU Report 705
29	Great Yeldham	Old Post Office Cottages, High Street	Village/hamlet	3	3	4	Walker 1995a
30	Great Henry	Near Great Henry Church	Village/hamlet	3	3	3	Essex CC FAU Report (GH91)
31	Castle Hedingham	Maplecroft, Sudbury Rd	Farmstead/other rural	3	3	5	Walker 1991b
32	Wimbish	Parsonage Farm	Farmstead/other rural	1	3	3	Walker 2000b, 303-5
33	Great Maplestead	Church Street	Village/hamlet	3	-	-	Essex CC FAU Report (GMCS96)
34	Sible Hedingham	Maplestead Mill	Mill/other industrial	4	5	5	Archive report by H. Walker
35	Harwich	Kings Head Street and Market Street	Urban/sub-urban	1	-	-	Essex CC FAU Report (HW5)
36	Halstead	Parsonage Street and Colchester Road, former Bayer Site	Urban/sub-urban	3	2	5	Essex CC FAU Report 1888
37	Halstead	Russells Lane	Urban/sub-urban	2	3	3	Essex CC FAU Report 9
38	Gosfield	Aylewards Farm	Farmstead/other rural	2	2	2	Essex CC FAU Report 1881 (2008)
39	Shalford	Braintree Road	Urban/sub-urban	2	5	5	Essex CC FAU Report 2181 (2010)
40	Great Tey	Brook House Road	Farmstead/other rural	3	2	5	Essex CC FAU Report (GTEBR98)
41	Bocking	Bocking Deanery sites	Church/religious house	2	2	4	Essex CC FAU Reports 600 (1999) and 1804 (2007)
42	Great Easton	Gt Easton motte and bailey	Castle/other high status	4	3	5	Walker in prep.

Site no.	Parish/borough /town/village	Site name	Site type	Banding by sherd nos	Earliest date category	Latest date category	Source of data
43	Stansted	Mole Hill Green areas A-C	Farmstead/other rural	4	3	4	Walker 2004a
44	Stansted	Colchester Hall	Hall/manor	2	3	3	Walker 2004a
45	Takeley	Frogs Hall	Farmstead/other rural	1	4	4	Walker 2006
46	Rayne	Havering Farm Barns	Farmstead/other rural	1	4	5	Essex CC FAU Report 1306
47	Felsted	Stebbingford Farm	Farmstead/other rural	5	3	5	Walker 1996b
48	Stansted	The Wilderness and Forward logistics base sites	Farmstead/other rural	4	3	4	Walker 2004a; Mephram 2008
49	Little Dunmow	Blatches	Farmstead/other rural	4	1	5	Mephram 2007
50	Stansted	Mid term car park	Farmstead/other rural	1	-	-	Mephram 2008
51	Stansted	Longborder Road and Roundwood sites	Farmstead/other rural	5	3	4	Walker 2004a
52	Stansted	Duckend Farm	Farmstead/other rural	2	-	-	Walker 2004a
53	Takeley	Priors Green	Farmstead/other rural	1	-	-	Essex CC FAU Report projects 1478, 1761, 1795; P. Blinkhorn for John Moore Heritage Services
54	Takeley	Land adjoining Dunmow Road	Farmstead/other rural	1	-	-	Sudds forthcoming
55	Takeley	Hatfield Park Golf Course	Farmstead/other rural	1	-	-	Oxford/Wessex unpublished report 56340
56	Fearing	Drummonds	Village/hamlet	present			Information from C.M. Cunningham
57	Pleshey	Pleshey Castle northern bailey	Urban/sub-urban	3	4	4	Walker 1988c
58	Little Waltham	Little Waltham Hall	Hall/manor	1	-	-	Essex CC FAU Report (LWHA93)
59	Boreham	Bulls Lodge Quarry Windmill	Mill/other industrial	5	2	4	Walker 2003b
60	Boreham	Bulls Lodge Quarry 2008-9	Farmstead/other rural	2	2	4	Essex CC FAU Report 1975, 1133, 1704
61	Boreham	Chelmer Valley Survey, Boreham interchange	Farmstead/other rural	3	3	3	Walker 1999b
62	Boreham	Old Hall; Generals Farm	Farmstead/other rural	1	-	-	Essex CC FAU Report 1568, 1732
63	Springfield	Greater Beaulieu Park	Farmstead/other rural	1	-	-	Essex CC FAU Report 1905
64	Writtle	Roxwell Quarry	Farmstead/other rural	2	4	4	Essex CC FAU Report 515
65	Chelmsford	7 Springfield Road and 190 Moulsham Street	Urban/sub-urban	2	4	4	Essex CC FAU Report project 917
66	Theydon Mount	Hill Hall	Hall/manor	present			Loader and Mephram 2009, 32
67	North Shoebury	North Shoebury	Hall/manor	1	-	-	Walker 1995b
68	Woodford Green	Harts Hospital	Farmstead/other rural	2	-	-	Telfer, A. 1996, Newham Museum Service Archaeology unpublished report
69	Barking	Barking Church of England Primary School, North Road	Church/religious house	1	-	-	Jarrett, C., Newham Museum Service unpublished report

Beds — no coarseware

Herts — no coarseware

London — no coarseware

## Gazetteer of medieval markets and fairs in Suffolk and Essex, shown by county in order of earliest date

### Suffolk markets and fairs before 1350

Suffolk markets and fairs before 1350 and current within the period of Hedingham manufacture; source <http://www.history.ac.uk/cmh/gaz/suff.html>

<i>Order by date of first mention</i>	<i>Location</i>	<i>Earliest mention</i>	<i>Market</i>	<i>Fair</i>
1	Hoxne	1066	market	fair
2	Kelsale	1066	market	
3	Aspall	1086		fair
4	Beccles	1086	market	fair
5	Blythburgh	1086	market	fair
6	Clare	1086	market	fair
7	Eye	1086	market	fair
8	Haverhill	1086	market	
9	Stowmarket	1086	market	fair
10	Sudbury	1086	market	
11	Bury St Edmunds	1135	market	fair
12	Great Bricett	1152	market	fair
13	Bungay	1199	market	fair
14	Ipswich	1200	market	fair
15	Walton	1200	market	fair
16	Lakenheath	1201	market	fair
17	Newmarket	1217	market	fair
18	Freckenham	1219	market	fair
19	Mildenhall	1219	market	fair
20	Redgrave	1219	market	fair
21	Debenham	1221	market	fair
22	Southwold	1221	market	fair
23	Exning	1223	market	fair
24	Halesworth	1223	market	fair
25	Cowlinge	1225		fair
26	Stradbroke	1225	market	fair
27	Barking	1226	market	fair
28	Hacheston	1226	market	fair
29	Herringfleet	1226		fair
30	Laxfield	1226	market	
31	Needham Market	1226	market	
32	Shelley	1226	market	fair
33	Southerton	1226	market	
34	Woodbridge	1226	market	fair
35	Haughley	1227	market	fair
36	Homersfield	1227		fair
37	Nayland	1227	market	fair
38	Somerleyton	1227	market	
39	Witnesham	1227	market	
40	Westhall	1229	market	
41	Wyverstone	1231	market	fair
42	Long Melford	1235	market	fair
43	Dunwich	1242	market	
44	Leiston	1242	market	fair
45	Cattawade	1247	market	
46	Kessingland	1251	market	fair
47	Kersey	1252	market	
48	Toppesfield	1252	market	fair
49	Flixton (near Oulton)	1253	market	
50	Pettistree	1253	market	fair

51	Erwarton	1254	market	fair
52	Ousden	1254	market	fair
53	Lavenham	1257	market	fair
54	Worlington (near Mildenhall)	1258	market	fair
55	Brent Eleigh	1260	market	fair
56	Wantford (near Poslingford)	1262	market	fair
57	Market Weston	1263	market	fair
58	Kettleburgh	1265	market	fair
59	Barrow	1267	market	fair
60	Carlton Colville	1267	market	fair
61	Drinkstone	1267	market	fair
62	Whittingham	1267	market	fair
63	Wissett	1267	market	fair
64	Felsham	1268	market	fair
65	Hadleigh	1269	market	
66	Belton	1270	market	fair
67	Bramfield	1270	market	fair
68	Framlingham	1270	market	fair
69	Margritestowe, Hollesley	1270	market	fair
70	Ringshall	1270	market	fair
71	Bealings	1271	market	fair
72	Brampton	1271	market	fair
73	Bures	1271	market	fair
74	Burgate	1272	market	fair
75	Great Thurlow	1272	market	fair
76	Saxmundham	1272	market	fair
77	Botesdale	1274	market	
78	Byng Hall	1274	market	
79	Lidgate	1274	market	
80	Orford	1274	market	
81	Sizewell	1274	market	
82	Wickham Market	1274	market	
83	Mendlesham	1280	market	fair
84	Bawdsey	1283	market	fair
85	Brightwell	1285		fair
86	Grundisburgh	1285	market	fair
87	Thurston End	1290	market	fair
88	Benhall	1292		fair
89	Kelton (near Benhall)	1292	market	fair
90	Woodhall	1295	market	
91	Letheringham	1297		fair
92	Covehithe	1298	market	fair
93	Moulton	1298	market	
94	Earl Soham	1302	market	fair
95	Clopton	1303	market	fair
96	Shotley	1303	market	fair
97	Stoke by Nayland	1303	market	fair
98	Oulton	1307	market	fair
99	Lowestoft	1308	market	fair
100	Raydon	1310	market	fair
101	Reydon	1310	market	fair
102	Brandon	1319	market	fair
103	Somersham	1319	market	fair
104	Earl Stonham	1327	market	fair
105	Easton Bavents	1330	market	fair
106	East Bergholt	1334	market	
107	Walsham le Willows	1334	market	
108	Bildeston	1348	market	

### Essex Markets and Fairs before 1350

(after Britnell 1981 and W. Walker (1981) in order of earliest date mentioned)

<i>Order by date of first mention</i>	<i>Location</i>	<i>Earliest mention</i>	<i>Market</i>	<i>Fair</i>
109	Colchester	1086	Market	Fair
110	Maldon	1086	Market	
111	Hadstock	1129	Market	
112	Newport	1141	Market	Fair
113	Saffron Walden	1141	Market	Fair
114	Witham, Chipping Hill	1147–54	Market	
115	Rayleigh	1181	Market	
116	St Osyth	1189–90	Market	
117	Waltham Holy Cross	1189	Market	Fair
118	Chelmsford	1199	Market	Fair
119	Braintree	1200	Market	
120	Great Wakering	1200	Market	Fair
121	Writtle	1204	Market	Fair
122	Wix	1204	Market	
123	West Thurrock	1207	Market	
124	Witham, Newland	1212	Market	Fair
125	Harlow	1213–29	Market	Fair
126	Hatfield Broad Oak	1218	Market	
127	Southminster	1218	Market	
128	Barking	1219	Market	
129	Grays Thurrock	1221	Market	Fair
130	Ramsden	1221	Market	Fair
131	Harwich	1222	Market	Fair
132	Great Bardfield	1224	Market	
133	Stratford (Langthorne)	1225	Market	
134	Theydon Mount	1225	Market	Fair
135	Brentwood	1227	Market	Fair
136	Fobbing	1227	Market	Fair
137	Great Dunmow	c.1224	Market	Fair
138	High Ongar	1229		Fair
139	High Roding	1231	Market	Fair
140	Hadleigh	1231	Market	
141	Blackmore	1232		Fair
142	Woodham Ferrers	1234	Market	Fair
143	Manningtree	1238	Market	
144	Prittlewell	1238	Market	Fair
145	Stock	1239	Market	
146	Romford	1247	Market	Fair
147	Aveley	1248	Market	Fair
148	Earls Colne	1250	Market	Fair
149	Halstead	1250	Market	Fair
150	Billericay	1253	Market	Fair
151	Burnham-on-Crouch	1253	Market	Fair
152	Elmstead Market	1253	Market	Fair
153	Epping	1253	Market	Fair
154	Great Oakley	1253	Market	Fair
155	Birdbrook (Hersted)	1253	Market	Fair
156	Takeley	1253	Market	Fair
157	West Ham	1253	Market	Fair
158	Castle Hedingham	1254	Market	
159	Ockendon	1254	Market	Fair
160	Coggeshall	1256	Market	Fair
161	Rochford	1257	Market	Fair
162	Roydon	1257	Market	Fair
163	Shopland	c.1257	Market	

164	West Tilbury	1257	Market	
165	Wendons Ambo	1262	Market	Fair
166	Berden	1267		Fair
167	White Roding	1269	Market	Fair
168	Rainham	1270	Market	Fair
169	Bartlow End (Stevington)	1272	Market	Fair
170	Pleshey	before 1274	Market	
171	Danbury	1280	Market	Fair
172	Boreham	1281	Market	Fair
173	Bradwell-juxta-Mare	1283	Market	Fair
174	Chipping Ongar	1287	Market	Fair
175	Ingatestone	1289	Market	Fair
176	Bowers Gifford	1292	Market	Fair
177	Felsted	1292	Market	Fair
178	Thaxted	1296	Market	Fair
179	Theydon Garnon	1305	Market	Fair
180	Great Baddow	1306	Market	Fair
181	Good Easter	1309	Market	Fair
182	Kelvedon	1312	Market	Fair
183	Ashdon	1315	Market	Fair
184	Corringham	1317	Market	Fair
185	Ridgewell	1318	Market	Fair
186	Bradfield	1320	Market	Fair
187	Terling	1331	Market	Fair
188	Latton	1332		Fair
189	Horndon-on-the-Hill	1337	Market	Fair
190	Stebbing	1338	Market	Fair
191	Goldhanger	1348	Market	Fair

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Essex Markets and Fairs before 1350 (after Britnell 1981 and W. Walker 1981) in order of earliest date mentioned



# Chapter 8. The demise of the industry

## Decline

Cotter dates the end of the Hedingham Ware industry to *c.* 1350, or perhaps a little earlier. This end date is based on the phasing at Waterbeach and Denny abbeys in Cambridgeshire, the late Hedingham forms at Rivenhall, and the stratified sequence at Colchester (Cotter 2000, 83–84). At Colchester, Hedingham Ware had peaked by the later 13th century and at both Colchester and the Cambridgeshire abbey sites there is an element of residuality in the later phases, so that an end date may be nearer 1325 than 1350 (Cotter 2000, 84).

The examination of distribution of Hedingham Ware at consumer sites included in this study has provided little additional evidence for the end of the industry, either because data on site phasing was not available, the sites were not closely phased, or because the pottery was found in too small a quantity for the dating to be reliable. One site at Blatches near Stane Street showed a relatively large group in a 14th century phase (L. Mephram pers. comm.).

Evidence from the production sites that pottery manufacture continued into the 14th century comes from the presence of typologically late types such as internally glazed fineware dishes, fully wheel-thrown coarseware jars/cooking-pots with the very developed H3 and E5, rims, and pipkins with everted rims. Although these corroborate Cotter's evidence of production continuing into the 14th century, they do not give a close date in the 14th century. There is however, documentary evidence of potters in Sible Hedingham in the 14th century, with mentions in 1317 and 1351 (see Ryan, Appendix 4, p.164), although it is possible that the transition from Hedingham Ware to the sandy orange ware tradition had begun by this time (see below).

Many potteries appear to either decline or end in the mid-14th century, including Mill Green, the Hedingham industry's rival in the south of the county. There was a general economic decline from the beginning of the 14th century when the climate deteriorated at the end of the Medieval Warm Period, becoming cooler and wetter, bringing harvest failures and famine (Hunter 1999, 130). In 1348 the Black Death arrived, with further visitations of the plague later in the 14th century. There is archaeological evidence of abandonment of rural sites in north Essex during the 14th century (Brooks and Havis 2004, 545; Medlycott 1996, 177), so the potters would have lost much of their custom or may themselves have been killed off by the plague, as happened at Hanley in Worcestershire, where a community of thirteen potters was wiped out by the Black Death (Le Patourel 1968, 108).

## Survival

There is evidence that pottery production continued in the Hedingham area beyond the mid 14th century. Around 2kg of pottery, datable on stylistic grounds to the later 14th to 15th centuries, was recovered from two kilns at

Blackmore End, Wethersfield (see gazetteer entry). The pottery is not Hedingham Ware, but a type of late medieval sandy orange ware similar to Colchester Ware (although a few Hedingham Coarseware sherds were also present, see gazetteer). Both kilns produced a similar assemblage, including wasters, comprising unglazed or sparsely glazed sherds which are sometimes slip-painted or slip-coated. Colour is typically orange or creamy orange, although grey and buff sherds are also present. Featured sherds include the following:

- rims from large jugs or cisterns with bifid handles, unglazed
- part of a jug showing a triangular rim and rilled neck with a slip-painted band and a plain glaze with occasional flecks of green
- a rod handle from a jug with a slip-painted stripe
- a broad strap handle, slip-coated but unglazed
- an everted dish rim with an internal plain lead glaze showing flecks of green
- a lid-seated jar rim
- a pipkin handle
- an everted bowl rim
- a warped flanged rim, perhaps from a bowl, with a decomposed glaze.

Although these are in the sandy Colchester Ware tradition, the fabric tends to be smoother and more micaceous than Colchester-type ware so that some sherds have a Hedingham Ware-like fabric. As this pottery is not of the Hedingham Ware tradition it cannot be described as Hedingham Ware even though it may represent a continuation of the original industry, perhaps carried out by the descendants of the original potters. Alternatively potters could have moved in from elsewhere. As postulated by Cotter (2000, 90), the Blackmore End production probably represents evolution into the less distinctive general category of sandy orange ware made in the Colchester area and elsewhere in Essex. The beginning of this change is apparent at the Starlings Hill kiln, where sandy fabrics occur but are still clearly identifiable as Hedingham Ware (see Chapter 3).

There is documentary evidence for potters in Wethersfield in the late 15th century, perhaps contemporary with production at Blackmore End, with mentions in 1483 and 1486. There is also evidence of pottery manufacture in Wethersfield in the 16th and 17th centuries, in 1535, 1598 and 1632 (see Appendix 4, p.164–5 for a detailed documentary evidence report). Presumably by this time they were manufacturing post-medieval red earthenware.

The southern part of the main road through Sible Hedingham was named Potterstreete in a deed of 1444, indicating that a community of potters lived here and that

pottery was still manufactured here in the 15th century, although from the evidence of the Blackmore End kiln, this was unlikely to have been Hedingham Ware. There is no documentary evidence for potters in Sible Hedingham in the 16th and early 17th centuries, so it would appear that potting had ceased or the potters moved away, perhaps to Wethersfield.

Ryan (Appendix 4, p.165) notes documentary evidence of tile-making in the Hedingham area during the mid 14th century and that brickmaking may have begun by the late 15th century. These clay-working industries continued until the 20th century and Sible Hedingham was an important producer of brick from the later 19th to earlier 20th centuries. Most brickmaking sites are to the west of Sible Hedingham and Gosfield, with a few sites on the eastern side of the River Colne. Some brickworks are situated in the valleys as was the case with the medieval pottery industry, but many are situated outside the valleys on boulder clay suggesting they used a variety of clay sources. Utilitarian earthenware pottery was again made

in the 19th century at the Southey Green pottery works, located close to the medieval Starlings Hill site, and pottery manufacture was also reintroduced at Castle Hedingham when the potter Edward Bingham arrived in the 19th century (see Chapter 2).

The documentary evidence shows a continuity of ceramic manufacture from the medieval period onwards, with the clay workers concentrating on brick and tile manufacture after pottery manufacture went into decline almost certainly due to competition from the more desirable types of pottery made at Staffordshire, London and elsewhere from the 17th century. Clay-working probably continued in this area because of the good quality clays and good transport links. As in the medieval period, modern Sible Hedingham was a hive of industry until the closing of the railway line in the 1950s, with wood-working and agricultural processing, including the malting of locally grown hops, being important industries (<http://www.siblehedingham.com/History.html>).

## Chapter 9. Conclusions

This study has been reasonably successful in achieving its aims and objectives; the only disappointment is the lack of documentary evidence to shed light on the pottery industry and its geographical setting.

The evidence revealed here very much corroborates earlier work showing the fineware's affinities with Scarborough-type ware, London-type ware, and in the later period, Mill Green Ware. It also corroborates the pattern of distribution suggested by Cotter, confirming that the main markets of Hedingham Ware were north Essex, southern Suffolk and Cambridgeshire. Neither was there any evidence to challenge the established dating of the industry from mid 12th to early to mid 14th century. The mid 12th century date fits in with the building of the castle at Castle Hedingham in 1140, providing circumstantial evidence that this institution either established or encouraged the pottery industry. If this was the case, the Hedingham industry soon established other markets for its products, as from the outset Hedingham Ware had a wide distribution.

In spite of its similarities to Late Saxon Thetford-type ware, there is no evidence that Hedingham Coarseware evolved directly from Thetford-type ware, and as pottery in the early medieval tradition was manufactured at some of the production sites, it almost certainly evolved from Early Medieval Ware. It may be related to the early medieval pottery industry at nearby Takeley. How the fineware came into existence is unknown but there must be some association with the London-type ware industry. If the authorities at Hedingham Castle did initiate the Hedingham pottery industry then expertise may have been brought in from London.

To make the finewares, suitable clays were needed and chemical analysis suggests the clays of the Lower London Tertiaries, specifically those of the Lambeth Group, were used for the finewares. Because these are deeply stratified and only exposed where the River Colne has carved deep valleys, the outcrops are very limited and occur locally only in the northern half of Sible Hedingham. All the known kilns are well to the south of this outcrop and this could mean that there are undiscovered kilns closer to the Lower London Tertiary deposits (or that there are unmapped deposits of Lower London Tertiaries further south along the river valley). However, this part of Sible Hedingham was very built-up during the 19th and 20th centuries, so any kilns would probably have been destroyed. Kilns in undeveloped Castle Hedingham, also near this outcrop, may await discovery.

There are production sites well away from the Lower London Tertiaries that produced fineware, such as the Shalford Road kiln near Wethersfield, but the fineware clay could have easily been carted some distance especially as Wethersfield is connected directly to Sible Hedingham by road. It is also possible that there were suitable outcrops near this site that have been worked out, or that the outcrop is not of sufficient size to be recorded on the modern geological map (Moorhouse 1982, 96). If the fineware clay was transported some distance, then this is evidence that the Hedingham Ware industry was

well-organised with close co-operation between the various production sites. Production sites such as Shalford Road and Blackmore End were well to the west of the main cluster in the Hedingham area. This could mean that there are production sites all over north-central Essex, but they would need to meet all the geographic requirements of the known kiln sites. They would have to be in, or near, deep valleys that exposed suitable clays and sands and would have needed access to supplies of water and fuel. If they were making finewares the potteries would also have to be within carting distance of clays from the Lower London Tertiaries. Finally, the potteries would have to be sited on, or close to, main roads.

The coarsewares can be differentiated, both by examination under the microscope and by chemical analysis, but without close examination appear little different from other coarsewares of the region. Nevertheless distribution has been plotted and seems to echo the main fineware distribution, but only occurs where the fineware is densest, not in the furthest flung locations, such as the Fens. A few examples of the coarseware occur in the south-west Essex/Greater London area where they would not be expected. This could be due to misidentification, but the coarseware may be more widespread than supposed, tending to be identified where it is expected to be found.

Whereas the fineware is similar to London-type ware and Scarborough Ware, the coarseware shows some similarities to coarsewares from Suffolk in terms of decoration, i.e. a row of dimpling below the rim, (but shares few similarities in terms of fabric and vessel form). However, as would be expected, the closest similarities are with the Essex coarsewares produced at Mile End and Great Horkeley, near Colchester. The coarseware then would appear to have a more local sphere of influence than the fineware, although there is no evidence that the fineware and coarseware were run separately, especially as they were fired in the same kilns. Hedingham and Mile End/Great Horkeley coarsewares can be distinguished chemically, but as both are located in the Colne valley, they may be related industries.

The coarseware assemblage reflects a typical coarseware assemblage at a consumer site with a preponderance of cooking-pots, followed by jugs and bowls with smaller numbers of more specialised vessels such as storage jars, curfews and chimney pots. A few of the production sites may have specialised in the production of the more hefty vessels, such as storage jars and curfews. Grey was almost certainly the intended firing colour, the large number of red or buff coarsewares were probably unintentionally under-fired, but there is very slight evidence that the large bowls were intended to be oxidised. However, this will have to be tested by looking at Hedingham Coarseware bowls from consumer sites.

Statistical analysis has been most useful in comparing the variables in cooking-pot traits, as this is the most numerous vessel form. It threw up some interesting correlations, for example, at Hole Farm, decoration was much more frequent on cooking-pots with H2 rims than on

H1 rims, even though the evidence suggests that there was no significant difference in date. Statistical analysis also demonstrated that a row of dimpling around the shoulder only occurred on the larger-sized cooking-pots.

Pottery-making was not the only industry being carried out in medieval Hedingham; woodland products and the wool industry were also important and all may have interacted. Stamped strip jugs, unlike other styles of Hedingham Fineware jug, are peculiar to the Hedingham industry. The accurate depictions of cartwheels shown on their stamps suggest an association with cartwheels.

Pottery production continued in the Hedingham area into the late medieval period and beyond, the evidence suggesting that the industry lost its identity as Hedingham Ware and evolved into the sandy orange ware tradition. The evidence from Starlings Hill suggests this happened fairly early on, and may have been because the potters realised that they could make perfectly serviceable glazed and decorated wares from the more abundant London Clay and would not be reliant on the more limited supplies

of clays from the Lower London Tertiaries at Sible Hedingham.

The wide and abundant distribution of Hedingham Ware shows how easily goods even of relatively low value were moved around by middlemen of various kinds. Finds of Hedingham Ware at important wool towns add weight to Cotter's suggestion that Hedingham Ware distribution was associated with the wool trade, and Hedingham Ware may also have been traded in association with other goods, such as grain. The absence of Hedingham Ware in north-east Suffolk helps demonstrate the importance of the Gipping Divide, whereby the River Gipping defines an important geographical and cultural boundary. The patterns of distribution also help show which roads were used in the medieval period and may be of some interest to historians.

Avenues for further study would be to examine all production sites in a particular region, to see how they compare in terms of kiln design, orientation and factors that affect the location. The latter would enable the location of pottery production sites to be predicted.

# Appendix 1: Petrographic analysis, by P.S. Quinn

## Background

As part of an English Heritage-funded project aimed at characterising the medieval Hedingham Ware pottery industry of North Essex, thin-section petrographic analysis has been conducted on a selection of coarse and fineware sherds. This analysis compliments hand-specimen fabric classification of material from the various Hedingham production sites, as well as answering specific questions about the raw materials and technology of this regionally important pottery industry. Details of the samples analysed and the aims of the analysis are given below.

## Sample materials

A total of fifty sherds were submitted for analysis. These include both fine, glazed wares and coarsewares. The material comes from several of the production sites that have been discovered around Sible Hedingham, Gosfield and Halstead, including Hole Farm, Southey Green and Holy Trinity. The samples were chosen by Helen Walker based upon the hand-specimen fabric classification of a large corpus of Hedingham Ware pottery. A total of thirteen different fabrics are represented, with in most cases, five sherds from each (Tables 10 and 11). The samples were numbered 1–50 and have been given the prefix HD for the purpose of this analysis.

## Aims of analysis

Petrographic analysis of the Hedingham pottery samples in this study was intended to compliment the hand-specimen fabric classification of the same material and contribute towards the establishment of a typology for this medieval ware in line with project research aims (see Chapter 1). Analysis was conducted within the confines of the already-established hand-specimen fabrics in order to characterise them in more detail, check their validity and examine their relationships to one another and other pottery wares. In this respect, specific questions were asked of many of the fabrics, in communication with Helen Walker (HW). These can be found in the discussion of the appropriate fabrics below.

In addition to complimenting and extending the fabric analysis of the ceramics, petrographic analysis was used to interpret the raw materials and technology of the Hedingham samples. Geological interpretation of the raw materials used in the potting industry and comparison with the surface geology of North Essex was aimed at identifying the specific deposits used by the Hedingham production centres. This contributes towards the interpretation of the place of the Hedingham industry within its geographical and environmental setting. Lastly, the investigation of micromorphological and textural features in thin-section was used to address aspects of the production sequence of the Hedingham pottery. These include paste preparation, vessel forming methods and firing.

## Methodology

Sub-samples of all fifty artefacts were impregnated and prepared as standard petrographic thin-sections at University of Sheffield, Department of Archaeology. These were studied at magnifications of 25–400x under the polarising light microscope. Petrographic analysis was conducted within the confines of the already-established hand-specimen fabric classification (Tables 10 and 11). Each fabric was characterised in detail under the microscope and interpreted fully in terms of its constituent raw materials and pottery technology. An assessment was made of the validity of each hand-specimen fabric, answering specific questions about their relationships between one another as well as with pottery from the site of Frogs Hall (Vince 2006). Identification of the likely source(s) of raw materials used for the Hedingham pottery was made by comparison with geological maps and reports of the North Essex area.

## Results

### Fabric 1

(Samples HD1, 2, 3, 4, 5)

A homogeneous fabric characterised by equant-elongate, rounded to well-rounded medium sand-sized inclusions in a non-calcareous light coloured fine silty clay matrix. The rounded sand inclusions which range up to 1.8 mm (sample HD1) and have a modal size of *c.*0.48 mm (medium sand) are mainly composed of monocrystalline quartz with undulose extinction and polycrystalline quartz. The polycrystalline quartz varies in grain size and can have foliation, suggesting that some of it is of metamorphic origin. Rarer sand-sized inclusions include chert, altered untwined feldspars (HD5), phyllite (HD4), siltstone (HD2), cataclasite (HD5) and hornblende (HD1). The rounded sand inclusions form a separate mode and appear to have been added as temper, perhaps in the form of a loose, well-sorted sand. This has been added to fine homogeneous clay with fine, sub-angular, silt-sized quartz, muscovite mica and ferruginous inclusions. Clay textural features (TFs) in several samples (e.g. HD3, 4, 5) appear to represent lumps of the base clay used to produce these ceramics. These indicate that there was some variability in the texture and composition of this clay, for example HD4 contains finer TFs and an overall finer base clay, whereas HD3 is coarser. The clay TFs generally have neutral optical density and blend into the matrix, but can have a more conspicuous darker, reddish colour (e.g. HD4, 5). The samples contain meso and macro elongate voids and vughs (e.g. HD1). They can exhibit a preferred alignment parallel to each other and the margins of the sections (e.g. HD1, 2), which might be related to drying or firing or could be due to forming. The largely equant sand inclusions do not show any preferred alignment. The clay matrix of the samples is highly to moderately optically active, suggesting that they were fired below 800–850°C. Most Fabric 1 samples analysed were fired in an oxidising atmosphere. Samples HD2 and HD5 have oxidised margins and dark cores, suggesting that they were

incompletely oxidised due to a short firing duration, or were reduced and rapidly cooled in air.

### **Fabric 6**

(Sample HD6)

As suspected by HW, this sample is very similar to Fabric 1. It is almost identical in terms of composition and texture to the previous fabric (compare with samples HD2, 3), being composed of rounded medium sand-sized inclusions of quartz and polycrystalline quartz in non-calcareous clay with silt-sized quartz and muscovite mica. Like Fabric 1 it appears to have been made by adding sand temper to fine clay, it has elongate voids that are aligned to the vessel margins and it was fired below 800–850°C in an oxidising atmosphere. One difference between this sample and the Fabric 1 sherds is the absence of clay TFs, but this could be explained by more thorough hydration of the base clay during paste preparation. Two possible relic coil structures can be picked out by the distribution and orientation of the sand inclusions, suggesting that the pot was formed by coiling.

### **Fabric 2**

(Samples HD7, 8, 9, 10, 11)

A relatively homogeneous fabric, characterised by the presence of equant to elongate, rounded to well-rounded medium sand-sized inclusions (max 1.12 mm) of monocrystalline quartz with undulose extinction, foliated polycrystalline quartz, altered feldspar, cataclasite (HD9), chert, untwined feldspar (HD10) and possible phyllite (HD10), in a non-calcareous light coloured clay matrix with abundant elongate-equant, silt-sized quartz and muscovite mica and ferruginous inclusions. The bimodal grain-size distribution of the inclusions in the samples suggests that the rounded sand inclusions were added as temper in the form of a well-sorted sand deposit. Evidence for the nature of the base clay can be found in the form of inconspicuous clay TFs in some samples (e.g. HD11), which represent lumps that were not sufficiently hydrated during paste preparation. Elongate voids occur in sample HD9 and especially in HD11, where they are parallel to the vessel margins. Samples HD7 and HD8 do not contain many voids, but seem to have possible relic coils picked out by the orientation of the sand inclusions. The clay matrices of the samples are moderately-highly optically active and therefore suggest a firing temperature below 800–850°C. Most samples were fired in a neutral to reducing atmosphere, with the exception of sample HD7, which has an oxidised margin. Sample HD10 stands out from the other samples in that it has slightly finer sand inclusions. Samples HD7 and HD8 have rather sparse sand inclusion and less voids compared to the other samples in the fabric. The five Fabric 2 samples are compositionally and texturally very similar to the samples in Fabric 1, with the exception that the majority of the Fabric 2 samples are reduction fired, whereas most of the Fabric 1 samples are oxidised. This confirms the suspicion of HW that Fabric 1 is an oxidised version of Fabric 2, or that Fabric 2 is a reduced version of Fabric 1. The same can be said for Fabric 6.

### **Fabric 3**

(Samples HD12, 13, 14, 15, 16)

The five samples analysed of Fabric 3 are compositionally very similar but can be divided into two groups based upon

their texture. All samples appear to have been made from a similar recipe to Fabric 1, Fabric 6 and Fabric 2 of loose rounded quartz and polycrystalline quartz sand added to fine silty, micaceous non-calcareous clay. Samples HD13, 15 and 16 are compositionally as well as texturally very similar to Fabric 1, Fabric 6 and Fabric 2 and could therefore be placed in the same fabric. Samples HD12 and HD14 differ from the other three in that their sand temper is of a smaller grain size (fine sand). This agrees with the interpretation of HW of Fabric 3 as a finer version of Fabric 2 (at least for these two samples). One fine sand tempered sample (HD10) occurs in Fabric 2 and is very similar to HD12 and HD14. As with Fabrics 1 and 2, unmixed lumps of the base clay occur in some samples (HD13, 15). Several samples (HD12, 13, 14, 15) also exhibit elongate voids with alignment parallel to one another and the vessel margins. The moderate-high optical activity of the matrices of the samples indicates that they were below 800–850°C. Most samples in this fabric were oxidised, although sample HD15 may have been incompletely oxidised due to a short firing duration and sample HD12 may have been reduced and rapidly cooled in air. Possible relic coils, picked out by the distribution and orientation of the sand inclusions occur in all samples, particularly samples HD13, 15 and 16.

### **Fabric 5**

(Samples HD17, 18, 19, 20, 21)

This fabric is characterised by abundant, fine inclusions in a non-calcareous clay matrix. The five samples analysed can be split into two groups. Samples HD17 and HD19 contain very abundant, well-packed, well-sorted, elongate and equant, sub-angular to rounded very fine sand-sized inclusions of quartz, muscovite mica, polycrystalline quartz, plagioclase feldspar, microcline feldspar, untwined feldspar and ferruginous inclusions. These inclusions have a general preferred orientation parallel to the vessel margins in sample HD17. Both samples contain abundant meso-elongate voids that are also aligned parallel to the vessel walls. Samples HD17 and HD19 both have non-calcareous clay matrices that exhibit slight optical activity, indicating that these samples were probably fired at around 800–850°C. Both samples were fired under reducing conditions. Sample HD19 contains some sparse larger (fine-medium quartz) equant, rounded to well-rounded quartz and polycrystalline quartz inclusions that stand out from the finer well-sorted inclusions that dominate this sample. Samples HD18, 20 and 21 are related to samples HD 17 and HD19, but have generally coarser, less well-sorted and less well-packed inclusions (max = 0.64 mm, mode = fine). They appear to contain less fine muscovite mica and more coarse rounded quartz grains. Due to the wide unimodal grain-size distribution of the inclusions in samples HD18, 20 and 21, it is not possible to determine whether the larger inclusions represent temper added to fine silty/sandy clay, though the roundness of these inclusions may set them apart from the finer more angular inclusions in the ceramics. As with samples HD17 and HD19, the other three samples have meso-elongate voids that are orientated parallel to the vessel margins. The generally moderate activity of the non-calcareous clay matrix in samples HD18, 20 and 21 indicate that the ceramics were fired below 800–850°C. Samples HD18 and HD21 were oxidised, whereas sample HD20 was reduction fired. The

samples of Fabric 5 submitted for analysis are easily distinguishable from fineware Fabrics 1, 6, 2 and 3 by their finer, but more inclusion-rich nature. This confirms the suggestion of HW.

### Sandy orange ware fabric (hedsao)

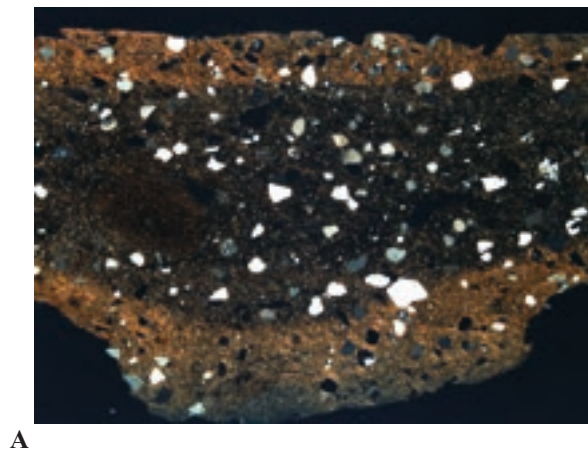
(Samples HD22, 23, 24, 25)

Three of the analysed samples from this fabric are characterised by abundant equant to elongate, well-rounded to sub-angular quartz inclusions in a non-calcareous clay matrix. The inclusions have a wide, unimodal grain-size distribution. However, there is a difference in the roundness, and in some respects the composition, between the larger more rounded sand-sized inclusions of quartz, polycrystalline quartz, chert, plagioclase feldspar, weathered untwined feldspar, fine sandstone, phyllite and cataclastite, and the more angular, finer silt-sized inclusions of quartz, muscovite mica, chert, feldspar, amorphous orange weathered inclusions and biotite. It is possible that the larger, more rounded inclusions represent temper and the finer inclusions were a natural component of the silty base clay to which this was added. A rather inconspicuous textural feature in sample HD25 may represent a poorly mixed fragment of the base clay used for these ceramics. This sample also contains dark red to black iron-rich or organic-rich TFs and inclusions of different sizes. It is not clear whether these are natural or the result of paste preparation. Sample HD25 also contains a single distinctive grey argillaceous inclusion that is rich in angular quartz, feldspar and

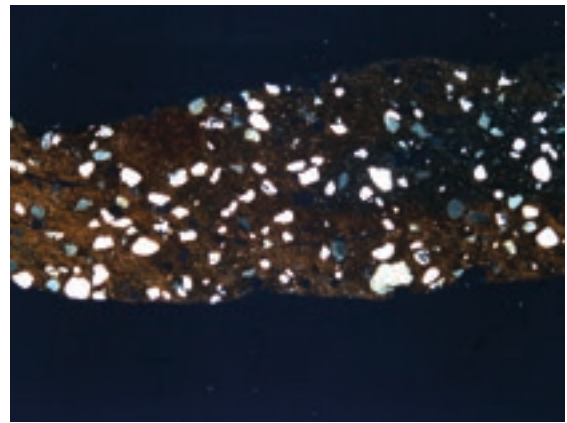
muscovite mica. This may also be a lump of dried clay, but its relationship to the mix of the ceramics is not clear. One possibility is that it represents the source of the fine sub-angular inclusions in this fabric, suggesting that the paste of these ceramics was made from three separate components. This cannot be confirmed with certainty without seeing other samples of this fabric. Sample HD24 contains abundant elongate meso- and macro-voids that are aligned parallel to the vessel margins. Sample HD22 contains many macro-voids that may be due to the thin-section preparation process. Sample HD25 does not contain many voids. Possible relic coils exist in sample HD24. The clay matrices of the analysed samples range from moderately optically active (HD25) to optically inactive (HD22), suggesting that they were fired at or above 800–850°C. Sample HD25 was well oxidised giving it an orange-red colour, whereas sample HD24 was fired in a less oxidising environment. Sample HD22 has an oxidised, red-orange margin, which is sharply contrasted with a grey, reduced or incompletely oxidised core. This may be due to reduction firing, then rapid cooling in air. Sample HD23 differs from the other three samples analysed from this fabric. It has a bimodal grain-size distribution, with a more distinctive sandy temper fraction and a finer base clay. This sample bears closer resemblance to Fabric 2 (e.g. sample HD9) and Fabric 3 (e.g. sample HD13). HW commented that the sandy orange fabric looks close to Fabrics 1–3. Whilst this is true for sample HD22, the other three samples are texturally

<i>Sample</i>	<i>Fabric</i>	<i>Context</i>	<i>Record No.</i>	<i>Description (and illustration No.)</i>
1	Fabric 1	Hole Farm kiln 2 east stokehole	r.11586	unglazed collared jug rim
2	Fabric 1	Hole Farm Ditch	r.11605	abraded body sherd with traces of yellow glaze and red slip
3	Fabric 1	Hole Farm kiln 2 oven	r.11888	small sherd ?from shoulder of jug
4	Fabric 1	Hole Farm Ditch	r.11707	jug handle
5	Fabric 1	Hole Farm Ditch	r.11522	sherd with thumbled applied strip and red pellet
6	Fabric 1/6	Hole Farm Ditch/kiln 2 east	r.11591	sherd from shoulder of jug (Fig. 14.3)
7	Fabric 2	stokehole	r.11588	abraded sherd with intersecting red slip stripes
8	Fabric 2	Hole Farm Ditch	r.11685	sherd with brown slip stripe
9	Fabric 2	Hole Farm Ditch	r.11606	body sherd with splashes of matt glaze
10	Fabric 2	Hole Farm Ditch	r.11684	lower handle attachment with incised decoration
11	Fabric 2	Hole Farm kiln 2 US	r.11878	jug rim
12	Fabric 3	Hole Farm Ditch	r.11693	red slip stripes and pale greenish glaze
13	Fabric 3	Hole Farm non-kiln feature	r.11983	sherd with reduced surface and dark greenish glaze
14	Fabric 3	Hole Farm kiln east stokehole	r.11590	sherd with matt glaze and clay adhesion
15	Fabric 3	Hole Farm Ditch	r.11755	sherd from shoulder of jug, rilled with pale greenish glaze
16	Fabric 3	Hole Farm Ditch	r.11756	unglazed sherd with brown stripe
17	Fabric 5	Hole Farm unstratified	r.11991	reduced, abraded sherd with applied strips and pads
18	Fabric 5	Hole Farm Ditch	r.11611	unglazed abraded base sherd
19	Fabric 5	Hole Farm Ditch	r.11760	reduced sherd with Rouen-style decoration
20	Fabric 5	Hole Farm kiln 2 oven	r.11885	sherd with intersecting brown stripes
21	Fabric 5	Hole Farm US	r.11990	sherd from stamp strip jug
22	Sandy orange (hedsao)	Starlings Hill Ditch (2)	r.13175	pierced jug handle
23	Sandy orange (hedsao)	Starlings Hill Ditch (1)	r.13184	body sherd with greenish glaze and attachment scar
24	Sandy orange (hedsao)	Starlings Hill Ditch (2)	r.13161	glazed body sherd with faint combing
25	Sandy orange (hedsao)	Starlings Hill Ditch (2)	r.13167	lower handle attachment, green-glazed

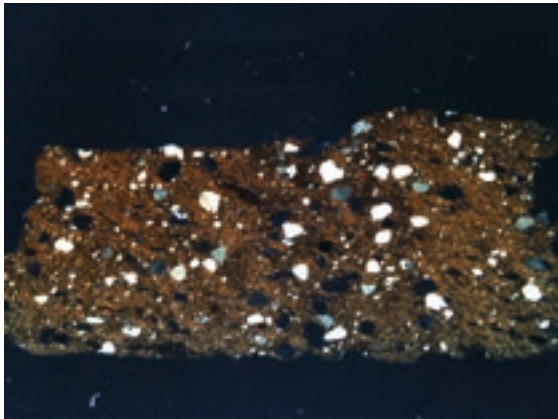
Table 10 Fineware ceramics from the Hedingham pottery industry submitted for thin-section analysis, with hand-specimen fabric classification and other information



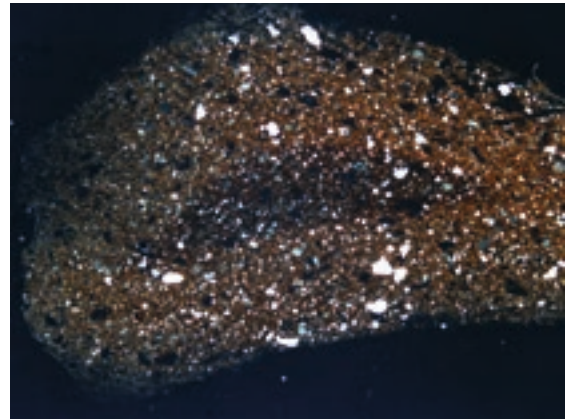
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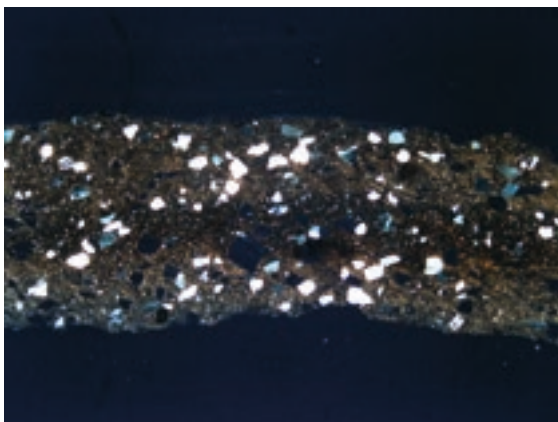
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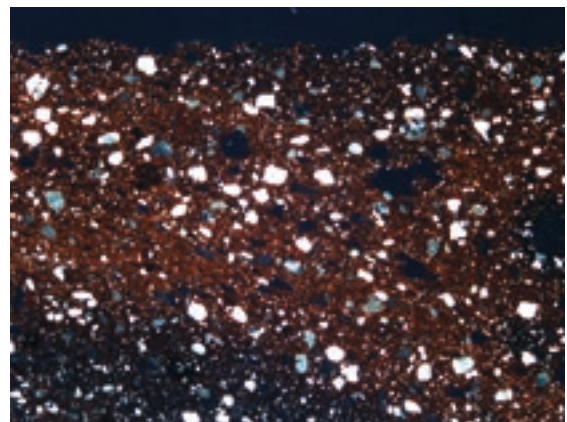
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Plate 45 Thin-section photomicrographs of medieval fineware ceramics from the Hedingham pottery industry. A. Fabric 1 Sample HD5, B. Fabric 1/6 Sample 6, C. Fabric 2 Sample 9, D. Fabric 3 Sample 15, E. Fabric 5 Sample 18, F. Sandy orange fabric Sample HD25. All images taken in XP. Image width = 1.25 cm



distinguishable from these fineware fabrics and appear to have been made using a different base clay.

#### **Fabric hedcwem**

(Samples HD26, 27, 28, 29)

The four samples analysed from this fabric are characterised by the presence of equant and elongate, rounded to well-rounded, medium-coarse sand-sized inclusions (max 2.0 mm – HD28) of quartz with undulose extinction, polycrystalline quartz which is sometimes foliated (e.g. HD27, 29), chert (e.g. HD27), metaquartzite (e.g. HD26) and phyllite (e.g. HD27), in a non-calcareous clay matrix with fine sub-angular, elongate and equant muscovite mica, biotite, chert (e.g. HD29), amorphous orange weathered inclusions and ferruginous inclusions. The rounded sand appears to have been added as temper to fine silty clay. Voids are not common in the samples, with the exception of some mega-vughs in HD27 and HD28. Sample HD27 contains argillaceous TFs, which may represent insufficiently mixed areas of the base clay. Sample HD27 and possibly sample HD26 contain relic coils from the pottery manufacturing process. The clay matrices of the samples are optically slightly (HD26, 28, 29) to moderately active (HD27) indicating that they were perhaps fired in the temperature range of 800–850°C. Samples HD26, 27 and 29 were oxidised, whereas sample HD28 was either incompletely oxidised due to a short firing duration or fired in an oxygen-poor atmosphere then rapidly cooled in air. The four samples analysed from coarseware fabric hedcwem bear similarities to the fineware sandy orange fabric (hedsao).

#### **Fabric hedcwefi**

(Sample HD30)

This sample bears a strong resemblance to coarseware fabric hedcwem and also the glazed sandy orange fabric hedsao. It is particularly similar to the latter (e.g. sample HD25) in terms of its composition and texture. It has a well-packed red-firing, silty, base clay, to which rounded sand temper has been added. The sample contains several large conspicuous dark red to black iron- or organic-rich TFs. HW commented that sample HD30 is relatively fine and micaceous. The thin-section prepared from this sample has medium sand-sized temper inclusions with a maximum size of 0.68 mm. It is finer than several coarseware fabrics such as hedcwem, hcwoxor, hcwcor and hcwstor. In thin-section sample HD30 does indeed have much fine muscovite mica, though this is also a feature of many other samples and fabrics analysed from the Hedingham pottery industry.

#### **Fabric hcwoxor**

(Sample HD31)

This coarse sample has a fabric characterised by abundant, equant and elongate, rounded to well-rounded, coarse sand-sized inclusions of quartz, polycrystalline quartz, untwined feldspar, siltstone and chert in fine silty clay with sub-angular quartz, muscovite mica and chert. It contains several dark red iron-rich clayey TFs and possible unmixed traces of the silty base clay. Numerous large vughs are probably the result of the thin-section making process. The clay matrix of this sample is moderately optically active, suggesting that it was not highly fired. It was fired in an oxidising atmosphere. This sample bears similarities to coarseware fabric hedcwem

among others. It differs from this fabric in that it contains a greater proportion of coarse sand temper.

#### **Fabric hcwcor**

(Samples 32, 33, 34, 35, 36)

This fabric is characterised by sparse, elongate and equant, rounded to well rounded, coarse sand-sized inclusions of quartz, polycrystalline quartz, chert (e.g. sample HD32) and breccia (sample HD35) in non-calcareous clay containing abundant silt-sized equant and elongate, angular to sub-rounded quartz, muscovite mica, ferruginous inclusions, biotite (HD36), hornblende (HD34) and epidote (HD36). It is clear from the strongly bimodal grain-size distribution of the inclusions and the differences in the roundness of the two modes that the coarse sand was added as temper. This loose sandy material appears to have been well-sorted (e.g. HD34), but also contained some finer sand particles (e.g. sample HD35). The fine, angular silt-sized inclusions were likely to have been present in the base clay that was used to produce these ceramics. Elongate meso- and macro-voids are present in many of the samples analysed (e.g. HD35) and are generally aligned to the vessel margins. Sample HD36 contains mego-elongate voids and mega-vughs. Relic coils are picked out by the orientation of the coarse sand temper in samples HD32, 34, and 36. All analysed samples were reduction-fired and have very dark brown to black clay matrices. Due to its dark colour, it is not possible to determine the optical activity of the clay in the samples. However, there appears to be some slight birefringence, suggesting that the samples were not fired above 800–850°C. HW commented that this fabric is from a different site than the other coarseware samples analysed here and that it is much coarser than the standard Hedingham coarseware. In thin-section the fabric bears strong similarities to many of the previous coarseware fabrics in terms of its composition and technology, including hedcw below. However, the sand temper added to hcwcor is slightly coarser than all other samples, setting it apart.

HW asked specifically about the similarity between coarseware fabric hcwcor and medieval pottery analysed by Vince (2006) from Frogs Hall, near Takeley, Essex. Although it has not been possible to access the thin-sections from this site for direct comparison, the description of the Frogs Hall ceramics and fired clay artefacts suggests strong similarities with hcwcor and indeed other Hedingham coarseware fabrics. Vince (2006) classified all of the Frogs Hall samples in his fabric 1, which is composed of rounded sand grains of quartz, metamorphic quartz, flint, chert and sandstone in a silty clay with abundant angular quartz and moderate muscovite. As in the Hedingham pottery analysed here, he appears to interpret the rounded sand inclusions in the Frogs Hall material as temper added to a base clay.

#### **Fabric hedew**

(Samples 37, 38, 39, 40, 41, 42)

This fabric is compositionally and texturally very similar to the samples analysed from coarseware fabrics hedcwem and hedcwefi. The six samples analysed are related, though samples HD37 and HD38 are slightly coarser than the other four and sample HD41 is finer and contains less temper. Notable compositional features include the common chert in the fine fraction (e.g. sample

HD38), the high proportion of ferruginous inclusions in sample HD42 and the high proportion of foliated polycrystalline quartz in sample HD37. Sample HD38 contains a TF that may represent an unmixed lump of the base clay used to manufacture these ceramics. The slight optical activity of the matrices in samples HD37 and HD38 indicate that the samples were moderately fired in the region of 800–850°C. The firing atmosphere of the samples varies from oxidising (sample HD41) to reduced (samples HD39, 40, 42). Sample HD37 has a reduced core and margin, between which the clay was oxidised. This complex layered structure may suggest that the sample was reduced, cooled rapidly in air, then reduced again, or that the sample was incompletely oxidised, then reduced for a short duration. HW asked whether there is any difference between the reduction fired and oxidised hedcw samples. In thin-section these look compositionally and texturally the same.

### Fabric hcwfi

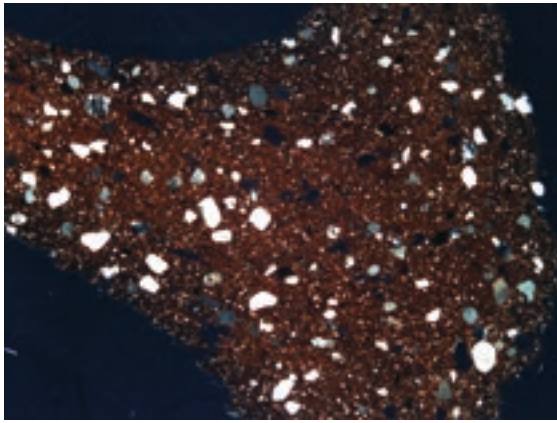
(Samples 43, 44, 45, 46, 47)

The samples analysed from this fabric are characterised by the presence of equant and elongate, rounded to sub-rounded, fine- to medium-sand sized inclusions of quartz, polycrystalline quartz, in some cases with foliation (e.g. sample HD46), chert (e.g. samples HD43, 47), siltstone (sample HD43) and untwined feldspar (sample HD45), in a non-calcareous clay matrix with abundant, well-packed, equant and elongate, sub-angular to sub-rounded silt-sized inclusions of quartz, polycrystalline quartz, muscovite mica, biotite (e.g. sample HD47), plagioclase

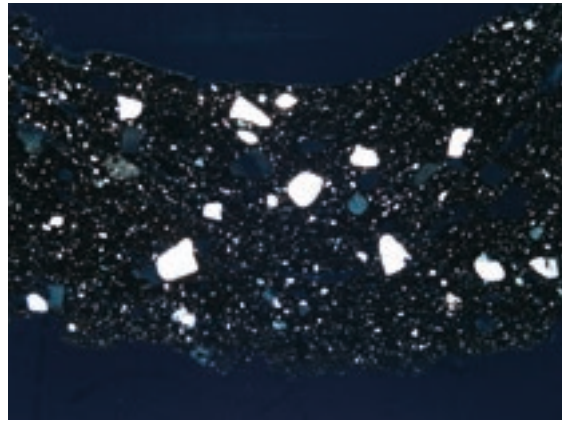
(e.g. sample HD43), chert (e.g. sample HD47), microcline (sample HD45), amorphous orange weathered inclusions and ferruginous inclusions. The sand inclusions, which may represent temper, have a wide grain size distribution in sample HD45, 46 and 47 and thus may have been added as a loose, poorly-sorted sand deposit. Sample HD44 has less sand temper, which was better sorted, leading to a more bimodal grain-size distribution. Sample HD43 stands out in that it is finer than the other four and appears to have had some very fine sand added. Inconspicuous clayey TFs in samples HD44, 45 and 47 may be remnants of the paste preparation process and represent the nature of the base clay. Dark, iron-rich TFs occur frequently in samples HD46 and 47. Samples HD45 and 47 may contain small pieces of crushed pottery or ‘grog’, though their identification is not positive. Meso-elongate voids permeate all samples, except HD44. These can be aligned with the margins of the samples. The clay matrices of the samples are moderately optically active (sample HD45), slightly active (samples HD43, 48) and optically inactive (samples HD46, 47), suggesting a range in the degree of firing. Sample HD46 contains much less fine muscovite mica than the other samples, which might suggest that it was high-fired, leading to the decomposition of these small inclusions. Firing took place in an oxidised (sample 45), weakly oxidised (samples HD43, 44), neutral (sample HD47), reduced (sample HD46) atmosphere. HW commented that hcwfi is a fine version of the standard coarseware, with much less sand. In thin-section the samples are generally finer than hedcw and are compositionally and texturally similar to hedcwefi and

<i>Sample</i>	<i>Fabric</i>	<i>Context</i>	<i>Record No.</i>	<i>Description (and illustration No.)</i>
26	hedcwem	Hole Farm kiln 4/5	r.11054	early medieval fabric, lower handle attachment of jug
27	hedcwem	Hole Farm kiln 2 east stokehole	r.12161	early medieval fabric, profile of dish
28	hedcwem	Hole Farm Ditch	r.11076	early medieval fabric, spike lamp (Fig. 16.48)
29	hedcwem	Hole Farm kiln 3	r.12704	early medieval fabric, beaded cooking-pot rim
30	hedcwefi	Hole Farm Ditch	r.10987	fine version of early medieval fabric, body sherd (from cooking-pot) (Fig. 16.49)
31	hcwoxcor	Hole Farm kiln 1 east stokehole	r.11082	transitional fabric (between early medieval and medieval coarseware tradition), pipkin handle (Fig. 33.200)
32	hcwcor	Holy Trinity, Halstead	r.13229	jug handle
33	hcwcor	Holy Trinity, Halstead	r.13227	body sherd from E1 cooking-pot rim
34	hcwcor	Holy Trinity, Halstead	r.13233	base sherd
35	hcwcor	Holy Trinity, Halstead	r.13223	sherd from B4 cooking-pot rim, wavy line decoration.
36	hcwcor	Holy Trinity, Halstead 4	r.13224	sherd from B4 cooking-pot rim
37	hedcw	Hole Farm surface find	r.11027	cooking-pot rim, combed decoration, grey
38	hedcw	Hole Farm kiln 1	r.11022	cooking-pot rim, some oxidation (Fig. 22.104)
39	hedcw	Hole Farm kiln 3	r.11275	cooking-pot rim with rilled sides, grey
40	hedcw	Hole Farm kiln 3	r.11285	jug handle fragment, grey
41	hedcw	Hole Farm kiln 4/5	r.11069	sherd from body of jug, buff coloured (Fig. 31.165)
42	hedcw	Hole Farm kiln 4/5	r.11087	cooking-pot rim with thumbled applied strip, buff
43	hcwfi	Hole Farm kiln 2 oven	r.10963	2 body sherds from socketed dish, buff coloured (Fig. 16.50)
44	hcwfi	Hole Farm kiln 2 oven	r.12568	profile of bowl, buff coloured
45	hcwfi	Hole Farm kiln 2 oven	r.10993	rim sherd from semi-complete cooking-pot, orange-buff
46	hcwfi	Hole Farm kiln 2 oven	r.12499	cooking-pot rim, grey, warped
47	hcwfi	Hole Farm kiln 4/5	r.11007	cooking-pot rim with faint dimpling, pale grey (Fig. 21.98)
48	hcwstor	Hole Farm kiln 1 east stokehole	r.11445	small sherd, oxidised core
49	hcwstor	Hole Farm kiln 1 west stokehole	r.11390	grey sherd
50	hcwstor	Hole Farm kiln 1 oven	r.11032	large fragment

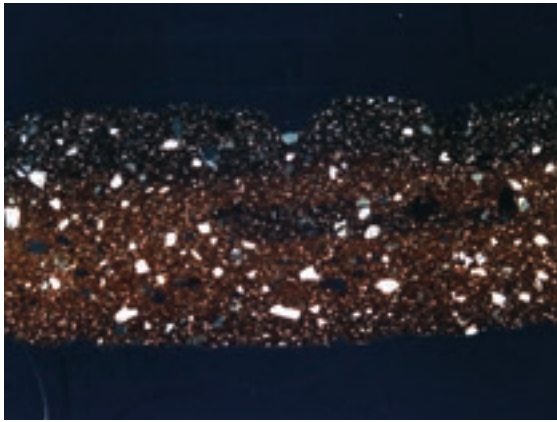
Table 11 Coarseware ceramics from the Hedingham pottery industry submitted for thin-section analysis, with hand-specimen fabric classification and other information



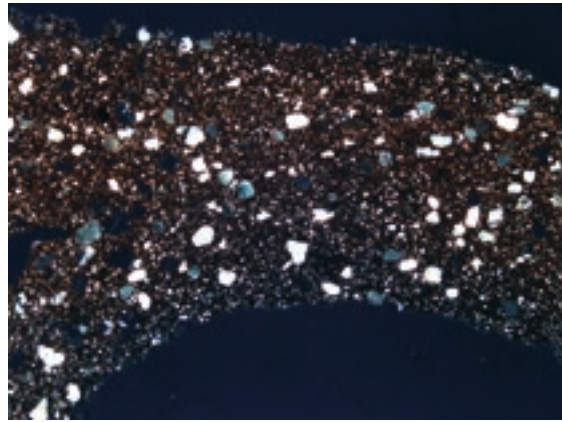
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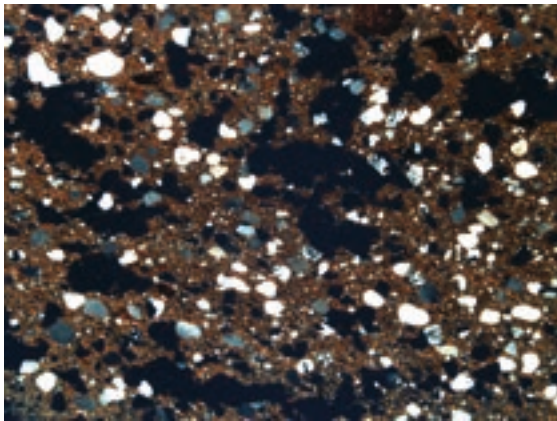
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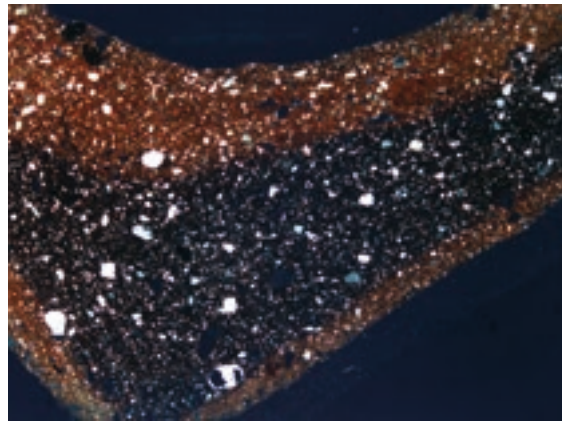
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Plate 46 Thin-section photomicrographs of medieval coarseware ceramics from the Hedingham pottery industry. A. Fabric hedcwem Sample HD29, B. Fabric hedcwefi Sample 30, C. Fabric hcwoxcor Sample 31, D. Fabric hcwcor Sample 35, E. Fabric hedcw Sample 38, F. Fabric hcwfi Sample HD45. All images taken in XP. Image width = 1.25cm

hedcwem, but with less temper. Sample HD43, bears similarities to some fineware samples of Fabric 5, however, this fabric group does not contain the small rounded amorphous orange weathered inclusions that occur in HD43. There is some textural and technological variation within the five hewfi samples analysed here, which might not support the idea of HW that they may be from the same batch. It is not possible to comment on whether the fineness of the hewfi samples was responsible for them warping, though in thin-section none of them appeared to be over-fired.

#### **Fabric hewstor**

(Samples HD 48, 49, 50)

The three samples analysed of this homogeneous fabric bear strong similarities to numerous coarseware samples, including hedcw, and therefore do not seem to be a separate fabric as suggested by HW. The three samples are indeed homogeneous as commented by HW, being characterised by the presence of rounded medium-sized sand temper of quartz, polycrystalline quartz and chert in a non-calcareous matrix containing angular quartz, muscovite mica, chert, biotite, amorphous orange weathered inclusions and ferruginous inclusions. All three samples are optically inactive and were therefore fired above 800–850°C. Sample HD49 was fired in a reducing atmosphere and samples HD49 and HD50 were fired in a neutral to slightly oxidising atmosphere.

### **Interpretation**

#### **Correspondence between hand-specimen fabrics and composition of Heddingham pottery**

In general there is reasonable correspondence between the hand-specimen fabrics and the nature of the samples in thin-section. However, some very close similarities exist between certain fabrics, suggesting that they represent the same recipe. In addition, some hand-specimen fabrics contain internal variation that contradicts their classification.

Fineware Fabrics 1, 6, 2 and 3 are very similar to one another. This was recognised by HW, who commented that Fabric 6 is not much different from Fabric 1 and that Fabric 1 might be an oxidised version of Fabric 2. Some, but not all of the samples analysed from Fabric 3 are finer versions of Fabric 2 (and thus Fabrics 1 and 6). However, three samples are not and would be happy in these previous fabrics. One sample of Fabric 2 has a finer grain-size than the others and is therefore related to the fine Fabric 3 samples.

Fineware Fabric 5 is not related to Fabrics 1, 6, 2 and 3. It appears to be made with different clay and contains far less temper. It is closer to some of the Heddingham Coarseware fabrics, e.g. hewfi. The samples analysed of Fabric 5 can be split into two groups in terms of the abundance of temper, but are generally related to one another. The sandy orange fabric hedsao also contains some internal variation. One sample appears to be related to Fabrics 2 and 3, whereas the majority of the samples were made with different clay to the more common fineware composition represented by Fabrics 1, 6, 2 and 3. HW notes that the sandy orange fabric samples come from different sites to other finewares analysed.

Coarseware fabric hedcwem bears similarities in composition and texture to the fineware sandy orange

fabric, as does hedcwefi. Fabric hewoxcor is related to coarseware fabric hedcwem among others, but differs in that it contains a greater proportion of coarse sand temper. HW commented that hewcor is from a different site than the other coarsewares sample analysed here and that it is much coarser than the standard Heddingham Coarseware. In thin-section the fabric bears strong similarities to many of the other coarseware fabrics including hedcw. However, the sand temper added to hewcor is slightly coarser than all other samples, setting it apart as a homogeneous group.

Fabric hedcw is compositionally and texturally very similar to the samples analysed from hedcwem and hedcwefi. The six samples are related but contain some differences in the grain-size and abundance of temper. HW commented that hewfi is a fine version of the standard coarseware fabric (hedcw) with much less sand. In thin-section the samples are generally finer than hedcw and are compositionally and texturally similar to hedcwefi and hedcwem, but with less temper. One sample of this fabric stands out in that it is finer than the other four and bears strong similarities to some fineware samples of Fabric 5.

The three samples analysed of coarseware fabric hewstor are homogeneous but bear strong similarities to numerous coarseware samples, including hedcw, and therefore do not seem to be a separate fabric as suggested by HW. In general, many of the coarseware fabrics are related to one another, with only differences in the grain-size and abundance of sand temper between and within the hand-specimen fabric groups.

#### **Raw materials used in Heddingham pottery industry**

Based upon the thin-section analysis in this report, it can be concluded that several types of raw materials appear to have been used in the Heddingham pottery industry. These include loose rounded sand and at least two types of clay. Rounded to sub-rounded and well-rounded, equant and slightly elongate, generally well-sorted, fine to coarse-sand temper was used in the production of nearly all the ceramic samples analysed. This sand is composed of grains of monocrystalline quartz with undulose extinction, which can be cloudy, polycrystalline quartz, that often exhibits a foliated alignment and is likely to be of metamorphic origin, chert and more rarely phyllite, siltstone, cataclasite, breccia, feldspar and hornblende. Despite variation in the grain-size and sorting of the rounded sand the composition of this material is very similar between the fabrics and samples analysed, suggesting a single source. The source of this sand may be the Kesgrave Sands and Gravels, a Quaternary (pre-Anglian) fluvial formation that occurs extensively in Essex (Sumbler *et al.* 1996) and outcrops along the sides of the Colne valley near Castle Heddingham, Sible Heddingham and Halstead, and its nearby tributary. According to British Geological Survey (BGS) 1:50000 Sheet 223, 'this consists of yellow to orange-brown sands and sandy gravels with less than 10% of clay and silt'. The clasts are reported to be 'predominantly rounded and consist mainly of flint, along with about 30% white quartz and brown, purple and bleached quartzites' in addition 'other erratics account for a further 1-4% and these include durable sedimentary rocks such as chert and sandstone, igneous rocks and metamorphic rocks'. The general description of this deposit resembles the sand that

has been added as temper to the Hedingham ceramics, with the exception that flint or chert is much less common and quartz dominates. Variation is noted in this deposit across the region covered by BGS Sheet 22. For example 'cross-bedded yellow-brown sands with thin green clayey silt beds and muscovite flakes dominate the north-west' where Hedingham is situated. The map notes state that the deposit is 'worked extensively for aggregate and building sand'. Certainly it would have represented an abundant locally available source of sand for temper in the wider Hedingham area and is highly likely to be the source of the material observed in thin-section. The grain-size variation in the rounded sand temper added to Hedingham ceramics may represent natural variation in this deposit and possible grading carried out by the potters by sieving or another means. Other available sand deposits in the study area include more recent river terraces and modern alluvium along the Colne.

The rounded sand temper appears to have been added to at least two separate types of base clay that may have come from different clay deposits. The base clay of Fabrics 1, 6, 2 and 3 is light firing and homogeneous, with fine, sub-angular, silt-sized quartz, muscovite mica and ferruginous inclusions. The base clay that was used for the coarseware samples and probably fineware Fabric 5 and the sandy orange fabric, on the other hand is darker, red-firing and contains more inclusions. It too has sub-angular silty clasts of quartz and muscovite mica, but also contains chert or flint and amorphous orange weathered particles. These two base clays may have come from different sources.

The London Clay Formation, which outcrops extensively along the Colne valley near Hedingham is described as being a 'chocolate-brown, silty clay [that is] micaceous in parts' (BGS Sheet 223). As such, it is perhaps a good candidate for the source of one or both of the clay deposits used for the Hedingham ceramics. This Eocene occurs extensively across south-east England and was used in the past for ceramic and brick manufacture. In his analysis of medieval pottery and fired clay artefacts from Frogs Hall, Takeley, Vince (2006) suspected the Tertiary Claygate Beds of the London Clay formation to have been exploited. The Claygate Beds or Claygate Member form the youngest part of the London Clay Formation, which has been removed by erosion in North Essex. Whether the basal part of the formation, which remains in this area, was suitable for pottery manufacture is not known. Its description as silty, micaceous clay certainly fits the description of the material used for some of the Hedingham pottery. This could be confirmed by field sampling and analysis of the London Clay outcropping in the Colne valley.

Extensive deposits of boulder clay cover the Tertiary and older rocks in North Essex. This consists of 'generally pale brown to buff sandy clay with chalk fragments' (BGS Sheet 223). The presence of chalk fragments is not fitting with the composition of the clay used to produce the Hedingham ceramics. However, the base of this unit, which may be exposed in river valleys, is represented by 'olive-brown, sandy clay with well-rounded flint and quartz pebbles and but a reduced amount of chalk'. Whether finer, silty clay of the same composition also occurs and in sufficient quantity to be mined for ceramic manufacture is not known. Nevertheless, the presence of fine chert or flint in the base clay that was used for the

coarseware ceramics at Hedingham suggests a source in the Quaternary deposits of this area rather than the Tertiary London Clay.

Clearly, extensive local deposits of clay and sand occur along the Colne valley near Castle Hedingham, Sible Hedingham and Halstead. Although analysis of field samples is needed to confidently link these beds to the products of the Hedingham pottery industry, the consideration of the geological literature above suggests that these local deposits may have been utilised for ceramic manufacture in medieval times.

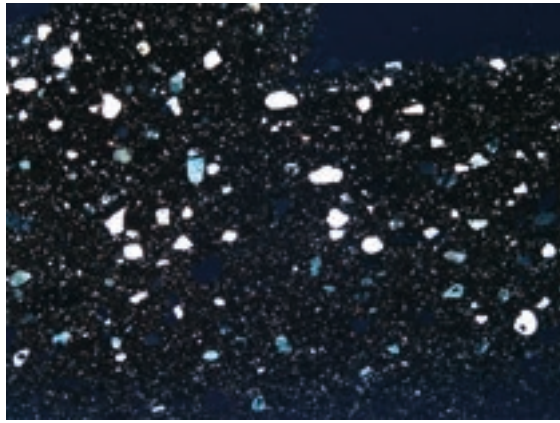
### **Technology of Hedingham pottery industry**

It is possible to interpret several aspects of the ceramic technology of the Hedingham pottery industry from analysis of the samples in thin-section, from paste preparation to firing. The existence in some fabrics (e.g. Fabrics 1, 2, hcwfi) of inconspicuous clay-rich inclusions that have a similar appearance to the surrounding clay matrix appear to indicate that dry, powdered clay was used as a base material for the production of at least some of the Hedingham pottery. These inclusions are interpreted as small particles of crushed clay that were not sufficiently hydrated during the addition of water and soaking of the clay. The absence of these particles in some fabrics and certain samples within fabrics could be due to more thorough hydration, the use of more finely ground dry clay, the use of a wet natural clay, or simply because no such particles were sectioned during sample preparation. It is not possible to choose between these possibilities.

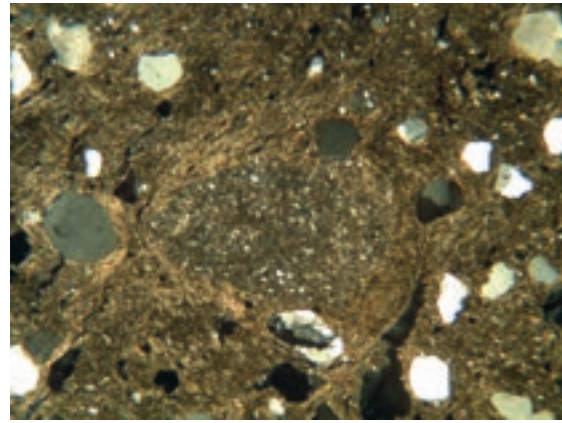
The clay paste of nearly all of the samples analysed from all Hedingham fabrics were made by the addition of rounded sand temper to a finer base clay. The presence of temper can be identified by the grain-size distribution of the ceramics, with the temper forming a separate, larger mode than the fine inclusions that were present naturally in the base clay, as well as differences in the roundness and composition of the natural and added inclusions. The identification of temper is easier in some cases than others. For example, it is not possible to be sure that sand was added to the paste used to produce all of the Fabric 5 samples analysed. However, by comparison with other fabrics, it is clear that sand tempering was a very common practice in the Hedingham pottery industry, being carried out at all of the sites analysed here and being used for the production of both fine and coarsewares.

Two samples of coarseware fabric hcwfi may contain possible fragments of crushed pottery or 'grog'. The identification of grog can sometimes be difficult, especially when it is not common or when other types of argillaceous inclusions occur in the same thin-section. Should the small inclusions in the two samples be fragments of pottery, their infrequent occurrence and the absence of similar inclusions in other related fabrics is likely to imply that they were incorporated accidentally rather than being an intentional addition.

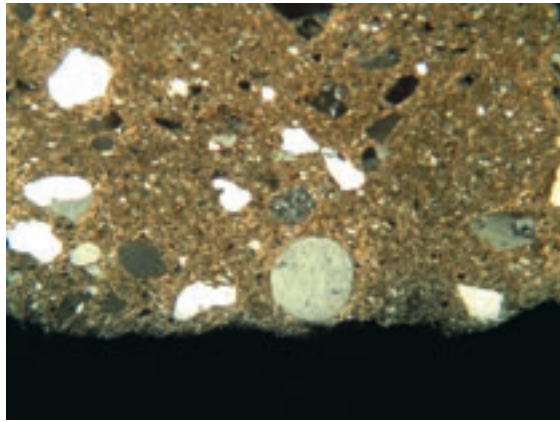
Evidence for the forming techniques used to shape the Hedingham ceramics is present in several of the analysed samples in thin-section. Despite the generally equant, rounded nature of the sand temper added to the ceramics, the orientation of inclusions in many samples appears to pick out relic coils left from the forming process. These are present in samples from both fineware fabrics (Fabrics 1, 2, 3, sandy orange fabric hedsao) and coarseware fabrics (hedcwem and hcwcor). Many Hedingham pottery



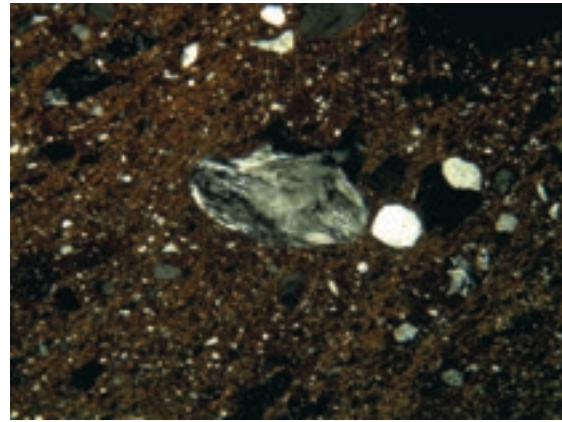
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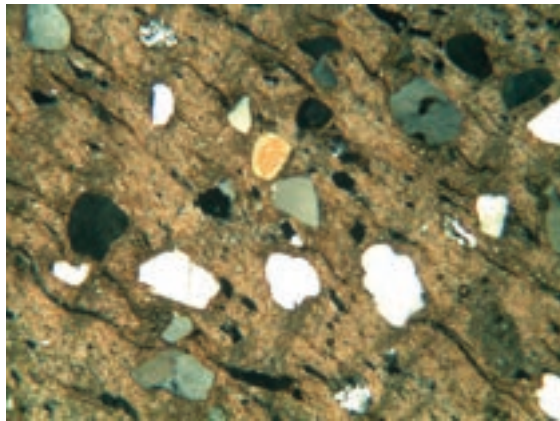
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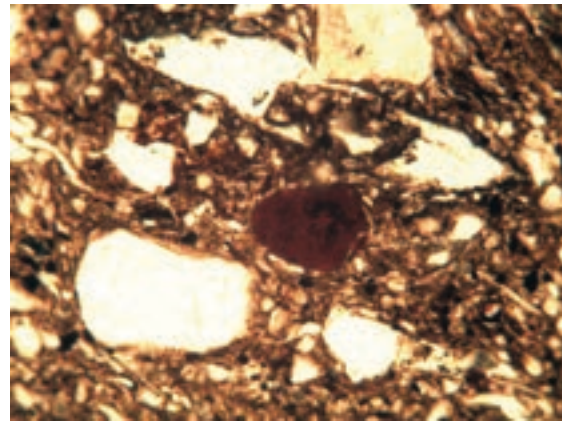
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Plate 47 Thin-section photomicrographs of medieval ceramics from the Hedingham pottery industry. A. Coarseware fabric hewstor. B. Rounded sand temper, C. Rounded sand temper, parallel elongate voids and high optical activity, D. Clay rich textural feature which may be unmixed base clay, E. Foliated, metamorphic polycrystalline quartz, F. Small rounded orange amorphous weathered inclusion. All images taken in XP, except F-PPL.  
Image width A = 1.25 cm, B-D = 3.8 mm, E = 2.4 mm, F = 1.0 mm

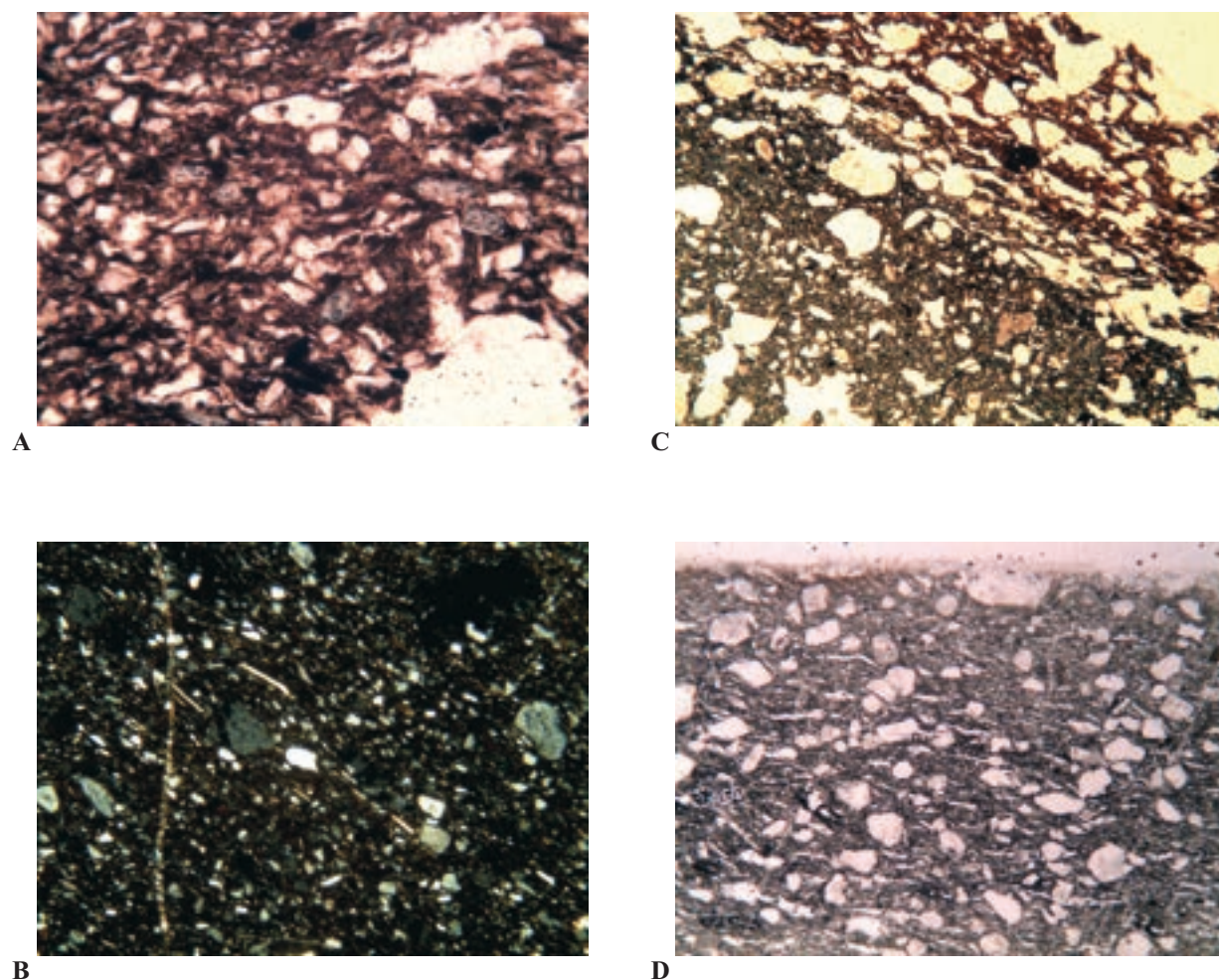


Plate 48 Thin-section photomicrographs of medieval ceramics from the Hedingham pottery industry. A. Fine grey chert/flint inclusions, B. Fine elongate muscovite mica inclusions, C. Oxidised margin and reduced core, D. Elongate voids parallel to vessel margin. All images taken in PPL, except B–XP.  
Image width A = 1.0 mm, B = 2.4 mm, C-D = 3.8 mm

samples contain small elongate voids in thin-section, which may result from the drying of the paste after forming. Where present, these are usually aligned to the margins of the samples. Strong alignment of voids and inclusions parallel to the vessel margins in ceramics is often taken as evidence for forming on a potter's wheel, where strong forces cause the fabric constituents to align. However, in some Hedingham pottery samples, both strongly aligned elongate voids and relic coils appear. This may suggest that the vessels were coil built and finished on a wheel or turntable.

Aspects of the firing process of the Hedingham pottery samples can be interpreted in thin-section. A rough estimate of the degree of firing can be based on the optical activity of the clay matrix in crossed polars (XP). Variation in this property exists between and with the fabrics analysed from optically highly active samples (e.g. Fabrics 1, 6, 2, 3), through moderately optically active and slightly active samples (e.g. Fabrics 5, hedcwem, hcwoxor, hedcw) to samples with optically inactive matrices (e.g. hcwstor). It has been suggested that above a temperature of 800–850°C the clay minerals start to break down, giving the matrix an optically inactive, isotropic

appearance in thin-section. In this case, some Hedingham pottery samples were fired above this temperature (e.g. hcwstor), some were fired below (e.g. Fabric 1) and others may have been fired around this critical temperature (e.g. Fabric 5). However, firing is a complex process in which other factors in addition to temperature contribute to the degree of firing of ceramics. Furthermore, the clay mineral composition of the matrix also appears to affect its optical activity and the atmosphere of firing may affect the visibility of this property, which is not so apparent in reduced ceramics. In this respect the high optical activity of fineware Fabrics 1, 6, 2 and 3 may be related to the type of clay used for these compositionally related samples as well as their oxidised firing.

The firing atmosphere of the Hedingham pottery samples can be interpreted in thin-section as a result of the relationship between the colour of the clay matrix and the redox conditions during firing. This property can also be interpreted in hand-specimen so need not be discussed in detail here. The samples were fired in a range of conditions from oxidised, through neutral to fully reducing conditions. Several samples exhibit a layered structure with a dark core and a light margin. This pattern

can develop as a result of incomplete oxidation of organic matter due to a short firing or reduction firing, followed by a rapid cooling in air. As colour and thus redox conditions appear to have been one of the criteria used to separate the pottery samples into hand-specimen fabrics (e.g. Fabrics 1 and 2), it is not worth commenting on the relationship

between atmosphere and fabric. However, it is worth noting that some variation in firing atmosphere exists within some of the fabrics.



## Appendix 2: ICP-AES (ICPS) analysis, by M.J. Hughes

### Introduction

The aim of this project was to further define the fineware and coarseware fabric groups identified among the pottery from the production sites at Hedingham. The samples selected for ICPS analysis (which are the same as those submitted for thin-section analysis) included five samples from each of ten different fabric groups, making an overall total of fifty samples. Five samples of each of five different fineware fabric groups were analysed: sandy orange fabric (hedsao) and Fabrics 1, 2, 3 and 5 (Fabric 4 is a general category and was not sampled; the sample of Fabric 6 has been placed within the Fabric 1 category as it was found to be virtually the same). The coarsewares included an early medieval fabric (hedcwem), and single examples of rare early medieval variants — one in a relatively fine and micaceous fabric (sample 30: hedcwefi), and an apparent transitional fabric between the early medieval and medieval coarseware traditions (sample 31: hcwoxcor). Other coarsewares sampled included the standard Hedingham Coarseware fabric, usually grey-firing (hedcw); a fine version of the standard coarseware, with much less sand (hcwfi); storage jars which appear to be in their own fabric (hcwstor); and a comparative coarseware from a nearby production site at Holy Trinity, Halstead (hcwcor), which is much coarser than the standard Hedingham Coarseware — it was interesting to see how chemically similar the Halstead coarse fabric was to the corresponding standard Hedingham Coarseware. One of the aims of the overall project was to see if Hedingham Coarseware could be readily distinguished regionally, and ICPS could provide valuable assistance by providing a chemical ‘fingerprint’ to distinguish it from other coarsewares of the region. Some previous analyses by neutron activation of Colchester-type wares (Hughes 2000) were compared to the Hedingham pottery and found to be chemically distinguishable — see below.

Chemical analysis using inductively-coupled plasma atomic emission spectrometry (ICP-AES, or ICPS for short) of the fabric of pottery gives a chemical fingerprint and thus information on its source, reflecting the clay from which it was made. It is widely available, rapid, produces accurate results on many elements and at relatively low cost per sample (the sample dissolution and instrumentation are described in Thompson and Walsh 1989 and Potts 1987). The atomic emission version (ICP-AES, often abbreviated to ICPS) analyses all the major elements in ceramics (except silicon which can be estimated by difference if needed), plus a good cross-section of the trace elements including the transition metals and some rare earth elements. It differs from petrological methods in producing an overall composition of the whole fabric, mainly that of the clay. This tends to complement petrology which describes mainly the mineral inclusions within the clay.

Some recent examples of ICPS projects on ceramics include pottery from Lundy Island (Hughes 2005); delftware from production centres in London (Hughes 2008); pottery from Harlow (Hughes 2009a); and ceramic building material from Hill Hall, Essex (Hughes 2009b). Earlier ceramic studies using neutron activation analysis

(NAA) included a project on redwares from London and Essex (Nenk and Hughes 1999).

### ICPS Analysis (Inductively-Coupled Plasma Atomic Emission Spectrometry)

Powdered samples were obtained from the fifty sherds by drilling with a 2 or 3mm diameter tungsten carbide drill. In addition, the samples sent for ICP analysis included two portions of a Certified Reference Material (NBS679 Brick Clay, produced by the US National Institute for Standards and Technology, Washington DC) spaced out in the analysis batch but without identification to the laboratory as such; these acted as analysis quality control samples. The analysis results on these control samples gave entirely satisfactory results. The weighed samples were placed in small individual Teflon (PTFE) beakers, treated with a mixture of hydrofluoric and perchloric acids and heated overnight on a hotplate to dissolve the ceramic. The acids were evaporated off and the residue dissolved in nitric acid and made to volume with ultra high quality water (Thompson and Walsh 1989, Potts 1987). All the ICP results are given in full in Table 12, and the averaged analyses for selected fabric groups are given in Table 13.

### Interpretation of the ICP analyses using Principal Components Analysis

Detailed interpretation of the analyses was then carried out with multivariate statistics, which simultaneously considers the concentrations of many elements in each sample. For this investigation, Principal Components Analysis (PCA) was used (Tabachnick and Fidell 2007); descriptions of its application to archaeology are given elsewhere (see for example, Baxter 1994 and 2003; Shennan 1997). The SPSS version 15 statistical package was used for this work (Pellant 2007). For interpreting the PCA plots produced in this project (Figures 44–47), each individual item analysed has been shown by a symbol for the fabric group to which it belongs, though this information has not been used in any way by the statistical computer program. Such PCA plots are effectively chemical ‘maps’ for the items analysed, and if the ceramics within a group are made of the same clay, they will plot in the same part of the figure. Principal Components Analysis looks for the largest variations in concentration of an element across the whole set of samples, so elements showing chemical differences between, in this case, different fabric groups, are particularly highlighted. Conversely, different groups of items which are similar in ICP analysis will plot close together or overlap; items or groups which have significant differences in clay chemistry will plot in different parts of the figures. An idealised principal components plot would show each group of pots in the same fabric as a cluster of points close together, but occupying different parts of the figure to other groups. The PCA was carried out in stages, in which items with significantly different chemistry were removed from the

analysis to allow interpretation of those groups of pottery which showed subtler differences in chemistry.

Principal components analysis (PCA) was particularly useful for an initial examination of the ICP results. Twenty-four of the thirty ICPS elements shown in Table 12 were included in the tests, chosen for the reliability of measurement and not subject to post-depositional effects. Some elements tend from past experience to contribute nothing to the interpretation such as those near their detection limit, while phosphorus and barium can be subject to post-deposition changes and cobalt was present in the drill. This left the following twenty-four elements for the PCA statistics on all the ICP analyses carried out for this project: aluminium, magnesium, calcium, strontium, sodium, potassium, rubidium, chromium, iron, manganese, nickel, zinc, lithium, scandium, yttrium, titanium, cerium, dysprosium, europium, lanthanum, neodymium, samarium, ytterbium, and vanadium. Before carrying out the tests, the results were first converted to logarithms to remove large element-to-element differences in numerical values.

### **Principal Component Analysis on all the samples analysed**

A principal component analysis (Figure 44) showed that the fifty samples appear to fall into two main chemical groups, with all the fineware pottery in Fabrics 1, 2, 3 and 5 falling to the lower right of the Figure (higher values on PC1). The coarseware fabrics formed another broad spread in the upper left of Figure 44 (high values on PC2). Individual sample numbers are shown for items which differed in some way from the rest of their fabric group.

It is noticeable that in Figure 44, many of the fabric groups formed quite compact spreads, i.e. the points were close to each other within a fabric group, indicating close similarity in clay chemistry between the members of the fabric group. Fineware Fabric 1 illustrates this, with a very compact group of four samples, except Sample 4 which was above the rest, i.e. has a higher value on PC2. Other groups such as Fabric 5 tended to be rather more spread out, with some sherds deviating rather more from the average, such as Sample 21 in the lower centre of the Figure. Among the coarsewares, there was a reasonable degree of cohesion by the fabric groups in their position on Figure 44. The sandy orange wares were an interesting case with three out of four falling into the coarseware spread and one (Sample 23) falling within the fineware groups. Of the coarsewares, the early medieval fabric (hedcwem) had one example (Sample 31) which differed significantly from the rest — lower left of Figure 44. It contains significantly less aluminium, iron and rare earth elements compared to the rest of the fabric group, and Figure 44 shows it to be unlike any other fabric groups. The group of samples of coarseware from Halstead (hcwcor) plot within the range of the rest of the coarsewares in Figure 44, though on the edge of the distribution.

The overall conclusion from this principal components analysis was that two different types of clay were used to make fineware Fabrics 1, 2, 3 and 5 on the one hand, and the coarsewares and the sandy orange glazed ware on the other. Examination of the 'loadings' which contribute to the two principal components shown in Figure 44 showed that PC1 had pottery which was richer in the rare earth elements, rubidium, and aluminium but

lower in sodium, iron, manganese and magnesium towards the right of the figure (elements listed in descending degree of contribution to the principal component). Similarly, PC2 had pottery which was richer in the trace elements chromium, vanadium, scandium, and zinc and the major elements magnesium and iron towards the top of the figure — interestingly no elements showed decreases towards the top of the figure. Very often the loadings on the first component in previous ceramic projects showed a positive contribution from almost all elements, interpreted as an indication of the total amount of temper, usually quartz which contains none of the analysed elements and so acts as a simple diluent to the clay fabric. In Figure 44 however, the first component showed strong negative correlations with iron and other elements, indicating that the differences between the two 'spreads' of samples which separate along the horizontal axis indicates two different clay types. This is borne out by examination of the averages for fine and coarsewares given in Table 13. Thus Figure 44 successfully differentiated between two clay types used at Hedingham, but to look for more subtle inter-fabric chemical differences it was necessary to follow this up with further principal components analyses on each of the two broad groups (see below).

We can also look for differences in clay chemistry between the fabric groups with 'boxplots' of representative chemical elements analysed by ICPS, showing the average and standard deviation for each of the fabric groups. There were interesting trends, which explained the patterning seen in Figure 44. Two examples are shown in Figure 45 and 46: Figure 45 shows that the aluminium concentration tends to fall from the finewares (on the left) to the coarsewares (on the right) while Figure 46 for magnesium shows the opposite: magnesium is low in the fineware fabrics but rises significantly among the coarsewares. The presence of higher aluminium in the finewares compared to the coarsewares showed that the finewares had a higher clay mineral content (clay minerals are aluminosilicates in structure). This suggests they were made of a more plastic clay mix with probably fewer inclusions than the coarsewares, which is entirely consistent with the fabric descriptions. The rare earths were also significantly richer in the finewares compared to the coarsewares, as was rubidium, while sodium, magnesium and iron were significantly lower (the average iron oxide in the finewares was 3.5% compared to 6.5% in the coarsewares). The rare earths are trace elements often associated with heavy minerals such as zircon and the finer fabrics appear to be richer in them. In earlier work on post-medieval pottery from this region of Essex analysed by neutron activation, it was noticeable that in the more northerly parts of Essex, the clays were generally richer in rare earths compared to ceramics made of London Clay from further south in Essex (Hughes 2000, Nenck and Hughes 1999). Potassium and calcium did not show any particularly strong trends, which is consistent with their not contributing significantly to the 'loadings' on the principal components. The average concentration of elements in the fine and coarsewares is given in Table 13, in which the above differences between the two fabric types are clear, while for the remaining elements there are no particular differences between them.

Hedingham itself lies on London Clay, but just to the north are deposits of Lambeth Group mottled clays

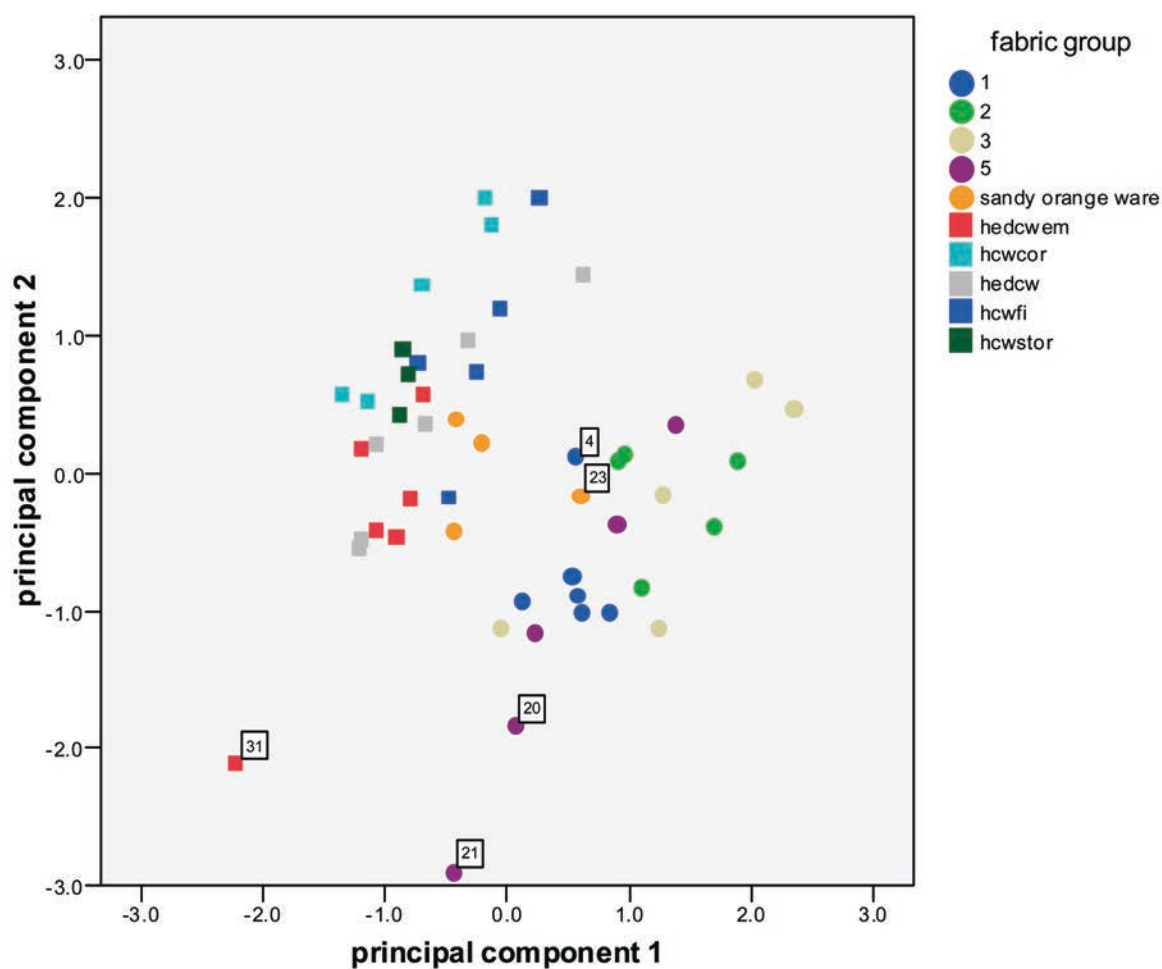


Figure 44 A plot of the first two principal components arising from all the samples analysed in this project, showing separation into two broad groups, most probably representing different clay types (lower right: London Clay; upper left: Lambeth Formation). The first principal component had pottery richer in the rare earth elements, rubidium, and aluminium but lower in sodium, iron, manganese and magnesium towards the right of the figure (elements listed in descending degree of contribution to the principal component). Principal component two had pottery which was richer in the trace elements chromium, vanadium, scandium, and zinc and the major elements magnesium and iron towards the top of the figure

(Ellison *et al.* 2004, 25–37; the Lambeth Group includes the formations previously known as the Woolwich and Reading Beds). The finding here of two different clay chemistries for the fine and coarsewares suggests these are probably the sources of the clays for the fine and coarsewares. The chemical features of the fineware Fabrics 1, 2, 3 and 5 match with the Lambeth Group clays and the coarsewares with London Clay. For example, the chemical pattern for the finewares is similar to previous ICPS analyses of Reading formation clays, such as the whiteware clays of Farnham (Newell and Hughes 2002/3, 103, table 1 — quoted here for comparison in Table 13) and with NAA analyses of Surrey Whitewares produced in a number of centres including Kingston and Cheam using Reading Beds clays (Pearce and Vince 1988, 11; analyses are given in Cowell 1988, 184, table 129 — analyses not included in Table 13). The iron content of the Surrey Whitewares is very similar to the concentration in the Hedingham finewares, and the rare earths are notably high as well. Since the Surrey Whitewares were analysed by neutron activation, the numbers of other elements which can be compared is limited (i.e. those analysed in common by both techniques), but the indications are of similar

chemistry between the Surrey and Hedingham fineware ceramics. The coarseware samples from Holy Trinity, Halstead (hcwcor) have a chemistry similar to the other Hedingham coarsewares, and given that Halstead lies on London Clay, and is therefore further from the Lambeth Group deposits than Hedingham, it is entirely consistent that the Halstead wares were made of London Clay.

One chemically very consistent group among the analyses was the storage jar fabric (hcwstor), forming in Figure 44 a compact group in the middle of the spread of the coarseware distribution of points. Their standard deviations were significantly lower than other fabric groups, indicating that the analysed examples of this group fell into a very narrow chemical range and were probably made either in the same batch or using the same clay at different times.

#### Principal Component Analysis on the finewares 1, 2, 3 and 5

The fineware Fabrics 1, 2, 3 and 5 and coarsewares do not mix in Figure 44, so to examine in more detail the relationships within these two categories, they were subjected separately to further principal components

<i>sample</i>	<i>lab no</i>	<i>fabric</i>	<i>Al2O3</i>	<i>Fe2O3</i>	<i>MgO</i>	<i>CaO</i>	<i>Na2O</i>	<i>K2O</i>	<i>TiO2</i>	<i>P2O5</i>	<i>MnO</i>	<i>Ba</i>	<i>Co</i>	<i>Cr</i>
<b>Finewares</b>														
1	RC1	Fabric 1	16.6	3.1	0.9	0.6	0.1	2.5	0.8	0.0	0.03	378.6	22.8	107.1
2	RC2	Fabric 1	16.8	3.1	0.9	0.4	0.2	2.7	0.9	0.2	0.01	406.5	21.8	99.4
3	RC3	Fabric 1	14.3	3.8	0.6	0.7	0.2	2.5	0.8	0.9	0.03	444.9	18.3	97.5
4	RC4	Fabric 1	18.0	3.9	1.0	0.6	0.2	2.9	0.9	0.3	0.02	399.9	23.9	109.7
5	RC5	Fabric 1	16.7	3.0	0.9	0.4	0.2	2.9	0.9	0.1	0.01	383.7	25.5	95.9
6	RC6	Fabric 1/6	17.4	2.7	0.8	0.6	0.1	2.2	1.0	0.1	0.02	374.9	33.2	86.2
7	RC7	Fabric 2	16.3	3.3	0.9	0.7	0.2	2.7	0.9	0.3	0.01	442.7	26.4	92.2
8	RC8	Fabric 2	17.2	2.7	0.9	0.3	0.2	3.1	1.0	0.1	0.01	414.4	27.7	84.4
9	RC9	Fabric 2	19.6	4.0	1.0	0.4	0.1	3.1	1.0	0.1	0.01	391.0	33.1	100.7
10	RC10	Fabric 2	19.1	3.9	1.1	0.4	0.2	3.4	1.0	0.1	0.01	385.7	32.9	103.5
11	RC11	Fabric 2	17.1	3.3	1.0	0.4	0.2	3.0	0.9	0.1	0.01	388.2	30.7	92.4
12	RC12	Fabric 3	19.2	3.4	1.1	0.5	0.2	3.1	1.0	0.1	0.01	419.6	34.2	108.9
13	RC13	Fabric 3	16.7	3.9	1.2	0.4	0.2	2.9	0.9	0.1	0.01	369.6	51.2	89.1
14	RC14	Fabric 3	15.1	3.1	0.9	0.4	0.2	2.7	0.8	0.1	0.01	348.9	31.1	85.7
15	RC15	Fabric 3	18.1	3.2	1.0	0.5	0.2	2.8	0.9	0.0	0.01	364.5	39.1	101.2
16	RC16	Fabric 3	16.6	3.5	0.9	0.4	0.1	3.0	0.9	0.1	0.01	391.6	23.0	88.0
17	RC17	Fabric 5	17.2	4.4	1.0	0.6	0.3	3.7	1.0	0.1	0.01	493.9	20.9	99.1
18	RC18	Fabric 5	14.9	4.1	0.9	0.5	0.2	2.5	0.8	0.1	0.01	377.6	23.4	83.1
19	RC19	Fabric 5	16.0	4.4	0.9	0.6	0.2	2.9	0.9	0.1	0.01	450.7	22.0	95.4
20	RC20	Fabric 5	14.6	3.1	0.8	0.4	0.2	2.3	0.8	0.0	0.01	367.5	20.9	80.2
21	RC21	Fabric 5	13.4	3.0	0.7	0.5	0.1	2.1	0.8	0.0	0.01	383.3	17.2	65.7
22	RC23	Sandy orange	14.1	6.4	1.1	0.6	0.3	2.3	0.7	0.1	0.04	331.9	23.5	98.2
23	RC24	Sandy orange	16.2	4.1	1.0	0.6	0.2	2.5	0.9	0.0	0.01	364.2	28.0	92.1
24	RC25	Sandy orange	16.3	7.2	1.1	0.6	0.4	2.5	0.7	0.1	0.03	362.7	33.7	106.6
25	RC26	Sandy orange	15.9	6.7	1.4	0.6	0.4	2.7	0.9	0.1	0.02	361.4	25.5	103.6
<b>Coarsewares</b>														
26	RC27	hedewem	14.2	7.6	1.3	0.6	0.4	2.7	0.9	0.4	0.02	375.7	22.6	114.6
27	RC28	hedewem	13.3	6.1	1.5	0.6	0.3	2.4	0.8	0.1	0.03	338.6	23.0	112.2
28	RC29	hedewem	13.3	5.9	1.6	0.6	0.4	2.6	0.8	0.1	0.02	336.9	25.4	90.9
29	RC30	hedewem	13.0	6.0	1.5	0.6	0.4	2.7	0.8	0.3	0.02	332.7	20.8	97.7
30	RC31	hedewefi	14.7	6.4	1.7	0.5	0.5	2.8	1.0	0.2	0.02	381.6	21.8	115.9
31	RC32	hcwoxor	11.0	5.0	1.2	0.4	0.3	2.2	0.7	0.2	0.02	340.4	17.1	84.3
32	RC33	hcwcor	16.9	9.8	1.8	0.7	0.4	2.9	1.0	0.2	0.04	330.3	35.2	126.1
33	RC34	hcwcor	14.9	7.7	1.6	0.5	0.4	2.6	0.9	0.1	0.03	321.6	31.4	110.3
34	RC35	hcwcor	16.1	8.8	2.0	0.4	0.4	2.9	1.0	0.2	0.03	345.4	29.7	125.8
35	RC36	hcwcor	14.9	7.8	1.8	0.6	0.3	2.9	0.9	0.2	0.03	320.6	31.1	116.5
36	RC37	hcwcor	14.8	7.8	1.6	0.4	0.4	2.7	0.9	0.1	0.02	316.0	30.1	113.8
37	RC38	hedew	12.9	5.8	1.4	0.7	0.4	2.3	0.8	0.1	0.02	345.1	21.4	94.6
38	RC39	hedew	12.1	5.6	1.4	0.7	0.4	2.4	0.8	0.1	0.03	413.3	23.1	95.4
39	RC40	hedew	14.6	5.7	2.1	0.6	0.4	3.0	1.0	0.1	0.02	340.4	29.5	110.6
40	RC42	hedew	14.5	6.9	1.8	0.4	0.4	2.6	0.9	0.1	0.02	354.1	24.9	113.7
41	RC43	hedew	13.7	6.3	1.5	0.6	0.4	2.7	0.9	0.3	0.05	380.3	43.3	118.9
42	RC44	hedew	15.4	9.1	1.8	0.6	0.4	2.8	1.0	0.2	0.02	415.2	23.1	112.2
43	RC45	hcwfi	16.0	7.2	1.9	0.6	0.5	3.1	1.0	0.2	0.02	431.4	27.3	136.2
44	RC46	hcwfi	14.9	5.0	1.7	0.7	0.5	3.2	1.0	0.2	0.02	416.5	22.6	124.6
45	RC47	hcwfi	15.0	5.9	1.9	0.5	0.5	2.8	1.0	0.1	0.02	387.8	26.9	128.9
46	RC48	hcwfi	12.6	4.8	1.6	0.4	0.4	2.5	0.8	0.1	0.02	335.5	29.9	109.5
47	RC49	hcwfi	13.6	5.6	1.9	0.5	0.4	2.7	0.9	0.1	0.02	384.5	23.1	122.2
48	RC50	hcwstor	13.6	6.0	1.7	0.8	0.4	2.7	0.9	0.2	0.02	379.1	25.3	116.8
49	RC51	hcwstor	13.7	5.9	1.8	0.8	0.4	2.7	0.9	0.1	0.02	379.7	26.1	122.6
50	RC52	hcwstor	13.9	5.9	1.9	0.8	0.4	2.8	0.9	0.1	0.02	385.5	24.3	128.1

chemical element symbols: Al2O3 aluminium; Fe2O3 iron; MgO magnesium; CaO calcium; Na2O sodium; K2O potassium; TiO2 titanium; P2O5 Ba barium; Co cobalt; Cr chromium; Cu copper; Li lithium; Ni nickel; Sc scandium; Sr strontium; V vanadium; Y yttrium; Zn zinc; Rare earth elements: La lanthanum; Ce cerium; Nd neodymium; Sm samarium; Eu europium; Dy dysprosium; Yb ytterbium; Cd cadmium; As arsenic; Rb rubidium; Pb lead.

The results from Al2O3 to MnO inclusive are given as the oxide, in weight percent; all the rest are given as the element, in parts per million. icp no: laboratory analysis number

Table 12 List of samples and full set of ICPS analyses obtained in this project (for information on context, record no. and sherd

<i>Cu</i>	<i>Li</i>	<i>Ni</i>	<i>Sc</i>	<i>Sr</i>	<i>V</i>	<i>Y</i>	<i>Zn</i>	<i>La</i>	<i>Ce</i>	<i>Nd</i>	<i>Sm</i>	<i>Eu</i>	<i>Dy</i>	<i>Yb</i>	<i>Cd</i>	<i>As</i>	<i>Rb</i>	<i>Pb</i>
<b>Finewares</b>																		
30.5	35.2	44.3	17.8	41.3	144.3	33.1	73.1	31.2	68.4	36.9	7.8	1.7	5.3	2.8	0.1	11.4	102.6	210.5
25.9	42.2	37.2	17.7	62.0	133.7	30.9	73.3	47.0	93.4	43.7	7.8	1.6	5.2	2.5	0.1	8.5	128.1	1594.2
29.4	34.3	48.1	15.2	62.6	120.7	37.7	71.9	54.2	107.7	57.1	10.8	2.1	7.4	3.4	0.2	31.2	100.2	5074.2
28.1	38.7	38.5	20.2	68.1	180.6	29.9	71.5	51.3	96.8	44.5	8.1	1.6	6.2	2.7	0.1	19.0	140.4	2489.7
19.0	38.3	34.7	16.5	60.0	131.5	29.7	67.4	48.5	96.6	45.1	8.0	1.6	5.4	2.5	0.1	5.9	132.9	1716.0
23.5	61.8	41.3	16.7	67.1	108.3	24.3	61.9	49.5	138.5	44.9	8.6	1.6	5.4	2.8	0.1	12.3	115.6	772.0
24.0	44.5	46.2	16.1	70.6	127.0	42.0	71.9	66.2	132.3	75.1	14.5	2.7	8.7	3.7	0.1	8.0	124.8	216.9
20.4	38.7	36.4	16.6	69.5	117.2	31.1	76.5	54.6	113.0	54.6	9.8	1.9	5.7	2.4	0.1	2.8	133.0	52.9
23.0	45.2	40.2	18.5	76.0	156.2	30.1	75.8	51.5	102.2	47.6	8.6	1.7	5.9	2.6	0.1	6.5	148.1	241.7
18.6	40.3	38.4	18.8	71.0	159.4	31.1	74.0	52.2	102.8	48.3	8.8	1.7	5.9	2.8	0.1	5.8	158.3	454.8
26.2	45.2	44.6	16.9	74.8	132.1	46.8	101.2	52.1	120.9	63.0	13.3	2.7	9.4	4.5	0.1	8.8	148.5	301.5
31.3	51.8	51.2	18.4	83.6	143.4	50.8	77.5	55.0	127.0	65.1	13.7	2.8	10.0	4.6	0.1	10.3	159.3	339.4
24.2	58.1	75.1	16.4	70.3	127.4	61.3	114.6	65.4	118.9	81.1	16.1	3.2	11.0	4.7	0.3	4.9	142.5	203.1
25.5	40.4	42.3	15.3	64.0	114.4	40.2	66.0	44.9	103.5	54.4	11.5	2.4	8.1	3.5	0.2	15.1	132.3	157.0
26.4	50.3	40.2	17.9	74.5	138.3	34.7	74.2	54.8	111.7	59.2	11.2	2.2	6.7	3.2	0.0	10.1	138.0	463.2
18.5	38.0	33.3	15.4	68.3	124.5	21.7	69.8	42.9	86.1	35.0	6.0	1.2	3.9	1.9	0.1	9.3	136.5	64.7
18.8	33.1	45.1	15.8	87.6	133.4	28.9	86.0	61.1	121.4	67.2	12.8	2.5	6.9	2.8	0.0	4.5	150.0	359.4
22.3	49.6	44.5	14.2	64.1	100.4	25.5	82.3	45.5	89.2	42.5	7.8	1.6	4.8	2.3	0.0	10.3	112.6	54.9
19.6	42.2	35.2	14.8	77.6	122.4	26.1	90.5	53.8	106.6	57.8	10.9	2.1	6.4	2.6	0.1	5.2	132.4	68.0
16.9	49.9	37.6	14.0	60.2	108.6	22.3	66.8	43.4	83.1	41.8	7.8	1.5	4.5	2.1	0.0	5.0	101.1	65.6
15.9	44.9	33.2	12.3	62.0	83.2	19.2	53.8	37.4	106.0	33.0	6.1	1.3	3.7	1.8	0.0	7.8	97.3	189.1
53.8	56.4	47.1	13.7	74.7	141.4	25.6	76.5	40.1	71.6	39.5	7.5	1.5	5.0	2.1	0.2	11.4	111.8	101.9
48.3	54.3	49.9	17.3	73.7	149.1	31.0	82.4	51.0	96.7	47.4	8.9	1.7	5.4	2.5	0.2	22.5	129.4	366.7
28.3	63.0	50.2	15.5	79.7	131.7	27.2	82.7	41.5	73.7	38.3	7.2	1.5	4.8	2.4	0.2	14.3	131.5	340.8
41.3	56.1	40.9	16.7	91.5	141.3	23.3	75.4	39.6	71.5	35.7	6.8	1.4	4.3	2.3	0.1	15.2	113.1	357.1
<b>Coarsewares</b>																		
31.2	41.2	40.2	16.8	80.9	152.7	18.3	78.7	32.6	60.2	28.1	5.3	1.2	3.4	1.8	0.2	20.7	89.5	33.9
40.4	29.3	43.2	16.2	59.3	145.6	24.3	74.7	28.5	58.5	30.2	5.9	1.3	4.2	2.1	0.2	18.7	77.4	21.9
62.2	47.4	38.1	16.3	76.5	139.9	26.9	76.2	34.2	63.4	31.2	5.9	1.3	4.2	2.3	0.2	14.7	97.2	21.1
37.3	30.1	37.5	15.7	66.8	141.8	23.0	69.4	36.4	67.0	32.9	6.2	1.3	4.2	2.1	0.2	19.8	83.6	18.7
40.8	47.6	44.6	17.6	78.6	151.3	25.7	77.3	33.1	61.7	31.5	6.0	1.3	4.2	2.1	0.2	12.0	105.1	20.4
51.8	29.1	33.4	14.0	51.6	123.5	14.7	59.6	17.2	41.3	20.3	4.2	1.0	3.0	1.6	0.2	10.1	61.8	24.2
44.1	63.9	50.8	21.5	84.7	207.5	30.3	97.9	39.9	77.4	39.1	7.6	1.6	5.3	2.4	0.2	20.3	110.5	1705.3
34.6	55.6	38.3	19.2	80.3	180.6	17.0	73.8	31.2	60.5	27.3	5.1	1.1	3.2	1.6	0.1	8.2	99.6	102.8
48.3	72.2	51.7	20.2	84.3	204.3	25.6	97.4	38.8	77.7	38.8	7.7	1.6	5.8	2.5	0.1	11.3	114.3	121.0
46.4	64.8	52.7	19.5	86.0	190.4	20.9	95.1	35.6	68.2	33.0	6.3	1.3	4.1	2.0	0.2	10.0	110.4	44.8
40.6	52.9	41.2	18.3	78.2	179.1	17.3	75.4	32.5	63.6	29.4	5.7	1.2	3.4	1.6	0.1	9.1	102.6	48.4
64.2	41.6	37.5	15.4	72.4	138.4	22.5	71.2	30.5	55.6	28.5	5.3	1.2	3.9	1.9	0.1	15.9	92.8	24.0
32.3	39.7	32.7	15.5	84.2	140.7	21.6	64.8	35.0	62.4	30.3	5.7	1.3	3.8	2.0	0.2	9.3	88.5	25.2
46.8	56.5	59.3	18.5	79.0	171.9	37.3	99.4	47.4	93.6	50.4	10.1	2.1	7.1	3.1	0.1	5.4	115.7	20.0
44.7	44.1	32.6	18.1	81.5	161.2	20.5	69.0	35.2	63.3	29.7	5.4	1.2	3.6	1.7	0.0	5.7	101.8	26.4
39.7	37.8	53.5	16.8	63.2	153.9	27.4	76.3	31.4	64.6	32.4	6.4	1.7	4.6	2.3	0.2	23.7	88.8	22.9
40.3	44.2	42.0	19.3	87.6	170.3	28.8	74.0	41.6	79.5	39.3	7.4	1.6	4.7	2.3	0.2	18.0	105.8	28.7
47.9	51.5	58.7	20.3	89.2	168.6	36.0	110.1	42.3	81.3	42.0	8.2	1.8	6.4	2.8	0.3	11.5	114.9	45.1
38.7	39.1	40.9	19.0	74.9	168.9	23.5	74.7	32.8	62.7	32.0	6.2	1.3	4.1	2.1	0.2	11.9	103.5	18.2
42.8	53.5	49.5	19.4	79.4	168.4	32.8	86.5	39.1	75.8	39.7	7.6	1.6	5.4	2.6	0.2	10.8	113.3	20.6
45.9	44.1	44.7	16.3	69.3	140.9	27.1	80.1	36.7	70.5	36.3	6.8	1.5	4.8	2.2	0.0	3.9	106.8	25.9
41.8	55.2	46.5	17.5	87.0	158.9	28.4	77.1	44.6	80.2	38.8	7.4	1.6	5.0	2.4	0.1	8.9	112.5	40.1
64.9	45.7	32.5	17.8	84.2	160.3	22.4	71.4	36.4	65.3	32.8	6.2	1.3	4.2	2.1	0.2	9.5	106.5	190.1
50.0	50.3	33.9	18.8	84.6	166.2	23.8	77.3	36.0	64.5	32.4	6.2	1.4	4.2	2.1	0.2	7.0	112.4	19.1
62.5	53.2	33.9	19.1	85.0	175.8	23.2	78.9	36.6	64.9	31.9	6.1	1.3	4.0	2.0	0.1	7.3	112.4	20.8

phosphorus; MnO manganese

description, see Tables 10 and 11)

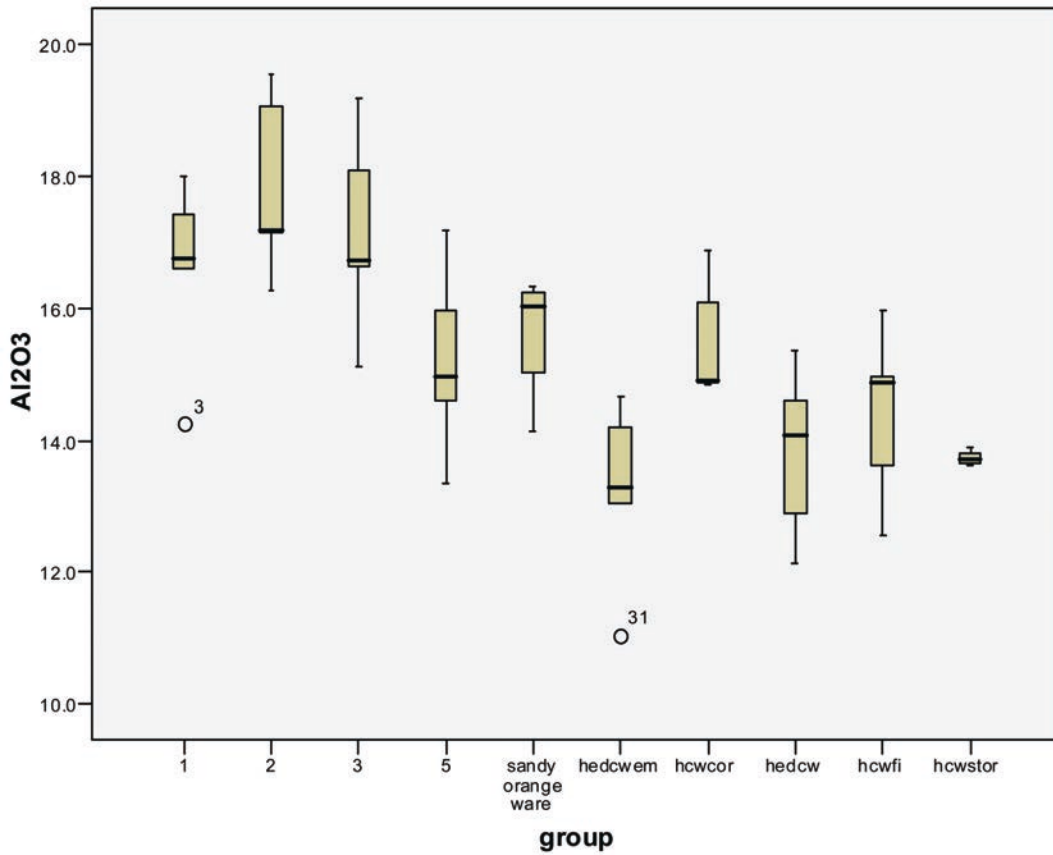


Figure 45 Boxplot showing the average and standard deviation of concentrations for aluminium for all the pottery groups analysed in this project. Single sherds which deviate significantly from the rest of their group are shown as individual numbered points

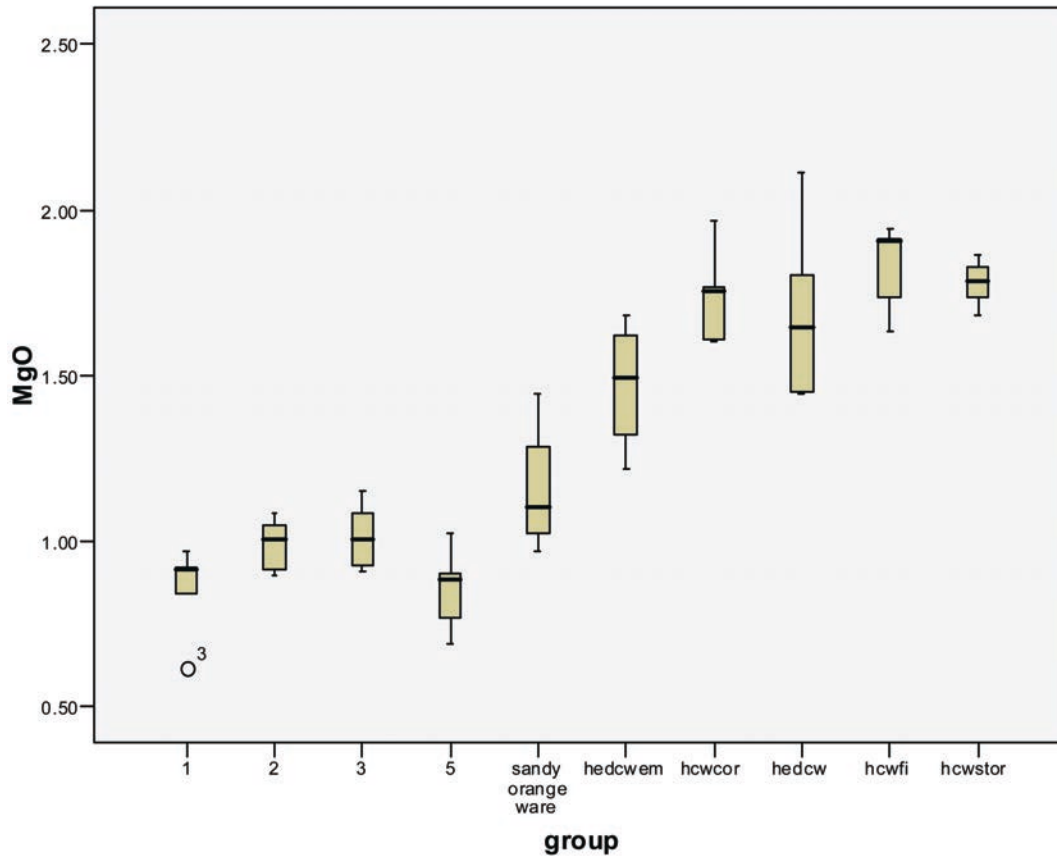


Figure 46 Boxplot showing the average and standard deviation of concentrations for magnesium for all the pottery groups analysed in this project. Single sherds which deviate significantly from the rest of their group are shown as individual numbered points

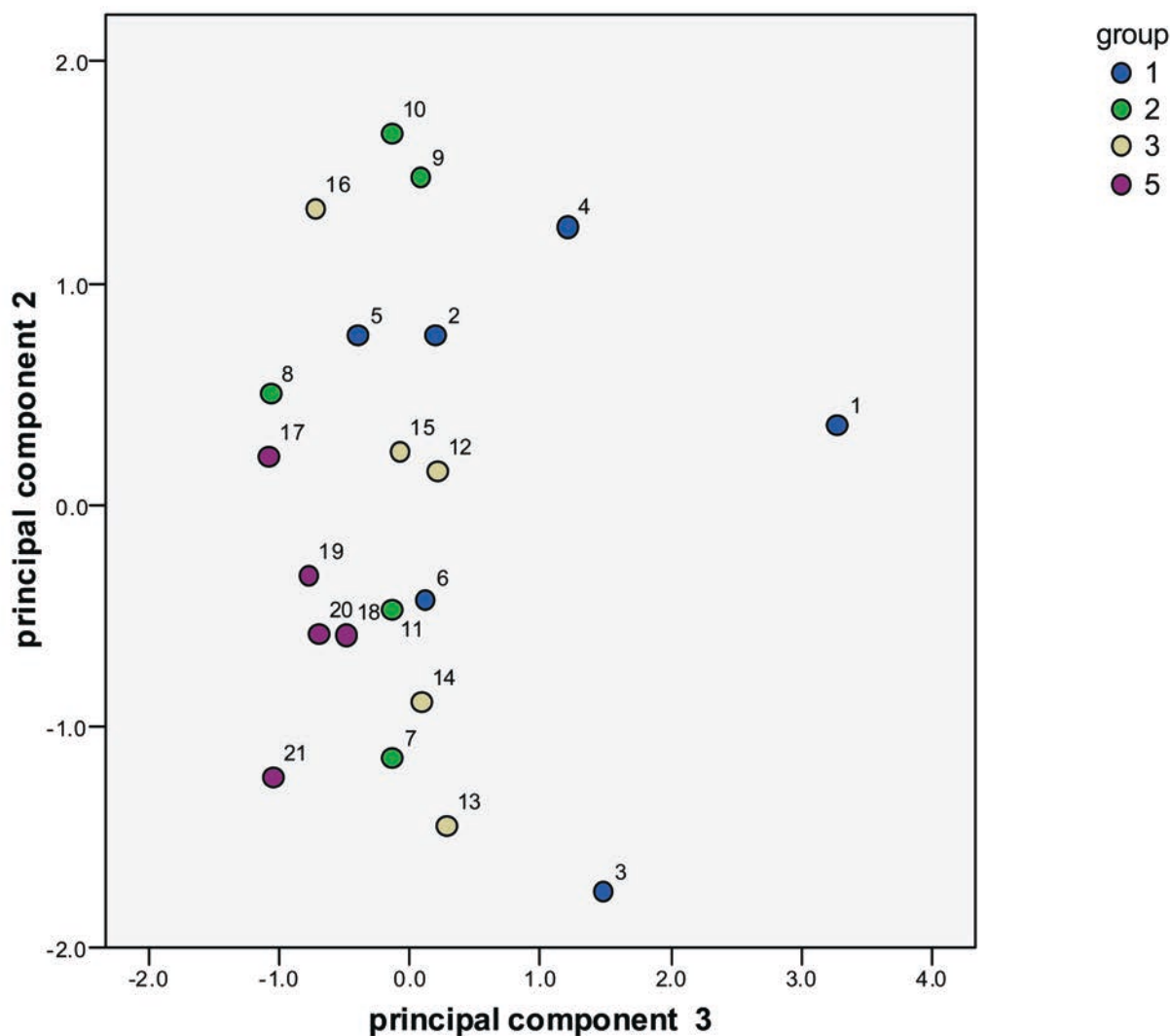


Figure 47 A plot of the second and third principal components arising from all the fineware samples in Fabrics 1, 2, 3 and 5 analysed in this project (Samples 1–21). Fabric 5 seems very consistent in its chemistry of all the examples, falling on the left, but other fabric groups are spread along the second (vertical) component. The second (vertical) component is correlated with some of the main clay-building elements such as aluminium, titanium and potassium and trace elements chromium, vanadium and rubidium. The third component is correlated positively with manganese, chromium and vanadium and negatively with strontium and sodium

analyses. The sandy orange ware fabric (with the exception of sample 23) was chemically similar on Figure 44 to the coarsewares so was included with the PCA on the coarsewares. The results on the twenty-one samples of fineware Fabrics 1, 2, 3 and 5 are shown in Figure 47, which plots PC2 and 3. PC1 is strongly linked to ‘total elements’ and so is simply a measure of the proportion of temper to clay in each item, in contrast to Figure 44, indicating that the separate PCA successfully separates the subtle differences within these finewares. PC2 and 3 (with the temper proportion differences removed) were more instructive. Fabric 5 seems very consistent in its chemistry of all the examples, falling on the left of Figure 47. There is some spreading of other fabric groups along the second (vertical) component. This component is correlated with some of the main clay-building elements such as aluminium, titanium and potassium and trace elements chromium, vanadium and rubidium. PC3 is correlated positively with manganese, chromium and vanadium and negatively with strontium and sodium. Fabric 1 is rather spread out on the vertical axis, and one

sample, an unglazed collared jar rim (Sample 1), has noticeably lower strontium than the rest of the group which accounts for its more extreme position compared to the rest. Fabric 2 likewise shows spreading, with Samples 9 and 10 at the top of the figure and the rest spread below them. Fabric 3 also shows some pairs of samples: 12 and 15; and 13 and 14 — which may indicate close chemical relationship, for example, made in the same or similar batch.

There is no clear separation between fabric groups on Figure 47, which suggest they are all made of essentially the same clay. The chemical differences probably represent slightly different ‘batches’ or parts of the clay deposit being exploited over time.

#### Principal Component Analysis on all the coarsewares and the sandy orange wares

The principal components analysis results on these twenty-nine samples are shown in Figure 48, which plots PC2 and 3. PC1 was again strongly linked to ‘total elements’ and so represented the proportion of temper in

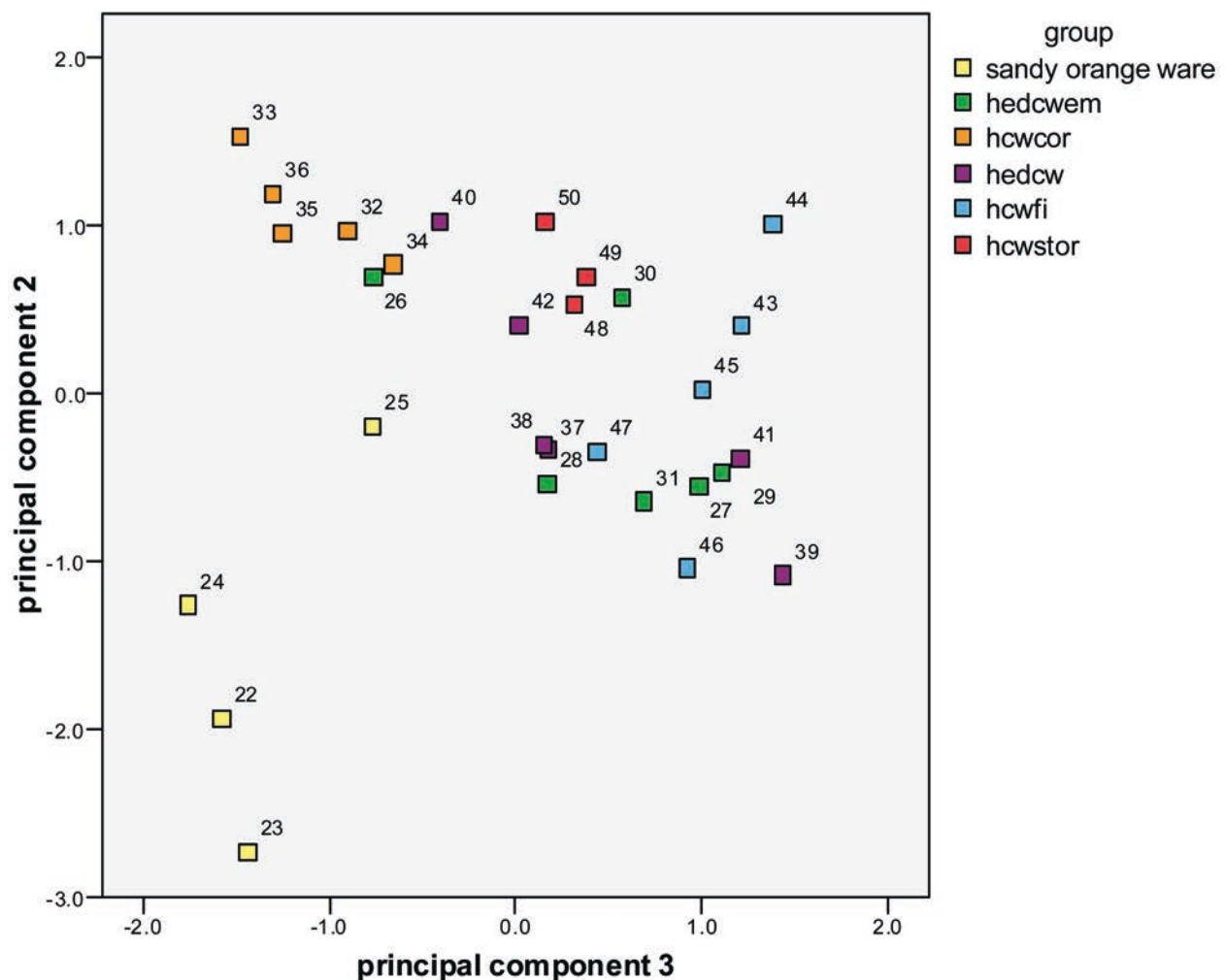


Figure 48 A plot of the second and third principal components arising from all the coarseware samples and the sandy orange finewares analysed in this project (Samples 22–50). The orange sandy finewares form a group in the lower left, and the Halstead samples (hcwcor) are in the upper left. The second (vertical) component is correlated with scandium, magnesium, vanadium and chromium. The third component is correlated positively with sodium and magnesium and negatively with lithium, iron and aluminium

the clay. The only sample to separate from the rest of the coarsewares (Sample 31) was one of the rare early medieval variants, and which appears to be a transitional between the early medieval tradition and the medieval coarseware tradition. Its only difference chemically is that it has higher sodium, titanium, and zinc but generally lower amounts of most other elements compared to the rest of the coarsewares, so it probably has a higher percentage of temper (?quartz) compared to the rest.

PC2 and 3 (with the temper proportion factor excluded) were more instructive (Figure 48). The second (vertical) component is correlated with scandium, magnesium, vanadium and chromium. The third component is correlated positively with sodium and magnesium and negatively with lithium, iron and aluminium.

The coarsewares tend to show more separation between the various fabric groups than the finewares. It is notable that the sandy orange wares form a group in the lower left of Figure 48, and the samples of the coarse variant from Halstead (hcwcor) are in the upper left. The early medieval fabric samples (hedcwem) lie in the spread of samples at the lower right, overlapping with some

sherds in the fine version of standard coarseware (hcwfi) and in the standard coarseware (hedcw). The mixing of samples in the fine and standard coarsewares indicate they are made of the same or very similar clays, differing only in fineness of inclusions in the fabric. Chemically, the fine version has slightly less iron but slightly more aluminium, magnesium, potassium, chromium and the rare earths compared to the standard Heddingham Coarseware (see Table 13 and Figure 45 and 46). The sandy orange ware samples, the storage jars (hcwstor) and the coarseware variant from Halstead (hcwcor) do not overlap on Figure 48, which indicates they have separate and distinguishable clay chemistries. Such chemistries will be derived from the particular mix of clay minerals, and temper source (either natural or added) in each fabric group, and is related to the potters' selection of slightly different sources of local raw clay, or different clay levels within the same pit. The storage jars (hcwstor) form a closely-knit group in the top centre of the figure, close to two of the standard coarseware sherds (hedcw) and one sherd in early medieval fabric (hedcwem) — and is quite typical of the local clay chemistry.



	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Ba	Co	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zn	La	Ce	Nd	Sm	Eu	Dy	Yb	Rb
<b>Hedingham Fineware fabrics 1-5</b>																												
mean	16.7	3.5	0.93	0.48	0.17	2.81	0.91	0.13	0.013	399	28	94	23	44	42	16	68	129	33	76	51	106	52	10.0	2.0	6.5	3.0	130
s.d.	1.6	0.5	0.13	0.11	0.04	0.38	0.08	0.18	0.006	34	7.8	10	4	7	9	2	9	21	10	13	8	17	13	2.8	0.5	1.9	0.8	19
cv %	9.5	15	14	23	22	14	9.1	137	43	8.5	28	11	19	17	21	11.1	14	16	30	17	16	16	24	27.6	26.6	29.6	27.4	14
compare:																												
<b>Farnham, Surrey clays and pottery*</b>																												
L13	15.9	3.3	0.72	0.19	0.17	1.96	0.76	0.03	0.012	295	22	53	17	57	23	12	114	92	14	29	51	72	50	4.1	0.8	2.3	1.8	
L14	20.5	2.8	0.72	0.22	0.21	1.87	0.86	0.06	0.008	322	57	59	20	58	19	17	91	94	20	29	47	69	47	3.0	0.9	2.9	2.3	
L15	16.5	2.2	0.69	0.65	0.24	2.13	0.67	0.83	0.008	438	44	51	20	47	24	14	234	77	22	142	79	144	78	8	2	4	2	
<b>All Hedingham Coarsewares</b>																												
mean	14.1	6.6	1.68	0.59	0.41	2.70	0.90	0.16	0.024	364	26	114	46	48	43	18	78	162	25	79	35	67	34	6.4	1.4	4.4	2.2	101
s.d.	1.3	1.3	0.21	0.13	0.05	0.24	0.08	0.07	0.007	34	5	13	9	11	8	2	9	21	6	12	6	10	6	1.2	0.2	1.0	0.4	13
cv %	9.2	20	13	22	13	9	8.6	41	31	9.3	21	11	21	23	19	10	12	13	23	15	17	16	18	19	17	22	17	13
<b>Hedingham sandy orange glazed ware</b>																												
mean	15.6	6.1	1.16	0.60	0.32	2.52	0.79	0.06	0.024	355	28	100	43	57	47	16	80	141	27	79	43	78	40	7.6	1.5	4.9	2.3	121
s.d.	1.0	1.4	0.20	0.02	0.10	0.17	0.10	0.02	0.012	15	4	6	11	4	4	2	8	7	3	4	5	12	5	0.9	0.1	0.4	0.1	10
cv %	6.4	22	18	3	31	7	12.1	35	48	4.4	16	6	26	7	9	10	10	5	12	5	12	16	13	12	9	9	6	8.6
<b>Hedingham fine version of standard coarseware (hewfi)</b>																												
mean	14.4	5.7	1.83	0.54	0.47	2.85	0.92	0.15	0.019	391	26	124	43	49	48	18	80	161	30	86	39	74	38	7.2	1.6	5.2	2.4	110
s.d.	1.3	0.9	0.14	0.13	0.06	0.33	0.10	0.06	0.002	37	3	10	4	7	7	2	8	12	5	14	5	8	4	0.8	0.2	0.8	0.3	5
<b>Coarseware from Halstead (hewcor)</b>																												
mean	15.5	8.4	1.74	0.54	0.37	2.80	0.93	0.15	0.030	327	31	118	43	62	47	20	83	192	22	88	36	69	34	6.5	1.4	4.3	2.0	108
s.d.	0.9	0.9	0.15	0.10	0.02	0.14	0.06	0.03	0.006	12	2	7	5	8	7	1	3	13	6	12	4	8	5	1.2	0.2	1.2	0.4	6
<b>Gt Horkesley, Colchester-type ware</b>																												
mean		7.7			0.25	2.23				326	27	98			17						34	68		6.2	1.2		1.7	
s.d.		0.8			0.03	0.36				97	18	12			2						7	16		1.8	0.4		0.4	
<b>factors used to multiply original NAA analyses of Gt Horkesley average to convert to ICP equivalent results</b>																												
multiply NAA results by:	1.058				0.770	0.961				1.010	1.015	0.787			0.981						1.072	1.000		1.005	0.912		0.730	
element to oxide factors	1.43				1.35	1.21																						

key: mean: average of the group; s.d.: one standard deviation; cv%: coefficient of variation (s.d. expressed as a percentage of the mean)

\* Newell and Hughes 2002/3, 103, table 1

L13 modern clay, Farnham Old Park B; L14 kiln sherds, Kingston, Eden St kiln; L15 Coarse Border ware, London, City

Table 13 ICPS analysis: comparison of the average and standard deviation of fineware fabrics 1, 2, 3, and 5; comparative whiteware clays; coarseware fabrics; some significant fabric groups; and earlier analyses by neutron activation of 15th century Colchester-type wares from Great Horkesley, near Colchester

The early medieval fabric sherds (*hedcwem*) show some slight differences within the group: Samples 27, 28, 29 and 31 are fairly similar to each other, and overlap with four of the six standard Hedingham coarsewares (*hedcw* — Samples 37–39 and 41), indicating continuity of clay resource from the early medieval to the medieval period production. However two of the early medieval fabric sherds (Samples 26 and 30) have two different sub-fabrics to each other and the rest of the group. Sample 26 is nearer the very coarse fabric group from Halstead (*hcwcor*) on this figure, and one rare early medieval variant, relatively fine and micaceous (Sample 30) is placed chemically similar to the storage jars (*hcwstor*).

The very coarse Halstead sherds (*hcwcor*) are slightly different to the rest, on the extreme top left of the distribution of coarsewares. They are a consistent chemical group, made of the same clay, and more compact chemically than any of the Hedingham coarsewares. Their position on the edge of the distribution in Figure 48 indicates a slightly different chemistry, and is entirely consistent with them being made at Halstead, a few miles from Hedingham, but also of London Clay. It is gratifying that ICPS has found a chemical difference to the corresponding standard Hedingham Coarseware.

The four sandy orange ware sherds (Samples 22–25) form a distinctly separate chemical group on the lower left of Figure 48. While Sample 23 falls among the fineware distribution in Figure 44, its analysis in Table 12 shows it to be very like the other sandy orange wares, and in Figure 47 it has a composition clearly consistent with the other three examples. The average composition of the sandy orange ware is given in Table 13 and provides an explanation for its separation from the others in Figure 48. It has the same high levels of iron, manganese and manganese, and lower levels of the rare earths typical of the coarseware average composition but clearly different to the rest of the finewares (Fabrics 1, 2, 3 and 5) (see Table 13) and so is consistent with being made of London Clay. However except for iron, it has levels of elements which are on the extreme edge of the range for coarsewares, tending towards the other finewares, which explains its separate position on Figure 48. One possibility is that it is made from a clay associated somewhere near the Lambeth Beds though not a typical example of the latter used for the other finewares.

### **Comparison with the neutron activation analyses (NAA) of Colchester-type wares from Great Horkesley, near Colchester**

An earlier investigation using neutron activation analysis of typical 15th century Colchester-type wares included analyses of examples from the pottery kilns at Great Horkesley, Essex just outside Colchester (Hughes 2000), about 20km east-south-east of Hedingham, and lying on deposits of London Clay. Six Colchester-type wares from Great Horkesley were analysed and the average is given in Table 13 (adjusted for inter-technique calibration factors between NAA and ICPS). Such inter-technique factors have previously been calculated for these two laboratories (Gutierrez 2003) but have more recently been recalculated using a larger set of comparison analyses and these new factors are given in Table 13. The elements iron, sodium and potassium are quoted as the element by NAA, so need multiplying by element to oxide conversion factors, also

quoted in the Table. The comparison with the Horkesley results shows some general similarities to the averages for Hedingham Coarseware and the variant from Halstead, though significantly different in a number of chemical elements. The table gives averages of examples of two chemically identifiable Hedingham fabrics: the fine version of Hedingham Coarseware, and sandy orange ware. The Halstead coarse variant is significantly higher in iron, aluminium, scandium and vanadium than the coarseware and sandy orange ware of Hedingham, but lower in the rare earth elements (lanthanum, cerium, etc). The Colchester-type ware from Horkesley has iron levels between the Halstead and Hedingham fabrics, but differs from either in having significantly lower sodium, potassium, chromium, scandium and slightly lower rare earth elements. The similarity to, but chemical difference from, either the Hedingham wares or the Halstead variant is to be expected, given the geographical separation of Horkesley from the Hedingham area. The relatively few elements quoted for the NAA results reflect the limited numbers of elements analysed in common by both techniques. That earlier study also showed distinct chemical differences between these Colchester-type wares in north Essex and pottery from further south and west in Essex, including Harlow wares (Hughes 2000, 370 and 372).

### **Conclusions**

The ICPS analysis showed a clear difference in clay chemistry between on the one hand the fineware Fabrics 1, 2, 3 and 5 which are probably made of Lambeth formation clays, low in iron, which outcrop just to the north of Hedingham, and on the other hand all the coarsewares and the sandy orange ware which seem to be made of London Clay. Further detailed investigation of the fabric groups showed the following:

#### **Fineware fabrics 1, 2, 3 and 5**

Fabric 5 seems very consistent in its chemistry of all the examples, whereas other fabrics showed greater chemical variability. Some pairs of samples in Fabric 3 suggest close chemical relationships. The finewares had a higher clay mineral content than the coarsewares suggesting they were made of a more plastic clay mix with probably fewer inclusions, which is entirely consistent with the fabric descriptions.

#### **Sandy orange ware fabric (*hedsao*)**

This ware shows similar chemical features to the coarsewares, and like them also appears to be of iron-rich London Clay. It is however rather closer than the coarsewares to the finewares in a number of its chemical components.

#### **Hedingham Coarsewares (including the early medieval fabrics)**

The coarsewares show rather more tendency than the fineware Fabrics 1, 2, 3 and 5, to have distinct chemical compositions among the fabrics analysed. The storage jars (*hcwstor*) form a closely-knit group. The early medieval fabric sherds (*hedcwem*) show some slight differences within the group but overlap chemically with most of the standard Hedingham coarsewares, indicating continuity of clay resource from the early medieval to the medieval

period production. One rare early medieval variant, relatively fine and micaceous, is chemically similar to the storage jars (hcwstor). The early medieval fabric samples (hedcwem) also overlap with some sherds in the fine version of standard coarseware (hcwfi). The sherds of the very coarse variant from Halstead (hcwcor) are a consistent chemical group, made of the same clay, and chemically more compact than any of the other Hedingham coarsewares. However they differ chemically in a number of elements to the other Hedingham wares, and so can be distinguished from them. The chemistry of the Halstead variant is typical of London Clay, like Hedingham coarsewares.

#### **Colchester-type wares at Great Horkesley**

Comparison of the ICPS results was made with previous neutron activation analyses of typical 15th century Colchester-type wares from the pottery kilns at Great Horkesley, about 20km from Hedingham, and lying on deposits of London Clay. The Colchester-type ware from Horkesley differs from Hedingham coarsewares (including the early medieval fabrics) in a range of chemical elements, and so can be distinguished chemically from Hedingham products.

## Appendix 3: XRF analysis of glazes, by Mike Hughes and Duncan Hook

General observations about the glazes have been made in Chapter 4. This section deals with the scientific analysis of the glazes.

### Technology of the lead glazes

The aim of the scientific work was, by determining the chemical composition of the glaze, to understand the technology of the glazes of Hedingham pottery, including comparing the glazes to products of other industries and to see whether there are any differences in glaze composition within the assemblage. Thirteen glazed sherds were selected for analysis, to cover as wide a range as possible of the Hedingham products. A recent investigation on the technology of lead glazes on Harlow pottery (Hughes 2009c) had parallel aims, and as the following results show, there are in fact many parallels between the chemical composition of the Harlow and Hedingham glazes. Analyses of Mill Green jugs showed that these lead glazes were coloured green with copper (Meddens and Redknapp 1992, 20), and there were very similar findings for the green-glazed Hedingham sherds.

A number of possible different lead-based starting materials for making lead glazes existed in the period of Hedingham production, including galena (lead sulphide), litharge (lead oxide), metallic lead and white lead (a mixture of lead hydroxide and lead carbonate) (see Hughes 2009c for a discussion on the background to the process of lead glazing at this period). Whichever starting material is used, firing the glaze causes a reaction between the surface layers of the body and the lead compound, fusing them into a glass-like material, and simultaneous penetration of some of the molten glaze into the underlying surface of the pottery. This fusion has the desirable effect of fixing the glaze closely to the body of the pottery, counteracting differential contraction of the glaze layer on cooling from firing (Kingery and Vandiver 1986, 268). The resulting glaze contains very high levels of lead, a smaller proportion of silicon (the major element in clay) and lesser amounts of clay-based elements. Thus analysis of the glaze layer of lead-glazed pottery is expected to show these levels of major and minor elements. However, where a coloured glaze is deliberately intended, either evenly coloured or with coloured highlights, it is necessary to introduce into the glaze mixture, before firing, a proportion of metallic elements which will render the glaze coloured, including at this period typically copper, iron or manganese, often singly but occasionally in combination.

### Criteria for selection

Glazed sherds occur at several of the production sites in Hedingham, but not all (e.g. Broak's Wood) were available for study and some of the glazed assemblages were so small, a representative sample could not be obtained. Therefore only samples from the two largest groups, Hole Farm and Starlings Hill, were sent for analysis. A representative sample of different fabrics and

decorative styles was included (see Table 14 for the list of sherds analysed).

Among the sherds selected for analysis, some glazes were pitted and others smooth; there was a clear glaze and a green ?copper glaze and sometimes when both the clear glaze and the green glaze occurred on the same sherd it appeared as though the two glazes were applied separately. Much of the glaze colour appeared to be determined by the colour of the pot body beneath. The body fabrics 1, 2, 3 and 6 were all more or less the same fabric and are early types. No examples were included of Fabric 4 as this is a general category for intermediate and small indeterminate sherds. Fabric 5 is the later, classic Hedingham Fineware so a difference in glaze composition was anticipated between this and the earlier fabrics. Also included were two examples of a sandy orange fabric (hedsao) which has a rather Mill Green-like mottled green glaze.

### Condition of the glazes and selection of analytical technique

A large proportion of the glazed sherds are misfired and are either matt and powdery or blistered and bubbled, but this did not affect the analysis. Many of the sherds, when examined under a 10X binocular microscope, showed the presence of numerous crazes in the glaze, and the general appearance of the surface of many glazes suggested some weathering. The analytical implication is that these glazes are often not in their original exact condition, and some elements may have been partially leached from them. It would in such cases be pointless to carry out full quantitative analysis, since this specifically requires unweathered material. It might be possible to find such material within the glaze layer, using for example a cut and prepared section examined with a scanning electron microscope, but this is more destructive of the material, and requires a significantly more complex analytical process, which might well prove fruitless if no original material was found. Experience has shown that while the original full chemical composition may not now be obtainable, elements identifying the main glaze composition and colouring agents will remain *in situ* even as weathering products, in proportions reflecting the composition of the original material. The colouring agents and the major glaze-forming elements such as silica, lead, alumina, and lime do not form soluble weathering products and tend to remain *in situ* in the glaze. In view of this, a semi-quantitative non-destructive surface analysis of the glaze using X-ray fluorescence is an effective and appropriate technique for obtaining answers about the technology of the glazes on the Hedingham pottery.

### X-Ray Fluorescence analysis (XRF)

X-Ray Fluorescence analysis was used to carry out the analysis of the glazes. This widely-used technique has several useful features: it is non-destructive; as a surface analysis technique it is ideal for analysing surface materials such as glazes; it records all the main elements

<i>Sample</i>	<i>Fabric</i>	<i>Site/major feature</i>	<i>Record No.</i>	<i>Decorative style/Description (and illustration No.)</i>
1	Fabric 1	Hole Farm Ditch	r.11514	London-style early rounded jug rim with clear splash glaze also showing patches of pale green glaze (Fig. 14.2)
2	Fabric 6	Hole Farm Ditch	r.11591	London-style early rounded jug rim, with abraded but lustrous glaze (Fig. 14.3)
3	Fabric 2	Hole Farm Ditch	r.11516	Lower part of London-style early rounded jug, pale grey fabric and brown slip-painting showing both a matt and blistered splash glaze (Fig. 14.6; Pl.9)
4	Fabric 1	Hole Farm Ditch	r.11706	Scarborough style early rounded, even, pitted yellowish glaze (Pl.10)
5	Fabric 3	Hole Farm east stokehole	r.11524	Scarborough style showing even cover of pitted dark olive green glaze (Fig. 14.15; Pl. 11)
6	Fabric 5	Starlings Hill unstratified	r.13011	Jug handle with cat's claw decoration and dark mottled green glaze (Fig. 14.22; Pl.12)
7	Fabric 5	Hole Farm kiln 3	r.11536–7	Fragment showing Rouen-style decoration showing partial matt glaze (Fig. 15.23; Pl.13)
8	Fabric 5	Hole Farm kiln 1 east stokehole	r.11541	Rim of stamped strip jug showing honey-coloured glaze without pitting (Fig. 15.26; Pl.14)
9	Fabric 5	Starlings Hill unstratified	r.13025	Rim of stamped strip jug showing clear glaze and green glaze applied separately (Fig. 15.30; Pl.16)
10	Fabric 5	Starlings Hill ditch	r.13191	Body sherds with gridiron stamps, perhaps a variant of a stamped strip jug showing lustrous green glaze without mottling (Fig. 15.36; Pl.17)
11	Sandy orange fabric	Starlings Hill unstratified	r.13168	Small sherd from jug with slip-painted lattice, pitted plain lead glaze (Fig. 15.41; Pl.18)
12	Fabric 5	Starlings Hill unstratified	r.13073	Body sherd with dark applied strip and lustrous, but pitted olive glaze, from same vessel as illustrated sherd (Fig. 15.44; Pl.19)
13	Sandy orange fabric	Starlings Hill ditch	r.13162	Body sherd with Mill Green-like mottled green glaze (not illustrated)

Table 14 List of sherds of glazed pottery analysed by XRF

present in the material; it is relatively rapid so large numbers of items can be analysed — so an overall impression can be obtained rather than being restricted to small numbers of samples which may be unrepresentative. It can also be a preliminary sorting technique for selecting representative material for more detailed examination e.g. on a scanning electron microscope (SEM).

The glazed areas of the sherds were analysed using an Artax X-ray fluorescence spectrometer (XRF) fitted with a 1.0 mm collimator, operating at 50 kV and 0.5 mA, using a helium flush and a live-time of 150 seconds.

These conditions, including the use of helium to provide an air-free path from sample to detector, allow better measurement of the lightest elements such as silicon than with an air-path instrument such as that used for the investigation of Harlow glazes (Hughes 2009c, 159). The results obtained were semi-quantitative only. No cleaning of the sherds was undertaken prior to analysis. In addition, the glazes were thin and not contiguous in all cases, resulting in some of the underlying body fabric probably being included in the analyses.

#### Analysis results by X-Ray fluorescence

The results of the analyses are given in Table 15 and have been expressed as weight percent oxide. The computer-based quantification program automatically normalises the figures for the elements included in the calibration to a sum total of 100%. However, as all the sherds analysed were found to contain a small amount of aluminium and are additionally likely to contain small amounts of other elements such as sodium and magnesium which could not be included in the quantification program, the figures

quoted in the table are likely to be slightly higher than the 'true' composition for those elements.

#### Discussion of the analysis results

All the sherds analysed were found to have lead-based glazes, with silicon being the other major element present. The glazes also all contained small but variable amounts of aluminium, calcium and titanium, and all but one (Sample 2) contained potassium. The glaze of only one sherd (Sample 3) contained detectable manganese, and it is debatable whether this amount represents a deliberate addition to colour the glaze. The iron contents were generally in the range of 0.7–2.2%, with the dark background glaze of a Rouen-style sherd (Sample 7) having an unusually high content of more than 6%. Samples 4 and 5 had applied clay decorative pellets; the pellets were chocolate brown in 4 but deep black in 5. Extra analyses (see Table 15) were undertaken of the glaze over the applied pellets as well as the background glaze away from the decoration, to look for differences. The glaze over these raised areas had identical iron contents (*c.*2.9%) despite the colour difference in the pellets, and the raised areas had significantly higher iron than the background glazes of the same sherds (1.1–1.2%). The clay of the applied pellets was almost certainly more iron-rich than the body fabric and the glazes over them reflect this enhancement. Samples 1–5, 7, 8 and 11 contained no detectable amounts of copper or zinc; Sample 1 has a pale green glaze, whose colour must be derived from iron.

Significant levels of copper were found in Samples 6, 9, 10, 12 and 13 and reflect deliberate additions to colour

Sample number (part)	SiO <sub>2</sub>	K <sub>2</sub> O	CaO	TiO <sub>2</sub>	MnO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	CuO	ZnO	PbO
1	50	2.1	1.8	0.13	<0.01	1.5	<0.01	<0.01	44
2	33	<0.1	0.8	0.06	<0.01	0.9	0.02	<0.01	65
3	49	1.9	2.2	0.05	0.02	0.7	<0.01	<0.01	46
4 (background glaze)	46	2.9	1.6	0.10	<0.01	1.2	<0.01	<0.01	49
4 (pellet glaze)	47	2.9	1.5	0.13	<0.01	2.9	<0.01	<0.01	45
5 (background glaze)	44	1.8	0.3	0.06	<0.01	1.1	<0.01	0.02	53
5 (pellet glaze)	40	2.1	0.7	0.10	<0.01	2.9	<0.01	0.05	54
6	33	0.3	0.4	0.04	<0.01	1.3	1.3	0.01	63
7	36	1.9	2.1	0.15	<0.01	6.3	<0.01	0.04	53
8	49	1.5	0.8	0.06	<0.01	0.8	0.01	<0.01	48
9	31	0.3	0.6	0.05	<0.01	1.0	1.4	0.01	66
10	27	0.2	0.5	0.05	<0.01	0.9	1.4	<0.01	70
11	34	0.4	1.8	0.08	<0.01	2.2	0.01	0.01	61
12 (background glaze)	38	0.3	0.7	0.05	<0.01	1.3	0.05	0.01	60
12 (dark glaze)	34	0.1	0.4	0.06	<0.01	1.2	4.0	0.28	60
13 (background glaze)	30	0.2	0.5	0.06	<0.01	1.8	0.5	0.04	66
13 (dark glaze)	29	0.3	0.7	0.08	<0.01	1.6	3.6	0.27	64
Corning glass A reference	82	5.0	7.7	0.3	1.5	1.6	1.9	0.07	0.2
Expected values*	83	3.6	6.6	1.0	1.5	1.4	1.5	0.05	0.1
Corning glass C reference	43	2.2	4.9	1.7		0.3	1.2	0.03	47
Expected values*	42	3.3	6.1	1.0		0.4	1.4	0.05	44

Notes: The results are semi-quantitative only. They have been expressed as weight percent oxide. However, as all the sherds analysed were found to contain a small amount of aluminium and are additionally likely to contain small amounts of other elements such sodium and magnesium, the figures quoted above are likely to be slightly higher than the 'true' composition.

'<' denotes an element not found to be present above the quoted detection limit.

The spectra of the sherds that contain copper also appear to contain slight traces of tin, although this may be due to a spectral interference from a Pb + Cu addition peak.

\* the 'expected' values for the Corning glasses analysed were obtained by normalising

the accepted values for the elements quoted to 100%, as not all the elements known to be present in these glasses were able to be included in the calibration.

Table 15 Semi-quantitative XRF analyses of the glazes on Hedingham pottery

the glaze. Sample 9 had a mottled glaze and an area of light green rather than the darker green was analysed. Sample 10 in contrast, showed a continuous green colour but the glaze analyses of both sherds were practically identical, including the copper content. The copper levels are higher still in the darker areas of glaze on Samples 12 and 13. Interestingly the glazes of these two sherds also contain the highest levels of zinc detected.

Apart from the presence of copper in some glazes, the results are very comparable to an earlier study on redware glazes on pottery of similar date from production sites in Harlow, Essex (Hughes 2009c). In the earlier work the silica ranged from 34–52%, and lead oxide from 45–65%, not far from the eutectic composition of 32% silica, 65% lead oxide and 7% alumina. In the Harlow redware glazes, iron was at a slightly higher level (2–4% iron oxide as compared to 1–2%). Potassium was lower in the Hedingham glazes (some less than 1%, others 1.5–3%) compared to Harlow (2.5–3%). Lime in the Hedingham pottery (0.3–2.2%) compares well to Harlow redwares (0.5–2.5%) and manganese is very low in ceramics from both places. No figures were given for the analyses of the Mill Green glazes (Meddens and Redknap 1992) so unfortunately no comparison of percentages can be made with these.

It is interesting to consider what effect the different body fabrics of Hedingham Wares have upon the composition of the glaze. The ICPS analysis of Hedingham pottery (see Appendix 2) showed that Fabrics 1, 2, 3, and 5 were probably made of Lambeth formation clays (part of the Lower London Tertiaries), low in iron (average *c.*3.5%), whereas the sandy orange wares and Hedingham Coarsewares were probably made of London Clay richer in iron (averaging *c.*6.6%). In Table 15, Fabrics 1, 2, 3 and 5 are represented by Samples 1, 3–10 and 12, whereas Samples 11 and 13 are sandy orange wares. The sandy orange ware samples contain slightly higher iron than the other fabrics, so it seems that underlying clay composition does affect the glaze composition. There are three other samples which have higher iron content, two of which represent areas of glaze covering applied iron-rich decorative pellets (spot glaze on Samples 4 and 5), which is also consistent with glaze/body interaction. The glazes covering these pellets are otherwise very similar to the honey-coloured glazes on the same sherd. Sample 7, the Rouen-style sherd, is something of an anomaly in that although it does not differ notably from other sherds, the glaze is unusually enriched in iron (6.3%), though the underlying body (Fabric 5) should be low in iron. This is probably due the iron content of its red slip-coating.

## Copper in Hedingham glazes

Analyses on Mill Green jugs showed that the green glazes were coloured with copper (Meddens and Redknapp 1992, 20). Some green glazes were analysed among the Harlow wares, but none contained anything more than traces of copper, and iron was concluded to be the colouring agent. Like the Mill Green glazes, but in contrast to the Harlow glazes, the green colours of some Hedingham glazes are the result of deliberate additions of copper. In the blackware glazes at Harlow, copper oxide (2–5%) was the colourant, augmented to some degree by iron which at typically 3–5% is higher than the corresponding deep green areas of glaze at Hedingham (0.9–1.8%).

There is thus a technical link not with Harlow green glazes but between the blackware glazes at Harlow and the deep green to black areas on some Hedingham Wares, such as Samples 12 and 13. In Sample 13, the deep colour occurs as discrete isolated spots or patches within the background honey-coloured glaze. This decorative effect could be obtained by sprinkling finely powdered copper compounds or copper filings onto the surface prior to firing the glaze, as Meddens and Redknapp (1992, 20) suggest for Mill Green green-glazed pottery, where copper-rich spots and bands occur. The Harlow blackwares also used copper as the colourant, but probably mixed with the lead compound before the glazing layer was applied to the pottery, to give an overall black appearance. Small concentrations of copper produce such an intense colour that the very intense green appears black on the Harlow pottery and in the darker spots on Hedingham glazes. The Harlow blackwares differ however in having significantly higher iron content compared to the Hedingham sherds.

Samples 12 and 13 showed areas of very deep green within the glaze; in 12 it was a wide, dark applied strip surrounded by a honey-coloured glaze, both of which were analysed. Sample 13 had a mottled green glaze and analyses were made of the very dark green and flesh-coloured areas. Both sherds contained, as well as copper, a significant concentration of zinc in the glaze on the deeper coloured areas, but apart from enriched copper content the green and honey coloured glazes on the same sherd had the same chemical composition. The copper : zinc ratios in the green areas on Samples 12 and 13 are 13:14, so the proportion of zinc in the original copper compound was around 5%. This would equate to a low-zinc brass or bronze. In the Harlow blackwares zinc also always accompanied the copper (Hughes 2009c, 163). There are two likely routes for introducing copper into the glaze: as a powdered copper compound or brass

filings. The medieval manuscript known as the *Mappae Clavicula*, thought to originate in northern Europe (Smith and Hawthorne 1974) contains many recipes for metalworking and artistic materials including a number for making green (copper-based) pigments, i.e. powdered copper compounds. In some recipes, copper plates are suspended over vinegar in a sealed pot kept in a warmed place (Smith and Hawthorne 1974, recipes v and vi). Verdigris forms on the surface of the copper, completely converting the copper sheet if left long enough. Another recipe directs that copper filings be left in a sealed container packed with salt and vinegar (recipe 80), which rapidly produces a green copper compound. Either method would yield a copper pigment or compound suitable for use on the copper-coloured glazes. However the second possible method of introduction, namely as solid metal filings, may have been more favoured by the Hedingham potters. Hamer (1979, 36) notes that brass filings break down in glazes to give zinc oxide which is a powerful flux. The introduction of as little as 1% zinc (Hamer 1979, 323) seems to have a strong interactive influence which results in increased fusion below 1085°C. Thus brass-derived copper would give a better effect as the fluxing action of zinc oxide would assist glaze formation.

## Conclusions

All the sherds analysed were of lead-based glazes containing 44–70% lead oxide, the principal balance to 100% being silica apart from minor amounts of other elements. They showed a high degree of consistency in their overall chemical composition, the main differences being variations in the silica/lead ratio. Among the minor elements, a number were low in potassium (Samples 2, 6 and 9–13) though there seemed no link to body fabric clay type to explain this. The lime content seemed to follow the same pattern as potassium. The presence of copper as the colourant in the green glazed sherds was the only clear difference in other elements.

There are similarities and contrasts to the chemistry of the Harlow glazes, where the redware glazes contain similar concentrations of the major elements silicon, lead and iron and minor elements lime, sodium and potassium. Harlow blackwares contain copper with minor amounts of zinc, as do Hedingham green glazes. In contrast, where green glazed areas occur on Harlow pottery, they contain no copper and have been produced by the presence of iron and careful control of the kiln to maintain it in reduction during glazing. But Hedingham green glazes share similar features to those on Mill Green pottery in that both were produced with copper as the colourant.

## Appendix 4: The documentary evidence, by Pat Ryan

### Pottery making

Unlike the recent study of the post-medieval pottery industry at Harlow (Davey and Walker 2009), there is little documentary evidence relating to the Hedingham pottery industry and much of what was found post-dates the main period of Hedingham ware production. Documentary research did however discover evidence of later medieval to early post-medieval pottery manufacture in the neighbouring parish of Wethersfield to the west of Sible Hedingham and many references to later brick and tile-making in the area. It was felt that this information merits publishing as it sheds light of what might have become of the potters after the medieval Hedingham Ware industry ceased production around the mid-14th century (see also Chapter 8 ‘The demise of the industry’).

The earliest reference to production is a potter or potters at Halstead owning 2½ acres of land in 1229 (Le Patourel 1968, table III). Unfortunately the source of this data is not given. The present author discovered four

references to potters in Sible Hedingham in surviving medieval documents. In 1317, John, the potter, (Johannes le bole) of Sible Hedingham granted a piece of land to Geoffrey Shorthose. Geoffrey (Galfridus) le bole was a witness to the grant (Gervers 1982, 45). In 1351 Robert Boket, potter and tilemaker of the same parish was presented at the Sessions of the Peace for demanding excessive wages (Furber 1953, 159). Part of the main road through Sible Hedingham was named Potterestreete in a deed of 1444 suggesting that a number of potters were or had been working in the area (Reaney and Fitch 1964, 34). There is a concentration of known medieval pottery kilns in the neighbourhood (see gazetteer in Chapter 2).

Only two late medieval pottery kilns have been disturbed by deep ploughing in Wethersfield at TL 7354 3144 (EHER; Ryan 1996, 180) (see also gazetteer entry in Chapter 2). However, several potters appear in the Wethersfield documents of the medieval period. Katerina Ia Pottere was included in the Lay Subsidy list of 1327 (ERO T/A 564) and Galfridus Pottere was presented at the

Date	Location	The evidence
1317	Sible Hedingham	Grant by John the potter (Johannes le bole) to Geoffrey Shorthose of a piece of land abutting on the lane from Halstead to Castle Hedingham. One of the witnesses was Geoffrey (Galfridus) le bole (Gervers 1982, 45) [Note: ‘Le bole’ means ‘the furnace’; also note that several other trades and crafts used furnaces]
1327	Wethersfield	Katerina le Pottere of Wethersfield (Lay Subsidy)
1351	Sible Hedingham	Robert Boket, potter and tiler of Sible Hedingham (Furber 1953, 159)
1351	Wethersfield	Geoffrey (Galfridus) Potter of Wethersfield (Furber 1953, 159)
1380–1	Wethersfield	John Parkyr and Henry Key, potters (T/A 565)
1444	Sible Hedingham	Potterestrete in Sible Hedingham ( <i>Feet of Fines for Essex</i> Vol. IV p.34)
1483	Wethersfield	Walter Rede, potter of Wethersfield, party to a deed (ERO D/DK T256/ 7)
1486	Wethersfield	One of the witnesses to a lease was Walt Davy, potter (lease of a property in Wethersfield called Goldinges ERO D/P 119/25/42)
Late medieval	Wethersfield TL 7354 3144	Two pottery kilns disturbed by deep ploughing (EHER; EB II p.180)
1535	Wethersfield	Will of Thomas Walakeyr, senior, potter (ERO D/ABW 39/26)
1588/9	"	Will of William Livermer, potter, left the house where he lived called Sharpes and Sir Harry’s Croft, 2 acres, and copyhold land in Wethersfield Park, also a house called Whoodes next to Wethersfield church. (ERO D/AMR 4/149; Emmison 1989, 260–1)
1632	"	Will of William Lyvermore, potter, left ‘the house he dwelt in called Sharpes at Blackmore End near a place called Styles with house, barn, stables and workhouses adjoining Sir Harry’s Croft’ (ERO D/AMW 1/9)
1598	Wethersfield	Will of John Cleavland, potter, left his free tenement in Blackmore End which was occupied by William Collen (ERO D/ABW 10/76) [Note: there is a farm at Blackmore End, Wethersfield, called Cleveland’s Farm on the OS 2nd edition 6" map. A late medieval pottery site has been recorded at Blackmore End but NGR is uncertain (Helen Walker)]
1784	Sible Hedingham, Southey Green	Daniel Smith admitted to waste ground at Southey Green. He was to repair the brick kiln there (ERO D/DSm M17, p.156)
1797	"	Daniel Smith took out a mortgage with Benjamin Joslin on ‘waste ground of the manor at Southey Green, 12 rods by 6 rods together with the brick kiln near or adjoining the same in the occupation of Thomas Osborne, brickmaker to which Daniel Smith was admitted in 1784’ (ERO D/DSm M17 p.220)
1840	"	Tithe Award, No.863 Brick Yard, owner Daniel Smith, occupier John Parish (ERO D/CT 174) TL 778 318
1863–1937	"	Members of the Corder family advertised the Southey Green Tile and Pottery Works in the trade directories
1876	"	Southey Green Pottery marked on OS 1st edition 6" map TL 778 318
1896	"	Southey Green Pottery marked on OS 2nd edition 6" map TL 778 318
1937	"	Southey Green Brick, Tile and Pottery Works made pottery, bricks, tiles and pipes (Corder-Birch, 1988, 74)
1848	Castle Hedingham	Edward Bingham, potter and earthenware maker of Castle Hedingham, advertised from 1848 to 1863, and his son until about 1901 (Trade Directories)

Note: for details of the medieval Hedingham Ware production sites see the gazetteer of production sites in Chapter 2

Table 16 Documentary evidence of potters



Sessions of the Peace for breaking the King's Peace in 1351 (Furber 1953, 159). In 1483 Walter Reed was described as a potter in a Wethersfield deed (ERO D/DK/T256/7). Three years later Walt Davy, another potter, was one of the witnesses to a lease of a property called Goldinges (ERO D/P 119/25/42).

No potters have been found in Sible Hedingham documents of the 16th and early 17th centuries, but several potters' wills indicate that the industry was continuing in Wethersfield. That of Thomas Walakey, senior, potter of Wethersfield, is dated 1535 (ERO D/ABW 39/26). In 1588/9, William Livermer, potter, left the house where he lived called Sharpes and Sir Harry's Croft, copyhold land in Wethersfield Park, also a house called Whoodes next to Wethersfield Church (ERO D/AMR 4/149; Emmison 1989, 260–1). John Cleavland, potter, made his will in 1598 (ERO D/ABW 10/76). He may have lived in the house called Cleavlands at Blackmore End. Some late medieval pottery has been found in the vicinity of the hamlet but the precise find-spot was not recorded. In 1632, another William Livermore, who was also a potter, left Sharpes to his wife (ERO D/AMW 1/9).

In the 18th century the Industrial Revolution in conjunction with a change in fashion brought with it a great increase in production in the cream and white wares of the Staffordshire potteries. The introduction of canal and then rail transport facilitated the distribution of these products all over the country and much of the Essex potters' trade fell away. However utilitarian earthenware products were still being manufactured in the Southey Green Pottery in Sible Hedingham and by the Bingham family in Castle Hedingham in the 19th century.

Although the works at Southey Green was named Southey Green Pottery on the OS 1st edition 6-inch map in 1876, bricks and tiles were also made (see below under Brickmaking for a more detailed history of this site). In Castle Hedingham, the Bingham family advertised in trade directories as pottery and red earthenware makers from 1848 until 1907.

## Tilemaking

The related clay-working industries of tilemaking and brickmaking also continued in the Hedingham area until the mid 20th century. In historic documents tilemakers are referred to as either tilemakers or tilers. Robert Boket of Sible Hedingham was not only a potter, but also a tiler in 1351 (Furber 1953, 159). In the 1380–81 Sible Hedingham Poll Tax list there were five entries for the Tyler family, all of whom were probably tilemakers (ERO T/A 565).

In 1425/26, tiles were bought from John Tyler of Halstead for use at Colne Priory (ERO D/DPr 15) and in 1437/38 tiles were bought from Halstead to repair the manorial buildings at Stisted (ERO T/A 262/5). In 1577 a tree overhanging the road near the tile kiln in this parish had to be felled (Emmison 1976, 288).

John Waspe, tilemaker of Sible Hedingham, was listed in the Lay Subsidy of 1524/5 (ERO T/A 427/1/8, transcript of PRO E179/108/214A). He was probably a relative of Augustine Waspe, tilemaker, who left a tenement called Bagge and Brome Hills in Preyors Manor, Sible Hedingham, in 1558/9 (ERO D/ABW 39/221). There is no evidence in the documentation as to whether they worked the Sible Hedingham tile kiln which belonged to the Hawkwood Chantry in 1548 (Morant 1768, 291, citing

Letters Patent 2 Edward VI), nor can it be proved if the Hawkwood Chantry tile kiln was on the farm listed in the Tithe Award of 1840 as Tile Kiln Farm and Tile Kiln Yard at TL 787 320 (ERO D/CT 174). In 1597 Martin Diamonte of Gosfield was fined for making 'unlawful tile wanting in length and breadth' (ERO Q/SR 137/73).

From the late 18th century a number of the brickmakers in the area also made tiles.

In 1863 John Hunt advertised as a brick and tilemaker. The following year, when the brickyard near Alderford Bridge (TL 789 340) was sold, tile making as well as brick making equipment was advertised in the sale particulars (ERO D/F 6/1/12). A tile kiln is marked at Southey Green Pottery Works on the OS 1st edition 6-inch map surveyed about 1876, and the Hedingham Brick and Tile Co. advertised in the trade directories from 1886 to 1917.

## Brickmaking

Brickmaking and the construction of all-brick buildings were introduced into England by continental brick-workers early in the 15th century. In the late 15th century the brick bridge and gatehouse were constructed at the castle in Castle Hedingham. It is likely that the large number of bricks required were made somewhere in the vicinity of the castle for there was already a strong tradition of working with clay in the area. Brick became the prestigious building material of the day and during the mid-16th century the great country houses of Gosfield Hall and Stanstead Hall, Halstead, were built with brick in the neighbourhood. The brick tower of Castle Hedingham church has a date stone of 1616. Towards the end of the next century Dynes Hall in Great Maplestead was extended with brick.

In 1569/70 Henry Young of White Colne left '3,000 bricks at Plaistow kiln in Halstead' (Emmison 1983, 209–10). (The national Grid Reference of Plaistow Green is TL 807 281). The deaths of John Brown and Henry Bayford, brickmakers of Sible Hedingham were recorded in the parish register in 1586 (Parish Register ERO D/P 48/1/1).

In the 17th century Robert Doe, brickmaker of Gosfield, was mentioned in the Quarter Sessions record of 1636 (ERO Q/SR 294/55) and John Wade, brickmaker of the same parish, made his will in 1662 (ERO D/AMW 6/171). John Broun, brickstriker, died in Sible Hedingham in 1676 (Sible Hedingham Parish Registers). At the very end of the century, in 1699, a brick kiln was referred to in the deeds of Hurrins Farm in Sible Hedingham and Great Maplestead (ERO D/DBm T42).

During the 18th century several members of the Hewes family were engaged in the brickmaking trade in Halstead. Peter Hewes, senior, brickmaker, made his will in 1724 (ERO D/ABR 19/93) and his relative John Hewes made his in 1741 (ERO D/ABR 22/404). In 1755 another Peter Hewes occupied a brick kiln and a ground of 2 roods in Halstead (ERO D/DCw T2). By 1810 the brick kiln, barns, stable and land were in the occupation of Widow and Thomas Salmon (ERO D/DCw T2). Joseph Linnett was the tenant of Wash Farm, two cottages, the brick kiln and 86 acres the following year (ERO D/DCw T2). He was recorded as the occupier of Wash Farm in the Tithe Award of 1838. The Brick Yard and Farm Yard are included in the list of fields (ERO D/CT 158). By 1863 the farm appears to have been renamed Brook Farm when Charles Blomfield, farmer and brickmaker, advertised in White's Directory.

The Brick Works adjoins Brook Farm and is shown on the OS map of 1898 (TL 823 302).

Another long-lasting site was the Pottery Works at Southey Green, in Sible Hedingham. According to an entry in the court rolls of Preyours Manor, in 1784 Daniel Smith was admitted to waste ground at Southey Green, provided he repaired ‘the brick kiln there’ (ERO D/DSm M17 p.156). Like many brickworks, this one closed down at the beginning of the Second World War and never re-opened. Adrian Corder-Birch has included photographs of the works in his *Pictorial History of Sible Hedingham* (1988, 74). One, taken in 1937, shows an up-draught kiln; the other is of pottery, bricks, tiles and pipes made there before the First World War.

The brickmaking industry in the Hedingham area expanded rapidly in the 19th century especially after the opening of the Colne Valley and Halstead Railway in

1863. Some of the works had a longer life than others. By the end of the century the following were shown in the OS 2nd edition maps: Thomas Moy’s brickworks near Nunnery Bridge, in Castle Hedingham (TL 773 354); Maiden Ley Brickworks, Castle Hedingham (TL 785 344); Highfields Brickworks, Great Maplestead (TL 790 349); Brook Farm Brickworks, Halstead (TL 823 302); Grange Brickfield, Halstead (TL 794 298); Southey Green Pottery (TL 778 318), Tortoise Brickworks (TL 772 342) and Langthorne Brickworks were all in Sible Hedingham (TL 769 341).

The fact that bricks could be produced more cheaply from the clays in the Fletton area around Peterborough probably led to the decline of the industry in Essex in the 20th century. The last two brickworks in the Hedingham area closed down in 1954 (Corder-Birch 1988, 77).

Date	Location	The evidence
Medieval	Sible Hedingham TL 7868 3285	Tile kiln cut by trench in 1961, scatter of medieval sherds in field (Colchester Museum map)
1351	Sible Hedingham	Robert Boket, tiler and potter of Sible Hedingham (Furber 1953, 159)
1380–1	Sible Hedingham	Five entries with the surname ‘Tyler’ (Poll Tax ERO T/A 565). [Note: Tyler may refer to a tiler of roofs or a tilemaker]
1425–26	Halstead	23,000 tiles bought for use at Colne Priory from John Tyler at 3s 4d per 1,000 and 8 days carrying from Halstead at 2s per day’ (ERO D/DPr 15)
1437/8	"	‘3,000 tiles bought at Halstead for the repair of manorial buildings at Stisted at 3s 8d per 1000 and carriage’ (ERO T/A 262/5)
1524/5	Sible Hedingham	John Waspe, tyllemaker (Lay Subsidy, ERO T/A 427/1/8 -transcript of PRO E179/108/214A)
1558–9	"	Will of Augustine Waspe, tilemaker of Sible Hedingham, left a tenement called Dagge and Drome [or Bagge and Brome Hills] in Preyours Manor (ERO D/ABW 39/221).
1548	Sible Hedingham	A tile kiln belonged to the Hawkwood Chantry in 1548 (Morant 1768, 291, citing Letters Patent 2 Edw VI)
1846	Sible Hedingham TL 787 321	Tile Kiln Farm and Tile Kiln Yard are listed in the Tithe Award of 1846 (ERO D/CT 174). [Note: this may be the one that belonged to the Hawkwood Chantry. It is also possible it may be the tile kiln which was cut by a trench in 1961 according to the Colchester Museum map (TL 7868 3285)]
1577	Halstead	A tree overhanging the road near the tile kiln at Halstead had to be felled (Emmison 1976, 288)
1597	Gosfield	Martin Diamante of Gosfield fined for making ‘unlawful tile wanting in length and breadth’ (ERO Q/SR 137/ 73)
1784	Sible Hedingham, Southey Green	Daniel Smith admitted to waste ground at Southey Green. He was to repair the brick kiln there (ERO D/DSm M17 p.156)
1797	"	Daniel Smith took out a mortgage with Benjamin Joslin on waste ground of the manor at Southey Green, 12 rods by 6 rods together with the brick kiln near or adjoining the same in the occupation of Thomas Osborne, brickmaker, to which Daniel Smith was admitted in 1784 (ERO D/DSm M17 p.220)
1840	"	Tithe Award, No.863 Brick Yard, owner Daniel Smith, occupier John Parish (ERO D/CT 174) TL 778 318
1863–1937	"	Members of the Corder family advertised the Southey Green Tile and Pottery Works in the trade directories
c.1876	"	Southey Green Pottery marked on OS 1st edition 6" map TL 778 318
c. 1896	"	Southey Green Pottery marked on OS 2nd edition 6" map TL 778 318
1937	"	Southey Green Brick, Tile and Pottery Works made pottery, bricks, tiles and pipes (Corder-Birch 1988, 74)
1840	Great Maplestead	Tythe Award Nos 139–176, 236–239, 262, owner Philip Nunn (ERO D/CT 231)
1848	"	Philip Nunn, brick and tilemaker advertised in White’s Directory
1863	Castle Hedingham	John Hunt of Castle Hedingham advertised as a brick and tilemaker (Trade Directories)
1867–70	Gosfield	William Broyd of Gosfield advertised as a brick and tilemaker (Trade Directories)
1876	Sible	Langthorne Brickworks was not marked on OS 1st edition 6" map
1882–1920	Hedingham	Langthorne Works, Mark Gentry, brick and tilemaker, The Hedingham Brick and Tile Works advertised in 1906 as High Class red moulded and enriched bricks, handmade and hand-pressed facing bricks (Trade Directories; Corder-Birch 1985, 66–7)
1897	"	Langthorne Brickworks marked on OS 2nd edition 6" map. Langthorne, Sible Hedingham and Highfields, Great Maplestead were owned by Mark Gentry; traded under the name of The Hedingham Brick, Tile and Terracotta Works and exported bricks to Egypt, Africa as well as providing the facing brick for Dublin Barracks (Corder-Birch 1985, 66–7, citing <i>East Essex and Halstead Times</i> 17 June 1909)
1893–1952	Castle Hedingham TL 785 344	Maiden Ley Brickworks, operated by the Rayner family, made bricks and tiles (Corder-Birch 1985, 66–7)

Note: there are many fields in the Hedingham area called Kiln Field but they may be associated with hop or malting kilns and have only been included if they are specifically named as brick or tile kilns

Table 17 Documentary evidence of tilers

<i>Date</i>	<i>Location</i>	<i>The evidence</i>
Late 15th C	Castle Hedingham	Brick additions, including the bridge, were made to the castle
Mid 16th C	Various	At this time major country houses were built in brick at Stanstead Hall, Halstead and Gosfield Hall in Gosfield. The church tower at Castle Hedingham has a date stone of 1616.
1569–70	Halstead: Plaistow Green TL 807 281	Plaistow Kiln, Will of Henry Young of White Colne, '3,000 bricks being yet at Plaistow kiln all paid for save 12d' (Emmison 1983, 210)
1580	Great Maplestead	Brickmans Croft 'between Brickmans Croft on the E and the river running from Alderford mylne gates to New mylne on the W', 'Brickmans Croft 7 acres' (ERO D/DGd M5 p.41 – survey)
1586	Sible Hedingham	Death of John Brown, brickmaker of Sible Hedingham and death of Henry Bayford, brickmaker of Sible Hedingham (Parish Register ERO D/P 48/1/1)
1586	"	Will of Henry Bayford, brickmaker of Sible Hedingham, who left a house and Low Croft, 3acres, in Great Maplestead (Emmison 1989, 251; ERO D/AMR 4/110)
c.1625	Halstead	Little and Great Brickfield to south of town (ERO D/DVz 282, portfolio of estate maps)
1636	Gosfield	Robert Doe, brickmaker of Gosfield (ERO Q/SR 294/55)
1662	Gosfield	Will of John Wade, brickmaker, written 1662, proved 1670, (ERO D/AMW 6/171)
1676	Sible Hedingham	John Broun, brickstriker of Sible Hedingham died 1676 (Sible Hedingham Parish Registers on ERO microfilm; ERO D/ABR 9/475)
1666 1699 1712 1718	Sible Hedingham and Great Maplestead	Hurrins Farm and a brick kiln. The brick kiln is referred to in deeds of 1699, 1718 and 1770 but is not mentioned in one of 1666 (ERO D/DBm T42). [Note: In 1770 the property was 'released' to James Sparrow. It is possible that this may be the farm in Sible Hedingham, which was quite close to the Great Maplestead boundary and was called Sparrows Farm on the OS 2nd edition 6" map in the late 19th century (c. TL 797 322) and is also marked Sparrows on Chapman and André's map published in 1777.]
1724	Halstead	Peter Hewes, senior, brickmaker (ERO D/ABR 19/93)
1741	"	John Hewes, brickmaker (ERO D/ABR 22/404)
1755–1811	"	Deeds including brick kiln in Halstead (ERO D/ DCw T2)
1755	"	Brick kiln and ground 2 roods late in the occupation of Peter Hewes (ERO D/DCw T2)
1810	"	And also all that Brick Kiln with the Barn Stable and lands in the occupation of Widow Salmon and Thomas Salmon (ERO D/DCw T2)
1811	"	Wash Farm in the occupation of Joseph Linnett, 2 cottages and the Brick Kiln in the occupation of Joseph Linnett (ERO D/ DCw T2)
1838	"	The Wash (Brook Farm), No.740 Brick and Farm Yards, Wil [illegible], owner; Jos. Linnett, occupier (ERO D/CT 158) TL 825 302
1863	"	Charles Blomfield, farmer and brickmaker, Brook Farm (White's Directory)
1898	"	Brook Farm Brick Works marked next to Brook Farm (OS 2nd edition 25" map) TL 825 302
1771	Sible Hedingham	Will of Joseph Bett, brickmaker — 'one load of great wood and one load of small wood provided the same shall be in my brick yard at the time of my decease.' (ERO D/ABR 26/25)
1772	Gosfield c.TL 773 306	Brick Kiln Field marked on map of 1772 (ERO T/M 297)
1775	Sible Hedingham	Will of Abraham Rayner, brickmaker (ERO D/ABR 26/494)
1784	Sible Hedingham	Daniel Smith admitted to waste ground at Southey Green. He was to repair the brick kiln there (ERO D/DSm M17 p.156)
1797	Southey Green	Daniel Smith took out a mortgage with Benjamin Joslin on waste ground of the manor at Southey Green, 12 rods by 6 rods together with the brick kiln near or adjoining the same in the occupation of Thomas Osborne, brickmaker, to which Daniel Smith was admitted in 1784 (ERO D/DSm M17 p.220)
?1832	"	Daniel Smith, owner and John Tricker tenant of a brick kiln (?Land Tax) [Note: Possibly the Southey Green kiln]
1839	"	John Parish of Sible Hedingham advertised as a brickmaker (Trade Directory)
1840	"	Tithe Award, No.863 Brick Yard, owner Daniel Smith, occupier John Parish (ERO D/CT 174) TL 778 318
1863–1937	"	Members of the Corder family advertised the Southey Green Tile and Pottery Works in the trade directories
1848	"	John Parish, brickmaker, Southey Green, advertised in White's Directory
c.1876	"	Southey Green Pottery marked on OS 1st edition 6" map TL 778 318
1897	"	Southey Green Pottery marked on OS 2nd edition 25" map TL 778 318
1920	"	Southey Green Pottery marked on OS 6" map surveyed 1920 TL 778 318
1937	"	Southey Green Brick, Tile and Pottery Works made pottery, bricks, tiles and pipes, an up-draught kiln (Corder-Birch 1988, 74)
1815	Sible Hedingham	Jack Hilton, brickmaker (Freeholders Book, ERO Q/RJ 1/12)
1823	Sible Hedingham, near Alderford	John Hilton admitted to land near Alderford Mill on surrender of Samuel Cowell. John Hilton died 1836. C A Hilton (under age) admitted; his mother, Hannah, was his guardian (ERO D/DSm M14)
1840	Mill Bridge TL 789 340	Buildings marked on Tithe map, No.1181 Brick Kiln Garden owner Hannah Hilton, occupier Ann Flack, No.1182 Part of Kiln Pasture and No.1183 Kiln House and Yard owner and occupier Hannah Hilton (ERO D/CT 174)
1876	"	'Brickfield' and well marked (OS 1st edition 6" map)
1920	"	Only pits indicated (OS 6" map surveyed 1920)

<i>Date</i>	<i>Location</i>	<i>The evidence</i>
1846	Castle Hedingham	No. 82, brick kiln and yard, owner George Nottidge, occupier John Tricker; brickfield-type buildings marked on Tithe map (ERO D/CT 173)
1876	TL 786 355	Nothing marked on OS 1st edition 6" map
1838	Halstead TL 799 313	No. 999 Brick Field, R B Wyatt, owner and occupier, nothing marked in field, NW of White House Farm (ERO D/CT 158)
1838	Halstead TL 831 323	No.1173 Brick Field, No.1183 Brick Wood Jolide Home, owner; Jonathan Nash, occupier (ERO D/CT 158)
1839	Castle Hedingham	William Leonard of Colchester Road, Castle Hedingham advertised as a brickmaker (Trade Directory)
1840	Sible Hedingham TL 758 359	A field called Brick Ley listed in Tithe Award (ERO D/CT 174) [Note: a possible brickmaking site east-south-east of Bloom Farm]
1840	Sible Hedingham TL 755 354	Fields called Little Bricks and Great Bricks listed in Tithe Award (ERO D/CT 174) [Note: a possible brickmaking site near Bottle Hall]
1840	Sible Hedingham TL 747 325	A field called Lower Bricks listed in Tithe Award (ERO D/CT 174) [Note: a possible brickmaking site N. of Tredgells Wood]
1840	Great Maplestead TL 799 354	No. 131 Brick Kiln Field, Richard Myall, owner and occupier listed in Tithe Award (ERO D/CT 231)
1840	Great Maplestead	Nos 139–176, 236–239, 262 owner Philip Nunn listed in Tithe Award (ERO D/CT 231)
1848	"	Philip Nunn, brick and tilemaker advertised in White's Directory
1843	Sible Hedingham	C A Hilton farmer admitted to waste on Southey Green (ERO D/DSm M?)
1876	Sible Hedingham TL 752 327	A brick field, kiln and clay mill, north-east of Tredgells Wood, are marked on OS 6" map in 1876 but not on OS map in 1896
1920	Sible Hedingham TL 757 326	Brick kiln and clay mill marked on OS 6" map surveyed 1920
1843	Wethersfield c.TL 736 315	Brick Kiln Farm near Brick Kiln Green, Wethersfield — No. 751 Second Brick Kiln Field, No. 793 First Brick Kiln Field, Nos. 800, 801 and 802; Brick Kiln Barn, owner John Cutts, occupier William Brand listed in Tithe Award (ERO D/CT 393). [No indications of a brickfield on the map]
1876	"	Brick Kiln Farm near Brick Kiln Green, nothing shown on OS 1st edition 6" map
1843	Wethersfield TL 712 308	No. 117, a brick kiln and yard, owner and occupier John Giblin listed in Tithe Award. Nothing shown on map (ERO D/CT 393)
1876	"	Nothing shown on OS 1st edition 6" map
1863	Sible and Castle Hedingham	The Rayner family of Sible Hedingham and Castle Hedingham advertised as brickmakers from 1863 until 1937 in the Trade Directories
1863	Castle Hedingham	John Hunt/Hart of Castle Hedingham advertised as a brick and tilemaker (Trade Directories)
1876	Sible	A brickfield marked west of Runnalong Wood on OS 1st edition
c.1897	Hedingham c.TL 753 327	A brickfield not marked west of Runnalong Wood on OS 2nd edition
1876	Castle/Sible	A brickfield, kiln and two clay mills marked on OS 1st edition 6" map near Nunnery Bridge
1876–1897	Hedingham TL 773 354	Brickfield, near Nunnery Bridge, Castle Hedingham; Thomas Moy, tenant 1856–1893 had permission to dig 'white earth' in Little Duller Field; closed by 1920 (ERO D/DS 128/5; B1409; OS maps)
1897	"	Brick Works marked on OS 2nd edition 25" map near Nunnery Bridge
1920	"	A brickfield near Nunnery Bridge marked as disused on OS 6" map surveyed 1920
1843	Gosfield TL 763 295	Orange Hall, No. 126 Brick Kiln, buildings in field, No. 146 Brick Kiln Piece, No. 125 Brick Grove, owner and occupier Edward George Barnard listed in Tithe Award (ERO D/ CT 151)
1876	"	c.TL 763 295, nothing in fields, Brick Grove named Oak Grove (OS 1st edition 6" map)
1867–70	Gosfield	William Broyd of Gosfield advertised as a brick and tilemaker (Trade Directories)
1876–1897	Gosfield TL 758 298	Brickfield buildings but no name on OS 1st edition 6" map in 1876; 'Old Brick Works' on 1897 OS 2nd edition 25" map
1876	Gosfield	No brickworks north-west of Park Hall Farm on OS 1st edition 6" map
1897	"	Old Brickworks north-west of Park Hall Farm marked on OS 2nd edition 6" map
1876	Gosfield TL 751 292	A brick field and kiln marked on N side of road SW of Wagstaff Farm, OS 1st edition 6" map in 1876; nothing remained in 1897 (OS 1st edition 6" map; OS 2nd edition 25" map)
c.1876	Sible	Langthorne Brickworks not marked on OS 1st edition 6" map TL 767 301
1882–1920	Hedingham	Langthorne Works, Sible Hedingham, advertised in the trade directories. Mark Gentry brick and tilemaker, The Hedingham Brick and Tile Works; advertised in 1906 as High Class red moulded and enriched bricks handmade and hand-pressed facing bricks (Trade Directories). Langthorne, Sible Hedingham and Highfields, Great Maplestead were owned by Mark Gentry; traded under the name of The Hedingham Brick, Tile and Terracotta Works and exported bricks to Egypt, Africa as well as providing the facing brick for Dublin Barracks (Corder-Birch 1985, 66–67, citing <i>East Essex and Halstead Times</i> 17 June 1909) TL 763 295
c.1897	"	Langthorne Brickworks marked on OS 2nd edition 25" map
1920	"	Langthorne Brick Works marked on OS 6" map surveyed 1920
1870–1882	"	Orbelle Cornish advertised as a brickmaker (Trade Directories)
c.1876	"	Tortoise Brickworks not marked on OS 1st edition 6" map
1890–1937	"	Tortoise Brickworks, Sible Hedingham; Eli Cornish advertised from 1890 to 1929 and F. Cornish in 1933 and 1937; worked until 1950s (Trade Directories; Corder-Birch 1985, 66–67) TL 772 342

<i>Date</i>	<i>Location</i>	<i>The evidence</i>
c.1897	"	Tortoise Brickworks marked on OS 2nd edition 6" map
1920	"	Tortoise Brick Works marked on OS 6" map surveyed 1920
1882–1886	"	John Taylor of Sible Hedingham advertised as a brickmaker (Trade Directories)
1893–1952	Castle Hedingham TL 785 344	Maiden Ley Brickworks, Castle Hedingham; operated by the Rayner family, made bricks and tiles (OS 2nd edition 25" map 1897; Corder-Birch 1985, 66–7)
1893–1952		Maiden Ley; Rayners operated between 1893 and 1952; supplied the bricks for facing the Prudential Assurance building in Holborn (Corder Birch 1985, 66–67)
1897	"	Maiden Ley Brickworks marked on OS 2nd edition 6" map
1920	"	Maiden Ley Brickworks marked on OS 6" map surveyed 1920
1899	Castle Hedingham	Ernest West of Purles Hill advertised as a brickmaker (Trade Directory)
1929	Sible Hedingham	Sible Hedingham Red Brick Co. advertised in Kelly's Directory
1919–1954	?Sible Hedingham	The Sible Hedingham Red Brick Co. was incorporated in 1919. The first directors were Eli Cornish, Reuben Hunt, Henry Tucker Ripper, William Chariton Ripper. The brickworks were situated at Purles Hill where the Hedingham Brick Co. and the adjacent Highfields brickworks which had belonged to Mark Gentry were previously located. This was the last of the brickworks in the area to close down. (Corder-Birch, 1988, 77)

Note: Whilst one man was the owner of a property where a brickmaking business was being carried on, another man, who was the tenant of the property, may have been the owner of the brickmaking business. This can lead to considerable difficulties when endeavouring to understand the exact meaning of some historical documents

Table 18 Documentary evidence of brickmakers

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# Index

Page numbers in *italics* denote illustrations. Places are in Essex unless indicated otherwise.

- Acacia House  
geology 5  
kiln 5, 91  
pottery  
  assemblage 5  
  forms: bowls 51; cooking-pots 55, 59, 66; jugs 37, 38, 45, 75, 77  
  manufacturing faults 87, 89  
Aldringham (Suffolk), Hedingham Ware 105, 120  
archive 3  
Attwoods  
  geology 6  
  kiln  
    compared 92  
    dating 7, 91  
    description 6, 6, 7  
    siting 27, 30
- Bardwell (Suffolk), Hedingham Ware 109, 119  
Barking, Hedingham Ware 125, 128  
Barrington (Cambs), Hedingham Ware 105, 119  
Barton (Cambs), Hedingham Ware 105, 119  
base, cylindrical 77, 78  
Basildon, Hedingham Ware 111, 124, 125  
Bayford, Henry 165, 167  
Beaumont-cum-Moze, Hedingham Ware 111, 122  
Beccles (Suffolk), Hedingham Ware 105, 119  
Bedford (Beds), Hedingham Ware 115, 125  
Beeleigh Abbey, Hedingham Ware 115  
Belchamp Walter, Hedingham Ware 121  
Bergen (Norway), Hedingham Ware 115  
Bett, William 167  
Biggleswade, Hedingham Ware 125  
Bingham, Edward 27, 134, 164, 165  
Bingham, Edward jnr 27  
Black Bourn 109  
Black Death 133  
Blackmore End  
  kiln  
    dating 7, 91, 133, 134  
    description 7  
    siting 29, 135  
  pottery 7, 105  
Blackwater, River 111  
Blatches, Hedingham Ware 133  
blistering 8, 88  
bloating 87  
Blomfield, Charles 165, 167  
Blyth, River 108  
Bocking, Hedingham Ware 111, 122, 127  
Boket, Robert 164, 165, 166  
Boreham, Hedingham Ware 111, 114, 123, 124, 128  
Bottisham (Cambs), Hedingham Ware 105, 119  
Bourn (Cambs), Hedingham Ware 105, 119  
Bourne (Lincs), pottery production 101  
Bovingdon Woods 29  
bowls  
  coarsewares  
    compared 96  
    description: carinated 52, 53; handled 52, 53; large slightly flared 48, 49–51, 49, 50, 51, 52; vertical-sided 51, 52  
    manufacturing techniques 84–5, 86  
    *see also* dishes/bowls  
  Early Medieval Ware 47  
bracken 29, 31  
Bradwell, Hedingham Ware 111, 124  
Brain, River 111  
Braintree  
  Hedingham Ware 109, 122, 123  
  market 116  
Brandon (Suffolk), Hedingham Ware 109, 119  
Brett, River 109  
brickmaking  
  clay 27  
  documentary evidence 134, 164, 165–6, 167–9  
Broak's Wood  
  geology 8  
  pottery  
    assemblage 8  
    dating 8, 91  
    forms 8, 43, 45  
    location 7, 30  
    woodland 29  
Brown, John 165, 166  
Broyd, William 166  
Burton End (Suffolk), Hedingham Ware 109  
Burwell (Cambs), Hedingham Ware 105, 114, 119  
Bury St Edmunds (Suffolk), Hedingham Ware 109, 114, 116, 117, 120, 126
- Cambridge (Cambs), Hedingham Ware 105, 117, 119  
Can, River 111  
Canvey Island, Hedingham Ware 111, 125  
Capel St Mary (Suffolk), Hedingham Ware 109, 121  
Carleton Rode (Norfolk), Hedingham Ware 102, 118  
cartwheel stamp 22, 43, 44, 98, 136  
Castle Camps (Cambs), Hedingham Ware 105, 119  
Castle Hedingham  
  castle 135, 165, 167  
  ceramic industries  
    Bingham's pottery works 27, 134  
    documentary evidence 164, 165, 166, 167, 168, 169  
    Hedingham Ware kilns 135  
  church 98, 165, 167  
  Hedingham Ware 111, 121, 127  
  nunnery 31  
  vineyard 30, 31  
castle sites, Hedingham Ware 101, 104, 105, 111, 113  
Cedars Park (Suffolk), Hedingham Ware 109, 114  
Chandlers  
  fired clay 83  
  pottery 25, 37, 38, 43, 44  
  roof tile 83  
Chandlers Cross (Herts), kiln 99  
Chatteris (Cambs), Hedingham Ware 105, 117, 118  
Chediston (Suffolk), Hedingham Ware 108, 119  
Chelmer, River 111  
Chelmsford, Hedingham Ware 111, 113, 114, 117, 124, 128  
Cherry Hinton (Cambs), Hedingham Ware 105, 119  
Chignall St James, Hedingham Ware 123  
chimney pots 12, 75, 77, 97  
Chipping Ongar, Hedingham Ware 111, 114, 124  
Clacton-on-Sea, Hedingham Ware 123  
Clare (Suffolk), Hedingham Ware 109, 116, 120, 127  
Clare Cottage  
  finds connected with manufacture 83–4  
  geology 8  
  pottery  
    assemblage 8–9  
    compared 92, 93  
    fabrics 32, 35  
    forms: bowls 51, 52, 53; cooking-pots 55, 58, 59, 60–2, 63–4, 63, 66; curfews 77, 78; jars 68; jugs, coarsewares 74–5, 76, 77; jugs, finewares 39, 42, 43, 45; pipkins 66, 67  
    glazes 46  
    manufacturing faults 87, 88, 89  
    manufacturing methods 84, 85  
  waster dump 8, 9–10, 29, 91, 92  
clay  
  preparation faults 87  
  sources 27, 135, 144–5  
Cleavlon, John 164, 165  
climate 30  
Clothall (Herts), Hedingham Ware 114, 125  
coarsewares  
  compared 96–7  
  Essex coarsewares 94

- South Hertfordshire greyware 94–5
- Suffolk greywares 95
- Thetford-type ware 95–8
- definition 2, 3
- discussion 135
- distribution 100, 110, 126–8
  - chronological changes in 114
  - discussion by county: Bedfordshire 114; Cambridgeshire 105; Essex 111; Hertfordshire 114; Norfolk 102; Suffolk 109
  - methodology: date banding 100; negative evidence 100–1; quantification 100; site type 101
- fabrics *see* fabrics, coarsewares
- forms *see* forms, coarsewares
- manufacturing methods 84–6
- methodology 1
- production site assemblages
  - Acacia House 5
  - Blackmore End 7
  - Broak's Wood 8
  - Clare Cottage 9
  - Crows Cross 10, 11
  - Foxborough Hill 12
  - Hole Farm 19, 34–5
  - Holy Trinity 20
  - Kemp's Wood 21
  - Shalford Road 22–3
  - Starlings Hill 24, 25
- recording 36
- Coddenham (Suffolk), Hedingham Ware 108, 120
- Coggeshall
  - Hedingham Ware 109, 122
  - market 116
- Colchester
  - Hedingham Ware 109, 113, 116, 117, 122, 133
  - kiln 98
- Colchester-type wares 94, 133, 157, 158, 159
- Collier Row, Hedingham Ware 111, 125
- Colne (Cambs)
  - Hedingham Ware 105, 118
  - pottery production 101
- Colne valley 27, 94, 117, 135, 144–5
- communications 27–9, 28, 101, 102, 110
  - Bedfordshire 114
  - Cambridgeshire 105
  - Essex 108, 109–11
  - Hertfordshire 114
  - London 114
  - Norfolk 101–5
  - Suffolk 105–9, 108
- cooking-pots
- coarsewares
  - compared 96
  - decoration and surface treatment: Clare Cottage 66; Hole Farm 64–6, 64, 65; Starlings Hill 66; other sites 66
  - distribution 114
  - forms 53; B2 rims 53–5, 54; B4B rims 53, 54; C1/3 rims (beaded) 53; E5 rims 59, 62; H1 rims 55, 56, 57, 58; H1/H3 rims 59, 62; H2 rims 55–9, 59, 60–2; H3/H3A rims 59, 62; H4A rims (upright squared) 53, 54; small 66–7, 67
  - manufacturing techniques 84, 85, 90, 90
  - sizes and ratios: Clare Cottage 63–4, 63; Hole Farm 59–63, 63
  - Early Medieval Ware 47, 47, 48, 85
- Copford, Hedingham Ware 123
- copper 27, 45, 46, 160, 161–2, 163
- coppicing 29
- Corder family 164, 166, 167
- Cottenham (Cambs), Hedingham Ware 105, 118, 126
- Cotter, J. 1
- cracking 88
- Creting St Mary (Suffolk), Hedingham Ware 108, 120
- Cressing, Hedingham Ware 111, 123
- Crows Cross
  - geology 10
  - kiln
    - compared 92
    - dating 11, 91, 92
    - description 10
    - fired clay 83
    - siting 27, 30
  - pottery
    - assemblage 10–11
    - compared 92
    - forms: cooking-pots 55, 59, 66; Early Medieval Ware 47, 67; coarseware jars 67, 67, 68, 69
    - manufacturing faults 89
    - manufacturing methods 85
- curfews 77, 78
- Dalham (Suffolk), Hedingham Ware 109, 120
- Danbury, kiln 94
- dating
  - coarsewares 100
  - finewares 100
  - production sites 91–2
    - Acacia House 5
    - Attwoods 7
    - Blackmore End 7
    - Broak's Wood 8
    - Clare Cottage 9–10
    - Crows Cross 11
    - Foxborough Hill 12
    - Hole Farm 19–20
    - Holy Trinity 20
    - Kemp's Wood 21
    - Shalford Road 23
    - Starlings Hill 24, 25
- Davy, Walt 164, 165
- decoration
  - cooking-pots 64
    - Clare Cottage 61, 66
    - Hole Farm: on body 54, 56, 58, 60, 61, 66; dimpling 58, 59, 61, 64–5, 64, 65, 86, 86; other shoulder decoration 60, 61, 62, 65;
    - on rims 54, 58, 60, 62, 65–6
    - Starlings Hill 66
    - other sites 66
  - jars 62, 66
  - jugs
    - Clare Cottage 75, 76, 77
    - Hole Farm 73, 74
    - methods 84, 86, 86
- Dengie peninsular, Hedingham Ware 111
- Denny Abbey (Cambs), Hedingham Ware 105, 114, 133
- Densett (Cambs), Hedingham Ware 114
- Diamonte, Martin 165, 166
- dishes, Early Medieval Ware 47, 48
- dishes/bowls, coarsewares 49, 49, 85
- documentary evidence 164–9
- Doe, Robert 165, 167
- Dovercourt, Hedingham Ware 121
- drains 21, 30, 92, 98–9
- drovers' routes 101, 116
- Dunmowes Manor (Cambs), Hedingham Ware 105, 119
- Duxford (Cambs), Hedingham Ware 105, 119
- Earls Colne, market 116
- Early Medieval Ware
  - from Crows Cross 11
  - definition 2–3
  - discussion 135
  - fabrics
    - at Hole Farm 34, 35
    - hedcweft 33
    - hedcwem 33
    - recording 36
  - forms 46–7, 47, 48
  - manufacturing methods 85
  - methodology 1
- ecclesiastical sites, Hedingham Ware 31, 104, 117
  - Cambridgeshire 105
  - Essex 111, 113
  - Hertfordshire 114
  - London 114
  - Norfolk 101, 102–5
  - Suffolk 109
- Eldo House Farm (Suffolk), Hedingham Ware 109
- Ely (Cambs), Hedingham Ware 105, 114, 117, 118
- Ely Ware 117
- Ermine Street 117
- Essex Reduced Wares 105

- fabrics
- coarsewares 33
    - bulk (heddef) 34
    - high carbon (hcwcarb) 34
    - at Hole Farm 34–5, 36
    - standard - finer, neither totally oxidised or reduced (hcwredof) 34
    - standard - neither totally oxidised or reduced (hcwredo) 34
    - standard - oxidised (hcwox) 34
    - standard - oxidised, coarser (hcwoxcor) 34
    - standard - oxidised, fine (hcwoxfi) 34
    - standard grey (hedcw) 34
    - standard grey - coarser (hcwcor) 34
    - standard grey - finer (hcwfi) 34
    - storage jar (hcwstor) 34
  - Early Medieval Ware
    - hedcwefi 33
    - hedcwem 33
    - at Hole Farm 34, 35
  - finewares 32
    - Fabric 1 32
    - Fabric 2 32
    - Fabric 3 32
    - Fabric 4 32
    - Fabric 5 32–3
    - Fabric 6 33
    - at Hole Farm 33
    - jugs 45
      - sandy orange (hedsao) 33
    - recording recommendations 35–6
    - see also* ICPS analysis; petrographic analysis
  - fairs 116, 117, 129–32
  - Farnham (Suffolk), Heddingham Ware 109, 126
  - Feering, Heddingham Ware 111, 123, 128
  - Felsted, Heddingham Ware 123, 128
  - Fen Road 116
  - fertiliser 31
  - finewares
    - compared 98
    - definition 2
    - discussion 135
    - distribution 100, 102, 104, 108, 118–26
      - chronological changes in 114
      - discussion 115–17
      - discussion by county: Bedfordshire 113–14, 113; Cambridgeshire 105, 106; Essex 109–13, 112; Hertfordshire 113, 114; London 114, 115; Norfolk 101–5, 103; Suffolk 105–9, 107, 108
      - methodology: date banding 100; negative evidence 100–1; quantification 100; site type 101
      - transport system 101
    - fabrics *see* fabrics, finewares
    - forms *see* forms, finewares
    - glazes 27, 46, 160–3
    - manufacturing faults 87–8, 88
    - manufacturing methods 86, 86, 87
    - methodology 1
    - production site assemblages
      - Acacia House 5
      - Broak's Wood 8
      - Clare Cottage 8–9
      - Foxborough Hill 12
      - Hole Farm 18–19
      - Holy Trinity 20
      - Shalford Road 22
      - Starlings Hill 23–4, 25
  - fired clay 83, 83
  - flat wares 46, 48
  - Fordham (Cambs), Heddingham Ware 105, 118
  - forms
    - coarsewares 135–6
      - bowls: carinated 52, 53; handled 52, 53; large slightly flared 48, 49–51, 49, 50, 51, 52; vertical-sided 51, 52
      - chimney pots 75, 77
      - cooking-pots 53–66, 54, 56–9, 60–2, 63, 64
      - curfews 77, 78
      - dishes/bowls, socketed 48, 49
      - jars: with combed decoration 62, 66; cooking-pot shaped and undifferentiated 68–71, 70; with internal lid-seating 67, 69; large Thetford-style 67–8, 68, 69–70; with perforated everted rims 62, 66; thick-walled 53, 54
      - jugs: rounded and fragments 71–5, 72–3, 76–7; spouted 71, 72
      - methodology 47–9
      - pipkins/small cooking-pots/jars 66–7, 67
      - skillet/pipkin handles 77, 78
      - spouted pitchers and handles storage jars 71, 72
    - Early Medieval Ware 46–7, 47, 48
    - finewares
      - flat wares 46, 48
      - handles 46
      - jugs 37, 45; combed or reeded 41, 44; early rounded-style 41, 42, 42; London-style early rounded 37–8, 38, 40; not assigned a decorative style 44–5, 48; Rouen-style 41, 42–3, 42; Scarborough-style early rounded 38–42, 39, 40; stamped strip 41, 43–4, 43, 44; white slipped 41, 44, 45
      - lids 46
      - methodology 37
    - Fornham St Genevieve (Suffolk), Heddingham Ware 109, 120
    - Foxborough Hill
      - geology 11
      - kilns 11, 12, 27, 91, 92
      - pottery
        - assemblage 11–12
        - forms: bowls 51; chimney pots 75, 77; cooking-pots 55, 59; curfew 78; jars 67, 67, 68; jugs 43, 44, 75; spouted pitchers 71, 72
        - glazes 46
        - manufacturing faults 87, 88, 89
        - manufacturing methods 85
    - Foxton (Cambs), Heddingham Ware 105, 119
    - Frogs Hall (Takeley)
      - kilns 21, 30, 98
      - millstone 84
      - pottery
        - analysis 137, 141, 145
        - compared 94, 95–8, 135
        - faults 87
        - forms 71
    - fuel 29–30
    - Fulbourn (Cambs), Heddingham Ware 105, 114, 119
    - Galfridus Pottere 164–5
    - Gentry, Mark 166
    - geology 26, 27, 29
      - Acacia House 5
      - Attwoods 6
      - Blackmore End 7
      - Broak's Wood 8
      - Castle Heddingham 27
      - Clare Cottage 8
      - Crows Cross 10
      - Foxborough Hill 11
      - Hawkwood Manor 12
      - Hole Farm 13
      - Holy Trinity 20
      - Kemp's Wood 20
      - Shalford Road 21
      - Starlings Hill 23
    - Gestingthorpe, pottery industry 27
    - Gipping, River 108–9
    - Gipping Divide 108–9, 136
    - Girton (Cambs), Heddingham Ware 105, 119
    - glazed wares *see* finewares
    - glazes 27, 46, 160–3
    - glycerine 31
    - Goldhanger, Heddingham Ware 111, 124
    - Gosfield
      - communications 27
      - Heddingham Ware 5, 21, 111, 122, 127
      - kilns *see* Acacia House; Kemp's Wood
      - location 2
      - tile and brickmaking 165, 166, 167, 168
    - Great Baddow, Heddingham Ware 111, 124
    - Great Bardfield
      - kiln *see* Shalford Road
      - market 29
    - Great Barton (Suffolk), Heddingham Ware 109, 114, 120
    - Great Bentley, Heddingham Ware 111, 123
    - Great Blakenham (Suffolk), Heddingham Ware 109, 126
    - Great Chesterford, Heddingham Ware 109, 121, 127
    - Great Cressingham (Norfolk), Heddingham Ware 101, 118
    - Great Dunmow, Heddingham Ware 109, 123

- Great Easton, Hedingham Ware 109, 113, 122, 127  
 Great Henny, Hedingham Ware 111, 127  
 Great Horkesley, pottery production 29–30, 94, 135, 158, 159  
 Great Maplestead  
   brickworks 166, 167, 168  
   Hedingham Ware 111, 121, 127  
 Great Ouse, River 101, 113, 114, 117  
 Great Sampford, Hedingham Ware 111, 121  
 Great Shelford (Cams), Hedingham Ware 105, 119  
 Great Tey, Hedingham Ware 111, 122, 127  
 Great Yeldham, Hedingham Ware 111, 117, 121, 127  
 Greenstead Green, kiln *see* Attwoods  
 gridiron stamp 44, 98  
 Grimston Ware 101, 117  
 grog 142, 145
- Hadleigh (Suffolk), Hedingham Ware 109, 116, 121, 127  
 Hadstock, Hedingham Ware 111, 117, 121, 127  
 hall/manor sites, Hedingham Ware 104, 105, 111, 113  
 Halstead  
   ceramic industries, documentary evidence 164, 165, 166, 167, 168  
   communications 27  
   Hedingham Ware 8, 20, 111, 114, 121, 127  
   kilns  
     Roman 25  
     medieval *see* Attwoods; Broak's Wood; Holy Trinity  
   location 2  
   textile industry 31  
 handles  
   coarsewares  
     construction and joining 85  
     curfews 77, 78  
     jugs 71–4, 72, 73, 75, 76, 77  
     skillet/pipkin 77, 78  
   Early Medieval Ware 47  
   finewares 46, 86  
 Harling (Norfolk), Hedingham Ware 102, 118  
 Harlow  
   Harlow Ware 46, 94  
   kilns 98  
 Harwich, Hedingham Ware 111, 121, 127  
 Haughley (Suffolk), Hedingham Ware 108, 120, 126  
 Haverhill (Suffolk)  
   Hedingham Ware 109, 114, 117, 120, 126–7  
   market 116  
 Havering, Hedingham Ware 125  
 Hawkwood chantry 165, 166  
 Hawkwood Manor 12  
 Hedingham Brick and Tile Co. 165, 166  
 Hedingham Ware *see* coarsewares; Early Medieval Ware; finewares  
 Helions Bumpstead, Hedingham Ware 111, 120, 127  
 Hempstead, Hedingham Ware 111, 127  
 Hessett (Suffolk), Hedingham Ware 109, 120, 126  
 Hewes family 165, 167  
 Heybridge, Hedingham Ware 111, 124  
 High Easter, Hedingham Ware 111, 123  
 Hilborough (Norfolk), Hedingham Ware 101, 118  
 Hilton family 167  
 Hitcham (Suffolk), Hedingham Ware 109, 120  
 Hole Farm  
   finds connected with manufacture 83–4, 83, 84  
   geology 13  
   kilns  
     compared 92, 98  
     dating 19–20, 91, 92  
     description 13–18, 13, 14–15, 17, 18  
     fired clay 16–18, 19, 83, 83  
     siting 30  
   pottery  
     assemblage 18–19  
     compared 92, 93  
     fabrics 32, 33, 34–5, 36, 48  
     forms, coarsewares 49; bowls 48, 49–51, 49, 50, 51, 52, 53;  
     chimney pots 75, 77; cooking-pots 53–5, 54, 55–63, 56–8, 59,  
     60–2, 63, 64–6, 64, 65; curfews 77, 78; dishes/bowls, socketed  
     48, 49; jars 53, 54, 62, 66, 67–8, 69, 70; jugs 71–4, 72–3;  
     pipkins 66–7, 67; spouted pitchers and handled storage jars 71,  
     72; miscellaneous 77, 78  
     forms, Early Medieval Ware 47, 47, 48  
     forms, finewares 37; flat wares 46; handles 46; jugs 37, 38, 38,  
     39, 39, 40, 41, 42, 43–4, 45; lids 46  
     glazes 46  
     manufacturing faults 86–8, 89  
     manufacturing methods: coarsewares 84, 85–6; firing conditions  
     90; kiln stacking 90, 90  
     quality control 93  
 Hollisley (Suffolk), pottery production 95, 96–7, 99, 108  
 Holy Trinity  
   geology 20  
   kiln  
     dating 20, 91, 92  
     fired clay 83  
     siting 27, 29  
   pottery  
     assemblage 20  
     compared 92  
     Early Medieval Ware 47  
     fabrics 34  
     forms: bowls 51; cooking-pots 55, 66; jars 68–71; jugs 75  
     manufacturing faults 89  
     manufacturing methods 85  
     quality control 93  
 hones 84, 84  
 Honington (Suffolk), Hedingham Ware 109, 119  
 Horndon-on-the-Hill, Hedingham Ware 111, 114, 125  
 Horningsea (Cams), Hedingham Ware 105, 119  
 Hunt, John 165, 166  
 Huntingdon (Cams), Hedingham Ware 105, 117, 118
- ICPS analysis  
   aims 149  
   comparison with NAA analyses of Colchester-type wares 158  
   discussion 158–9  
   interpretation 149–50  
     principal component analysis on all samples 150–1, 151, 154  
     principal component analysis on coarsewares and sandy orange  
     ware 155–8, 156  
     principal component analysis on finewares 151–5, 155  
   methodology 149  
   samples and analyses 152–3
- Ipswich (Suffolk)  
   Hedingham Ware 108, 109, 116, 121  
   pottery production 95
- Ireland, Hedingham Ware 115  
 Isleham (Cams), Hedingham Ware 105, 114, 118  
 Ivel, River 114  
 Ixworth (Suffolk), Hedingham Ware 109, 114, 119
- jars  
   coarsewares  
     compared 96  
     description: combed decoration 62, 66; cooking-pot shaped and  
     undifferentiated 68–71, 70; with internal lid-seating 67, 69;  
     large Thetford-style 67–8, 68, 69–70; with perforated everted  
     rims 62, 66; small 66–7, 67; spouted pitchers and handled  
     storage jars 71, 72; thick-walled 53, 54  
     manufacturing techniques 85, 86  
   Early Medieval Ware 47
- jugs  
   coarsewares  
     compared 96–7  
     description: rounded and fragments 71–5, 72–3, 76–7; spouted  
     71, 72  
     manufacturing techniques 84, 85  
   Early Medieval Ware 47  
   finewares  
     compared 98  
     description 37; combed or reeded 41, 44; early rounded-style 41,  
     42, 42; London-style early rounded 37–8, 38, 40; not assigned a  
     decorative style 44–5, 48; Rouen-style 41, 42–3, 42;  
     Scarborough-style early rounded 38–42, 39, 40; stamped strip  
     41, 43–4, 43, 44; white slipped 41, 44, 45  
     distribution 114  
     fabrics 45  
     manufacturing methods 86, 86, 87
- Katerina la Pottere 164  
 Kelvedon  
   Hedingham Ware 111, 123

- market 116
- Kemp's Wood
  - geology 20
  - kiln
    - dating 21, 91, 92
    - description 20
    - siting 27, 29
  - pottery 21, 59, 75
- Kennett, River 109
- Key, Henry 164
- kilns
  - compared 92, 98–9
  - dating 91–2
  - description
    - Acacia House 5
    - Attwoods 6, 6, 7
    - Blackmore End 7
    - Crows Cross 10
    - Foxborough Hill 11
    - Hole Farm 13–18, 13, 14–15, 17, 18, 19; fabrics 34–5, 36
    - Holy Trinity 20
    - Kemp's Wood 20
    - Lamb Lane 21
    - Shalford Road 21, 22
    - Starlings Hill 23, 24
  - finds from 83, 83
  - firing conditions 90–1, 91
  - firing process 147–8
  - orientation 30
  - post-medieval 25–7
  - products compared 92–3
  - Roman 25
  - stacking 90, 90
  - tile 93
- King's Lynn (Norfolk), Hedingham Ware 101, 114, 118
- Kings Reach (Beds), Hedingham Ware 113
- Kirby-le-Soken, Hedingham Ware 111, 122
- Kirtling Green (Suffolk), Hedingham Ware 109, 120, 127
  
- Lamb Lane, kiln 21
- lamination 87
- lamps 47, 48
- Landbeach (Cambs), Hedingham Ware 105, 119
- Langenhoe, Hedingham Ware 111, 123
- Lark, River 109, 117
- Lavenham (Suffolk), Hedingham Ware 109, 116, 120
- Lawshall (Suffolk), Hedingham Ware 109, 120
- Lea, River 111, 114
- Leiston (Suffolk), Hedingham Ware 105, 120
- Leyton, Hedingham Ware 125
- lids 46
- Lincoln, pottery industry 117
- Lindsay, Jack 1
- Linnett, Joseph 165, 167
- Little Bentley, Hedingham Ware 111, 122
- Little Dunmow, Hedingham Ware 114, 123, 128
- Little Hallingbury, Hedingham Ware 114, 125
- Little Maplestead, preceptory 31
- Little Oakley, Hedingham Ware 111, 122
- Little Ouse, River 101, 109
- Little Waltham, Hedingham Ware 111, 128
- Livermer, William 164, 165
- London, Hedingham Ware 114, 115, 115, 116, 117, 125–6
- London-type ware
  - compared 98, 135
  - jugs 25, 37, 38, 42, 43, 44
- Long Melford (Suffolk), Hedingham Ware 109, 120
- Longstanton (Cambs), Hedingham Ware 105, 119
  
- Maldon, Hedingham Ware 111, 113, 124
- Manningtree, Hedingham Ware 111, 121
- manufacture
  - assemblages compared 92–3
  - demise of 133
  - faults 86–7, 89
    - clay preparation faults 87
    - firing faults 87–8, 88
    - forming faults 87
  - finds connected with
    - fired clay 83, 83
    - roof tile 83–4
      - worked and unworked stone 84, 84
  - firing conditions 90–1, 91
  - methods
    - coarsewares: compared 96; handles 85; holes in bowls and jars 86; sockets and spouts 85–6; vessel construction 84–5
    - finewares 86, 86
  - organisation, level of 93
  - quality control 93
  - technology 145–8
    - see also* kilns
- Marham (Norfolk), Hedingham Ware 101, 114, 118
- markets
  - Cambridgeshire 105, 135
  - Essex 108, 111, 129–32, 135
  - Norfolk 101, 105
  - Suffolk 108, 108, 109, 129–32, 135
- Maxey (Cambs), Hedingham Ware 105, 118
- Mildenhall (Suffolk), Hedingham Ware 109, 119
- Mile End
  - Hedingham Ware 111, 122
  - pottery production 29–30, 94, 96–7, 135
- Mill Green, millstones 84
- Mill Green Ware
  - coarseware 94
  - decline of 133
  - distribution 111, 114, 117
  - finewares 23, 33, 44, 46, 98, 135
  - glaze analysis 160, 162, 163
  - tiles 93
- millstones 84
- Milton (Cambs), Hedingham Ware 105, 119
- Moreton Hall (Suffolk), Hedingham Ware 109
  
- Nayland (Suffolk), Hedingham Ware 109, 120
- Nene, River 101, 105, 117
- Nettleden (Herts), kiln 99
- Newham, Hedingham Ware 125
- Newmarket (Suffolk), Hedingham Ware 105
- North Elmham (Norfolk), Hedingham Ware 101, 102–5, 115, 118
- North Shoebury, Hedingham Ware 111, 125
- Norwich (Norfolk)
  - Hedingham Ware 101, 102, 118
  - pottery production 95
- Nottidge, George 168
- Nunn, Philip 166
  
- Oakington (Cambs), Hedingham Ware 105, 119
- Orford (Suffolk), Hedingham Ware 105, 120
- Orton Longueville (Cambs), Hedingham Ware 105, 118
- Orwell, River 109
- Osborne, Thomas 164
  
- Pant, River 21, 27, 29, 111
- Parish, John 167
- Parkhall Woods 29
- Parkyr, John 164
- peat 29
- Peddars Way 101
- Pentlow Hall, Hedingham Ware 109, 111, 114, 121, 127
- Peterborough (Cambs), Hedingham Ware 105, 117, 118
- petrographic analysis
  - aims 137
  - background 137
  - interpretation
    - correspondence between hand-specimen fabrics and pottery 144
    - raw materials 144–5
    - technology of industry 145–8
  - methodology 137
  - results
    - Fabric 1 137–8, 140
    - Fabric 2 138, 140
    - Fabric 3 138, 140
    - Fabric 5 138–9, 140
    - Fabric 6 138, 140
    - Fabric hcwcor 141, 143
    - Fabric hcwfi 142–4, 143
    - Fabric hcwoxcor 141, 143
    - Fabric hcwstor 144, 146
    - Fabric hedcw 141–2, 143



- Fabric hedcwefi 141, 143
- Fabric hedcwem 141, 143
  - sandy orange 139–41, 140
- sample materials 137
- pipkins 66–7, 67
  - handles 77, 78
- Pirton (Herts), Hedingham Ware 114, 125
- pitchers 71, 72
- Plaistow Green 165, 167
- Pleshey
  - Hedingham Ware 111, 113, 123, 128
  - market 116
- Polstead (Suffolk), Hedingham Ware 121, 127
- potash 31
- potters, documentary evidence 164–5
- Preston St Mary (Suffolk), Hedingham Ware 109, 120, 126
- Priory Farm (Suffolk), Hedingham Ware 109
- production sites
  - description 4
    - Acacia House 5
    - Attwoods 6–7, 6, 7
    - Blackmore End 7
    - Broak's Wood 7–8
    - Clare Cottage 8–10
    - Crows Cross 10–11
    - Foxborough Hill 11–12
    - Hawkwood Manor 12
    - Hole Farm 12–20, 13, 14–15, 17, 18, 19
    - Holy Trinity 20
    - Kemp's Wood 20–1
    - Lamb Lane 21
    - Shalford Road 21–3, 22
    - Starlings Hill 23–4, 24
  - post-medieval 25–7
  - Roman 25
  - siting of 2, 28
    - climate 30
    - fuel 29–30
    - kiln orientation 30
    - other industries 30–1
    - raw materials and communications 26, 27–9
    - religious houses 31
    - seasonality 30
  - see also* manufacture
- pyrite nodule 84
- quality control 93
- querns 84
- Ramsey (Cambs), Hedingham Ware 105, 117, 118
- raw materials 27, 29, 135, 144–5
- Rawreth, Hedingham Ware 111
- Rayleigh, Hedingham Ware 124
- Rayleigh High Road, pottery production 94
- Rayne, Hedingham Ware 111, 128
- Rayner family 166, 167
- Rede, Walter 164
- repairs 87
- research aims 1
- Ridgewell, market 116
- Rivenhall, Hedingham Ware 111, 123, 133
- river transport 101, 115, 117
  - Bedfordshire 113, 114
  - Cambridgeshire 105
  - Essex 111
  - London 114
  - Norfolk 101
  - Suffolk 105–8, 109
- Roach, River 111
- road system
  - Hedingham Ware production area 27, 28, 29
  - and pottery distribution 101, 102, 110, 115, 116, 117
    - Bedfordshire 113–14
    - Cambridgeshire 105
    - Essex 109–11
    - Hertfordshire 114
    - Norfolk 101
    - Suffolk 108–9
- Rochford, Hedingham Ware 111, 124
- roof tile 83–4
- Roydon (Norfolk), Hedingham Ware 102, 118
- Runwell, Hedingham Ware 111, 124
- rural sites, Hedingham Ware 104
  - Cambridgeshire 105
  - Essex 111
  - Norfolk 102
  - Suffolk 109
- Saffron Walden, Hedingham Ware 109, 127
- saggars 78
- St Ives (Cambs), Hedingham Ware 105, 118
- St Osyth, Hedingham Ware 111, 123
- Salmon, Widow and Thomas 165, 167
- Sandon, Hedingham Ware 111, 124
- Sawston (Cambs), Hedingham Ware 105, 114, 119
- Scarborough Ware 37, 42, 45, 98, 135
- seasonality 30
- Sellers, John and Elizabeth 1, 13
- Shalford, Hedingham Ware 111, 114, 122, 127
- Shalford Road
  - clay 135
  - geology 21
  - kiln
    - compared 92
    - dating 23, 91, 92
    - description 21, 22
    - siting 27, 29, 30
  - pottery
    - assemblage 21–3
    - distribution 105
    - forms: bowls 51; cooking-pots 55, 59; jugs 43, 44, 45, 75
    - glazes 46
    - manufacturing faults 88
    - manufacturing methods 86
- Shardlowe's Wood 29
- Shotgate, Hedingham Ware 111
- Sible Hedingham
  - Bakers Farm, kiln 25
  - ceramic industries
    - documentary evidence 164, 165, 166, 167, 168–9
    - production sites, siting 27, 29, 135; *see also* Clare Cottage; Crows Cross; Foxborough Hill; Hawkwood Manor; Hole Farm; Lamb Lane; Starlings Hill
  - communications 27
  - Hedingham Ware 127
  - industry, medieval 30, 31, 136
  - location 2
  - Potter Street 1, 29, 133–4, 164
  - skillet handles 77, 78
  - Smith, Daniel 164, 166, 167
  - soap-making 31
  - sockets, manufacturing method 85
  - Soham (Cambs), Hedingham Ware 105, 118
  - South Hertfordshire Greyware 94–5, 96–7, 99
  - Southchurch, Hedingham Ware 111, 125
  - Southey Green, pottery production
    - 19th century 25, 134
    - documentary evidence 164, 165, 166, 167
    - Southey Green Banks 25
  - spouts 85–6
  - Springfield, Hedingham Ware 111, 123, 128
  - Stane Street 27, 109, 111, 114, 116
  - Stansted
    - Hedingham Ware 109, 111, 116, 122, 128
    - Transitional Early Medieval Ware 34
  - Starlings Hill
    - finds connected with manufacture 83
    - geology 23
    - kilns
      - compared 92, 93
      - dating 24, 25, 91
      - description 23, 24
      - siting 30
    - pottery
      - assemblage 23–4, 24–5
      - fabrics 32, 33, 35, 133
      - forms: bowls 51, 52, 53; bowls/dishes 48, 49; cooking-pots 47, 54, 55, 59, 62, 66; flat wares 46, 48; handles 46; jars 53, 68; jugs, coarseware 75, 77; jugs, fineware 37, 38, 39, 40–1, 42, 42, 43–4, 44, 45, 45, 48

- glazes 46
- manufacturing faults 87, 88, 89
- manufacturing methods 84–5, 86
- quality control 93
- Stebbing, Hedingham Ware 122
- Stebbingford, Hedingham Ware 109, 111, 123, 128
- stone, worked and unworked 84, 84
- Stotfold (Beds), Hedingham Ware 113–14, 125
- Stour, River 109, 111
- Stowmarket (Suffolk), Hedingham Ware 108, 114, 120, 126
- Stratford St Mary, Hedingham Ware 109, 111
- Stratton (Beds), Hedingham Ware 113, 125
- Stretham (Cambs), Hedingham Ware 105, 114, 118
- Sturmer, Hedingham Ware 111, 121, 127
- Sudbury (Suffolk)
  - Hedingham Ware 109, 114, 116, 121, 127
  - industry 31
  - market 116
- Suffolk greywares 95, 96–7
- Surrey Whiteware 98
- Swavesey (Cambs), Hedingham Ware 105, 117, 118
- Takeley
  - Hedingham Ware 109, 111, 123, 128
  - market 116
  - pottery industry *see* Frogs Hall
- Tempsford Park (Beds), Hedingham Ware 113, 125
- Tending, Hedingham Ware 111
- terms, definition 1–3
- textile industry 31; *see also* wool trade
- Thames, River 111, 114, 117
- Thaxted
  - Hedingham Ware 109, 121
  - market 116
- Thetford (Norfolk)
  - Hedingham Ware 101, 118
  - pottery production 95
- Thetford-type ware 68, 84, 95–8, 99, 135
- Theydon Mount, Hedingham Ware 128
- Thorpe Morieux (Suffolk), Hedingham Ware 109, 120
- tile making 93, 134, 164, 165, 166
- Tillingham, Hedingham Ware 111, 124
- Tiptree Heath, pottery production 94
- Tollesbury, pottery production 94
- Transitional Early Medieval Ware 34
- Trimley St Mary (Suffolk), Hedingham Ware 109, 121
- Tyler, John 165, 166
- urban sites, Hedingham Ware 104
  - Cambridgeshire 105
  - Essex 111–13
  - London 114
  - Norfolk 102
  - Suffolk 109
- Via Devana* 105, 117
- villages *see* rural sites
- Wade, John 165, 167
- Walakeyr, Thomas 164, 165
- Walsham le Willows (Suffolk), Hedingham Ware 114, 119
- Waltham Abbey, Hedingham Ware 111, 124
- warping 88
- Waspe, Augustine 165, 166
- Waspe, John 165, 166
- waster dumps
  - Clare Cottage 8–10
  - Hawkwood Manor 12
  - Starlings Hill 24–5
- Waterbeach (Cambs), Hedingham Ware 105, 118, 119, 133
- Waveney, River 105, 109
- Weeley, Hedingham Ware 111, 123
- Wensum, River 101
- West Hanningfield, Hedingham Ware 111, 124
- West Walton (Norfolk), Hedingham Ware 101, 118
- Wethersfield
  - ceramic industries, documentary evidence 164, 165, 168; *see also*
    - Blackmore End
    - communications 29
    - Hedingham Ware 111, 121
  - Whittlesford (Cambs), Hedingham Ware 105, 119
- Wicken Bonhunt, Hedingham Ware 121
- Wickford, Hedingham Ware 111
- Wimbish, Hedingham Ware 111, 121, 127
- windmill sites 113
- Winfarthing (Norfolk), Hedingham Ware 102, 114, 118
- Wisbech (Cambs), Hedingham Ware 101, 105, 117, 118
- Wissey, River 101
- Witham
  - Hedingham Ware 111, 123
  - market 116
- wood, fossilised 84
- Woodford Green, Hedingham Ware 124, 128
- Woodham Ferrers, Hedingham Ware 124
- woodland 29–30
- wool trade 31, 116, 117, 136
- Worlingham (Suffolk), Hedingham Ware 105, 119
- Writtle, Hedingham Ware 111, 113, 124, 128
- XRF analysis, glazes 160–3
- Young, Henry 165, 166

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