

6th-century and did not outlast the 7th century. Like its companion, however, the Four Crosses javelin cannot be fitted directly into one of Swanton's groups, being longer than all other post-Roman English examples, which also invariably had cleft unwelded sockets. On the Continent both welded and unwelded sockets occur on spearheads like Swanton's group D2, as for example those from late 6th- and early 7th-century graves at Hailfingen, Württemberg, W. Germany.¹⁶ These continental examples are rarely longer than any of the group D2 spears, which are up to about 400 mm long.¹⁷

In conclusion it may be said that the weapons are probably neither of Anglo-Saxon nor of Irish derivation, and it seems unlikely that they were imports from the Continent. Little is known of weapon types in use in contemporary British territories in western Britain, however, and although it is possible that they derive from this cultural background, little more can be said until further examples are found.

P. M. BARFORD,¹⁸ W. G. OWEN¹⁹ and W. J. BRITNELL²⁰

NOTES

¹ Site 2. Full report in W. Warrilow, W. G. Owen and W. J. Britnell, 'Eight ring-ditches at Four Crosses', *Proc. Prehist. Soc.*, forthcoming.

² The authors are grateful for comments by J. M. Lewis and I. R. Scott. Conservation has been carried out by Kate Hunter, Conservation Laboratory, University College, Cardiff, who also kindly made radiographs available for study.

³ W. J. Britnell, 'The Excavation of Two Round Barrows at Trelystan, Powys', *Proc. Prehist. Soc.*, 48 (1982), 161-63.

⁴ The pottery has been studied and reported on by P. V. Webster, Department of Extramural Studies, University College, Cardiff, in the main site report.

⁵ Identified by Sonia O'Connor as possibly being antler.

⁶ E.g. R. A. Smith, *British Museum, A Guide to the Early Iron Age* (London, 1925), fig. 121, 9; C. Fox, *A Find of the Early Iron Age from Llyn Cerrig Bach, Anglesey* (National Museum of Wales, 1946), 74, pl. xxxv, 14 (the latter also being unusual in its extreme length).

⁷ E.g. J. P. Bushe Fox, *Fourth Report on the Excavations of the Roman Fort at Richborough, Kent* (Society of Antiquaries, 1949), pl. LVIII, 279.

⁸ M. J. Swanton, *The Spearheads of the Anglo-Saxon settlements* (Royal Archaeological Institute, 1973), 41-43, group B2.

⁹ *Ibid.*, 75-77.

¹⁰ E.g. at Lagore, H. O'N. Hencken, 'Lagore, a Royal Residence of the seventh to tenth centuries A.D.', *Proc. Royal Irish Academy*, LIII (1950), 95-98, figs. 29-31.

¹¹ W. Coblentz, *Das Gräberfeld von Proitz* (Dresden, 1959), pl. 22.3, cremation 69.

¹² K. Bohner, *Die Fränkischen Altertümer des Trierer Landes* (Berlin, 1958), 128, 148-5; taf 28.2 and taf 28.9.

¹³ G. C. Boon, *Isca, The Roman Legionary fortress at Caerleon Monmouthshire* (National Museum of Wales, 1972), 54, fig. 30.10.

¹⁴ Publication forthcoming.

¹⁵ Swanton, *op. cit.* in note 8, 67-71.

¹⁶ H. Stoll, *Die Alamannengräber von Hailfingen in Württemberg* (Berlin, 1939), taf 8.2, 9.2, 10.14, 32.13.

¹⁷ The longest Hailfingen spears, while not as attenuated, approach more closely the proportions of the Four Crosses javelin, with very long slender necks and short blades. Similarly, the long spear from Rittersdorf grave 142 (Bohner *op. cit.* taf 28.9) has some similarities with the Four Crosses javelin, but has an unwelded socket.

¹⁸ Address: Greenacre, Straight Road, Bradfield, Essex.

¹⁹ Address: Ty Ucha, Llanelltyd, Dolgellau, Gwynedd.

²⁰ Address: Clwyd-Powys Archaeological Trust, 7a Church Street, Welshpool, Powys.

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A LATE 13TH-CENTURY GRISAILLE WINDOW PANEL FROM BRADWELL ABBEY, MILTON KEYNES, BUCKS. (Figs. 8 and 9; Pl. x)

Excavations in 1982 at Bradwell Abbey, Milton Keynes, Bucks. (SP827 396), a small Benedictine house founded c. 1154, resulted in the discovery of a leaded panel of late 13th-century window glass measuring 1050 mm by 830 mm.¹ Individual glass quarries, fragments of lead comes and melted lead are frequently found on monastic sites, but the recovery of an almost complete panel is a rare and unusual find.²

A post-suppression survey carried out in 1526 refers to 'old glasses' in the church and chancel 'which would be taken down and saved for the mending of divers Chancels etc.'³

The window panel was found on the N. side of the church approximately 2 m north of the nave wall, deposited almost 0.50 m below the modern ground surface and dumped within a layer of clay roof-tile fragments and limestone rubble (Pl. x). The associated debris would suggest that the window was discarded in the 16th century. The soil from around the glass and lead was initially removed by trowel but this proved to be impractical and plastic tools and purpose-made oak spatulas were used. Wooden tools were particularly useful and can be recommended because they did not scratch the glass or lead. The majority of the glass was in good condition and was kept damp to prevent deterioration and drying.

Lifting and Conservation

As excavation progressed it became clear that the window was composed of several layers and it was decided that the panel should be lifted as one whole block to enable detailed excavation and conservation in the laboratory. In order to do this it was necessary to excavate around the window panel and leave it on a pedestal of earth which could then be removed and undercut to allow the gradual insertion of a metal plate, on which the whole window could be lifted *en bloc*. Before this was done individual quarries were consolidated with Polyvinyl Acetate (PVA) emulsion and plasterers' scrim. The entire window was then covered with butter muslin and more scrim and a further layer of PVA applied.

After the panel had been lifted it was placed in a custom-built box which had been lined with plastic sheeting and polystyrene chips. This packing material supported the glass and lead allowing the window to be turned over, cleaned and conserved on both sides. Each quarry was mechanically cleaned of limescale and soil, using a scalpel blade and a fibreglass-tipped brush, revealing the painted and pitted surface of the glass.

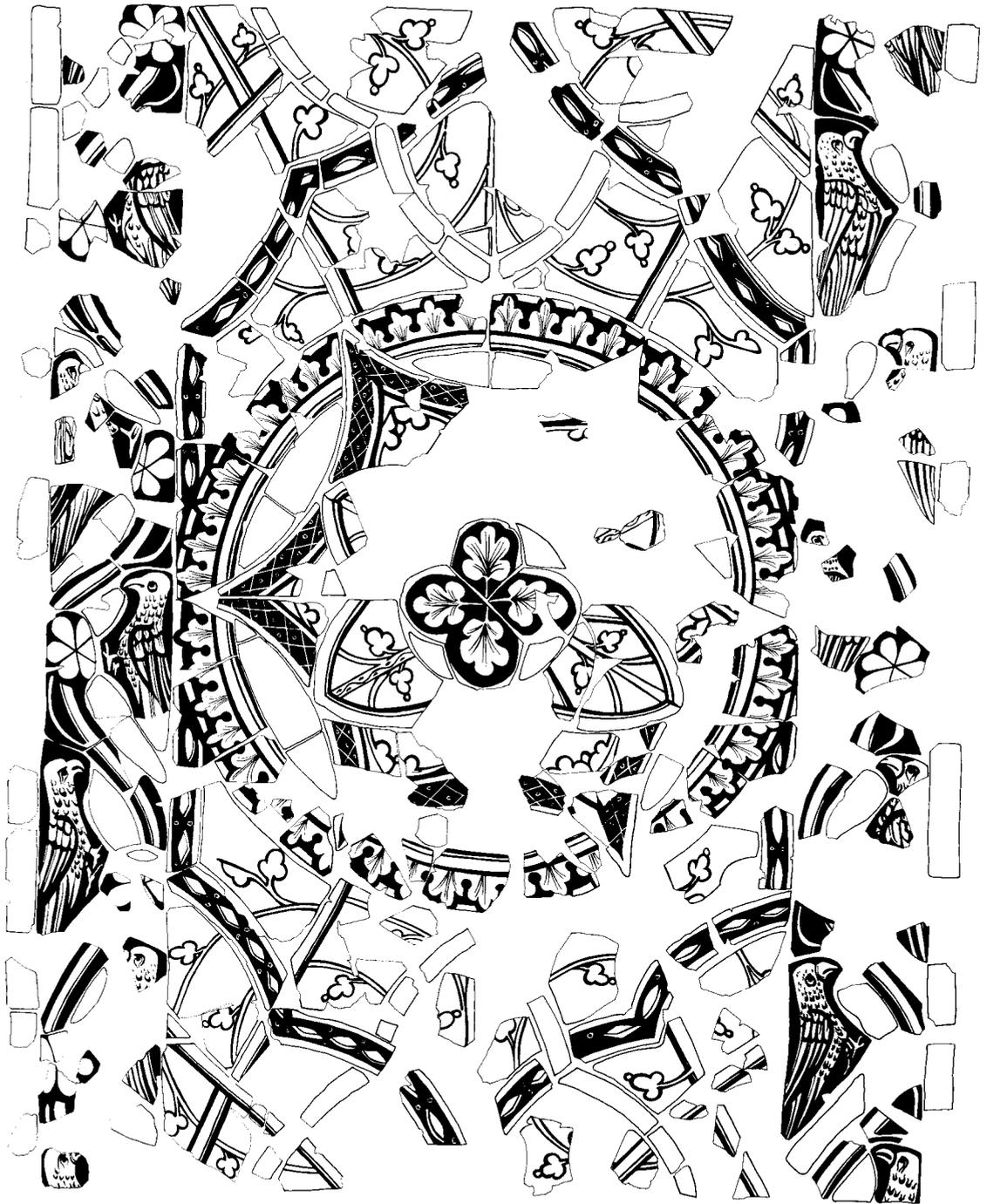
In order to record the displaced quarries the panel was gridded and the glass kept separate. Photographs were taken of both sides and the quarries numbered and bagged individually. The majority of the quarries had been broken in antiquity and these were repaired using cellulose nitrate glue. The glass was gradually allowed to dry out and subsequently coated with a layer of 25% PVA in acetone and industrial methylated spirits to prevent any further decay of the surface. Vacuum impregnation was not used because it was felt likely that the glass might react unfavourably to the low pressure of a vacuum. After the quarries had been cleaned and stuck together they were drawn at full size and these drawings formed the basic record for the reconstruction (Fig. 8). Most of the lead comes were in a stable condition and required only mechanical cleaning to remove surface corrosion and soil.

The Leadwork

The lead was typical of medieval cast comes with the common extended 'H' profile. The flange of the came was originally diamond-shaped but this and the marked casting flash had been trimmed down to give a flatter profile on both the inside and the outside of the window. The comes averaged 5 mm in width and the depth of the glass seating was on average 2 mm.

Several pieces of twisted lead of a different profile had been used to fix the window to an iron glazing bar — *ferramentum* — rectangular in profile, 12 mm × 8 mm with a total length of 1068 mm. Each end of the bar had been hammered out to form a circular fixing point pierced to take a nail. Its bottom end contained a corroded nail which had rusted into the hole. The angle of the bar and the position of the corroded nail suggests that the panel had been attached to a wooden frame by the nails rather than fitted into a stone-mullioned window.

One of the main aims of the cleaning and conservation was the unfolding and unravelling of the lead comes to reveal their original pattern. At an early stage of this exercise it became obvious that the panel had been pleated in the centre with the result that a considerable area of glass had become displaced and sandwiched within the panel. This displacement meant that repositioning of the lead comes was extremely difficult at first, but gradually became easier as the glass fragments were removed. Eventually the lead comes



0 400mm

FIG. 8

BRADWELL ABBEY, MILTON KEYNES, BUCKS.
Glass fragments in their original positions with leadwork removed

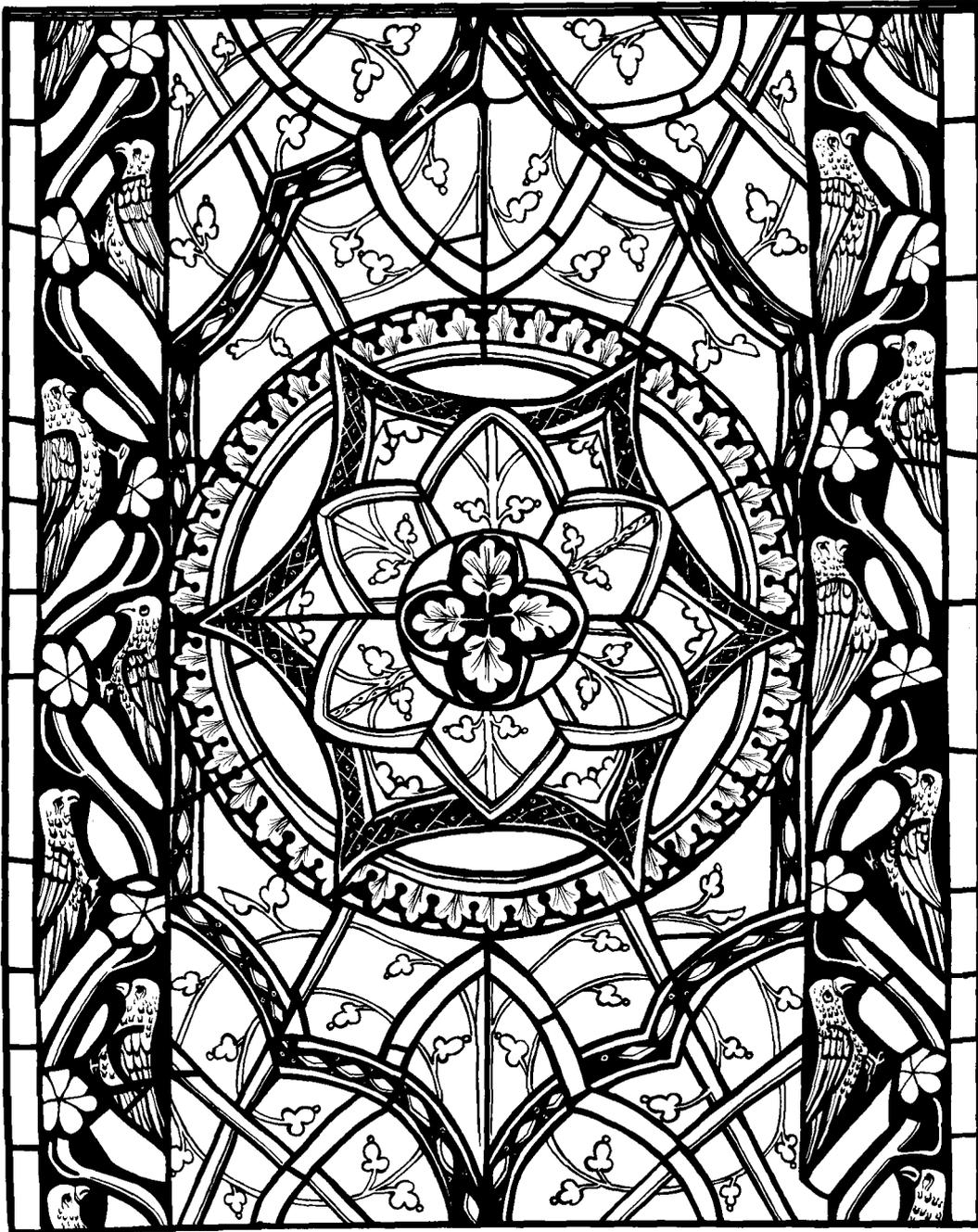


FIG. 9
BRADWELL ABBEY, MILTON KEYNES, BUCKS.
A reconstruction of the window showing the painted glass and leadwork

were sufficiently smoothed out to suggest the approximate size and basic geometrical pattern of the original. The lead frame was then drawn at full size.

Reconstruction of the Design

The initial attempt to recover the design of the window involved placing photocopies of the drawn quarries in their correct positions within the lead frame. This technique proved to be reasonably successful but it was clear that the lead frame needed further straightening and adjustment to obtain the original layout. Before the leadwork was reshaped to its original position a draft reconstruction drawing of the pattern was prepared and the positions of the known quarries fixed. This provided the basic cartoon of the design and allowed the replacement of glass quarries as if into a jigsaw puzzle.

As the quarries were replaced it was also possible to replace several sections of lead came, the size of the quarries and the evidence of the scars of soldered joints confirming the position of the missing lead. Later the leadwork was placed on a copy of the reconstruction drawing, enabling much of its original pattern to be recognised. Next the lead was gently manipulated back to its original shape. Further quarries could then be replaced which resulted in a clearer picture of the original pattern.

The final stage of the reconstruction involved placing the remaining drawn quarries into the master drawing. In spite of considerable effort a number of quarries could not be incorporated into the pattern, but these omissions do not seriously affect the overall reconstruction drawing (Fig. 9).

The Geometry of the Pattern (Fig. 9)

Whilst the original cartoon was no doubt symmetrical the pattern of the leadwork is not exactly so, even after allowance has been made for some distortion in the ground. The irregularities presumably occurred as the panel was assembled on site. Similarly the pattern of the painting on the glass varies. The personal style of the glass painter is evident; for example, none of the birds are quite the same, showing that the pattern was painted frechand onto the glass and was not a direct tracing from a cartoon. The same is true of the painting within the border of the six-pointed star and the fleur-de-lis pattern around the main roundel. The leaves running up the border panel are also slightly different from each other. The petals on the ends of the stems are not all complete; some may have been originally, but were subsequently cut down in order to fit the glass into the lead quarry. It is likely that this panel was the centre of a triple panel lancet, presumably one of the main windows of the priory church.

Scientific Analysis

Six pieces of glass were selected for scientific analysis and this work was carried out by Dr J. Hunter and Mr M. Heyworth of Bradford University. We would like to thank them for their work and the following summary is based upon their report.

The samples from Bradwell Priory are virtually impossible to provenance on analytical grounds, all the fragments being of a typical medieval, non-durable high potash glass presumably produced using an organic alkali such as the ash of wood or plants. One sample was examined by X-ray fluorescence which confirmed that the glass was high in both potassium and calcium and low in sodium, indicative of 'forest' products of the period. The majority of the glass is in a stable state, but lamination will slowly continue as the alkali 'weeps' towards the surfaces.

HISTORICAL DISCUSSION. By JILL KERR

This panel of geometric grisaille is a remarkable find. The Dissolution resulted in our greatest national loss of stained and painted glass, as so much of this highly vulnerable medium was smashed out and destroyed for the asset stripping of the valuable lead comes. To

find a complete panel still in its original lead is extremely rare and of considerable value to glass historians. As more extensive excavations are conducted on monastic sites, it is becoming increasingly evident that the archaeological record is revealing immensely important information concerning the repertoire of decorative motifs, and the nature of this crucially important lost dimension of glazing history. This is usually in the form of extremely fragmentary remains, which present considerable difficulties in assessing and defining by comparative analyses. The Bradwell panel is highly unusual on two counts: firstly, the survival of the medieval leads, so very scarce in *in situ* glazing because of successive releading; secondly, the completeness of the painted and coloured glass, which permits an almost unique opportunity for an accurate reconstruction of the design.

The panel is a highly competent combination of geometry articulated by the lead lines, and decorative motifs painted on the glass. Medieval glaziers integrated the lead lines into the design completely — a characteristic inevitably compromised in *in situ* glazing by later repairs, intrusions, cracking and unsympathetic releading, which results in impaired legibility and difficulty in recovering the integrity of the original design. This is particularly difficult with geometric grisaille glazing, where the cut lines are such a crucial feature of the proportions and composition, and perhaps explains why even the most stunningly virtuoso surviving windows of this type (for example, the Five Sisters window at York Minster, the Lincoln Cathedral N. transept lancets and the Salisbury Cathedral SE. windows) are so critically underappreciated, and appear so disappointing because of the extent of replacements and the network of mending leads that obscure the original sophisticated symmetry.

Like medieval floor tiles, which often exhibit similar designs and characteristics, geometric grisaille glazing was easily mass-produced by means of repeat cartoons. With its restrained use of coloured pot metals, grisaille was relatively inexpensive, admitted much more light than historiated or figure glazing, and was infinitely varied and extendable. Panels of heraldry or figures were frequently associated with grisaille, either inserted into the geometry in the form of lozenges or bosses, or as whole panels forming the 'band' windows which became such an important characteristic of 14th-century glazing. There is no evidence so far available from the archaeological record that the Bradwell glazing contained any features of this kind.

The Bradwell combination of stiff-leaf, trefoil, unveined fruiting leaves radiating from a rinceau of curling stems, painted on white glass with no cross-hatched background, and the wide, serpentine border of alternating birds and sixfoil flowers, is unparalleled elsewhere. Similar intersecting geometries with wide borders and no cross-hatching but combined with naturalistic foliage occur at Chartham (Kent) in the 13th century,⁴ and at Norbury (Derbys.) in the early 14th century.⁵ The Bradwell panel bears some affinity to the more rigid and formulaic designs with cross-hatched backgrounds of *c.* 1250 at Chetwode Priory (Bucks.),⁶ Stanton Harcourt and Stanton St John (Oxon.).⁷ The fluid arrangement of the stems, linking with the intersecting double lines of the geometric framework, and the more naturalistic wide border design, point to the developments manifest in the extensive series of band windows at Merton College Chapel, Oxford of 1289–96.⁸ The presence of stiff-leaf trefoils and formalized veined foliage, diaper in reserve and lozenge designs, indicate a transitional phase between the mid 13th-century formality of the grisailles with cross-hatched backgrounds and the late 13th-century relaxation towards a more naturalistic repertoire of motifs. A date of *c.* 1270 is therefore proposed for the Bradwell panel.

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We would like to thank Susan Marshall for conservation of the glass and lead; Dr Barry Knight (H.B.M.C.) for comments on the leadwork; June Burbidge for assistance with the reconstruction and for production of the reconstruction drawings. Also the excavation volunteers who helped with the lifting of the window and other members of the unit for help in many ways.

R. A. GROFT and D. C. MYNARD

NOTES

¹ A more detailed report on the window and the excavations at Bradwell Abbey will be published in the forthcoming *Rec. Buckinghamshire Archaeol. Mono. Series. Interim Reports* have been published in D. C. Mynard, 'Excavations at Bradwell Priory 1968-1973', *Milton Keynes J. Archaeol. Hist.*, 3 (1974), 31-66. and R. A. Croft, 'Bradwell Abbey Excavations 1982', *S. Midlands Archaeol.*, 13 (1983), 57-62.

² Glass and lead from a 14th-century lancet window were found at East Haddlesley, W. Yorkshire. H. E. Jean Le Patourel, *The Moated Sites of Yorkshire* (Soc. for Medieval Archaeol. Mono. 5, 1973), 83-84.

A similar find was made in 1983 at Carmarthen Friary: information from Kate Hunter, University College, Cardiff.

³ P.R.O. E36/165.

⁴ N. H. J. Westlake, *A History of Design in Painted Glass* (London, 1881), Vol. I, pl. LXXXIX.

⁵ L. F. Day, *Windows. A Book About Stained and Painted Glass* (London, 1909), fig. 137.

⁶ D. and S. Lysons, *Magna Britannia* (London, 1806), Vol. I, figs. 2-5.

⁷ P. A. Newton, *C.V.M.A. G.B.* (London, 1979), Vol. 1, pls. 43 (g) and (f), 45 (a) (London, 1979).

⁸ P. A. Newton, in J. Sherwood and N. Pevsner, *Oxfordshire* (London, 1974), 81.

FIFTEENTH-CENTURY CONTINENTAL BRICKMASONS

The important role played by continental workers in building with brick in England during the 15th century is well established.¹ Recently two draft letters of interest in this connection were discovered in the Essex Record Office amongst the manorial records of Havering-atte-Bower (ERO D/DU 102/52). Although there is little evidence to indicate who the correspondents were the letters clearly demonstrate the writer's preference for a continental bricklayer as can be seen from the following extracts. In order to make the letters more intelligible to the modern reader contractions have been expanded and deletions omitted. The medieval character 'yogh' has been replaced by 'y' and the personal pronoun Y by I.

Letter 1

'...fythyr more as evyr I may do eny thyng for yow in tyme to come that ye well ordeyne me a mason that ys a ducher or a flemyng that canne make a dowbell Chemeney of Brykke for they canne [?] best fare ther with and I wold have seche one as cowde maket wele to voyde smoke and al so to hewe the mantell of the same Brykke for the fre stone [illegible] ther to and that I have hem as sone as evyr I myghte, for lenker [longer] than the monday after sent Lukys day may I not a byde and yf ye have hym I praye yow send my sone with hem to me and lete hem brynge hys axis with hym for to hewe with brykke and yf ye may no flemynge have than I wold have an enkesche [English] man if he were a yonge man for a yonge man ys sharpest of witte and of cunnyng and sech a one as wolde undyr take to make it fetely [fitly] and yf ye canne none kete [get] atte all I pray yow Send me word ther of in a letter so that I may have it Trustely upon Wednisday atte Rumford marktett or ellys atte nyghte or ellys on the Thursday by none [Noon] and for ellys I wyl to Chelmysford that nyghte and so fourthe to Witham for to have a man there yf I may ...'

Letter 2

'Dere and welbelovyd frend with all my hert I grete well. Thankyng yow Evyr more of yowre gret labour that ye have had for me a bowte my mason for in gode feyt [good faith] my lykkyt hym ryght well and as by his [illegible] and so I have made covenants whit hem² so that he schall come a gen in hast this weeke likke as he hath [illegible] for I wold fayn it were doon by cause of my wyff for sche wayteth the tyme of hyr delyverons with in thys fortenyght ...'

The first draft letter was written at the head of the recto side and the second squeezed into the space left at the tail of the dorse of the first of four membranes of manor court precedents that had been stitched together to form a roll. The latest date mentioned in the cases was 12th May, 1446, which must be the earliest date the correspondence could have been completed. The roll was attached to draft records of manor courts held between 1467 and 1469. The handwriting on the roll is different to that of the draft courts to which it is