ARCHAEOLOGICAL DATING OF MEDIEVAL AND TUDOR GLASSMAKING SITES IN STAFFORDSHIRE, ENGLAND

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INTRODUCTION

Glassmaking had begun in Staffordshire by the early years of the 14th century. Before 1615 the industry was based entirely on the use of wood as fuel and until the reign of Elizabeth it was confined to an area in the east of the county about 10 km across within which were two concentrations of glassmaking sites. To the south, glassmaking took place on the manor of Wolseley, and a site there at Little Birches was the subject of an excavation in 1991–1992. This revealed evidence for three furnaces, one belonging to the mid 16th century, a second of a similar date, and another dating from the 13th or 14th century. The output of the later furnaces was clear crown window glass; the earlier site yielded virtually no glass at all (Welch 1997).

Following excavation at Wolseley, investigation turned to the northern and larger concentration of glassmaking sites in Bagot’s Park, north of the village of Abbots Bromley. Until the 1960s the Park had been an area of scrub and ancient woodland, but it was reclaimed for arable farming and during the process a number of sites were located. David Crossley excavated one of these sites (site 4) in 1966 and found that the main output of the furnace was, again, white crown glass (Crossley 1967).

After 30 or more years of ploughing the glassmaking sites in the Park exist as little more than spreads of production debris, identifiable after cultivation. Nevertheless, sufficient thermoremanent magnetisation remains beneath the ploughsoil for the original location of the furnace to be detectable by geophysical techniques, and a programme of archaeological surveys was carried out by Dr Ruth Murdie of Keele University which led to the identification of 15 furnace locations. Together with one site destroyed completely in the 1960s (site 7), and two other sites (11a and 16) known by surface debris spreads only (and assuming that these three sites had one furnace each), it is now known that there were 18 furnaces in use over the whole period of glassmaking in the Park (Fig. 1; the numbering of sites follows that originally used by Crossley with later additions; his original sites 1, 2, 5, 10 and 14 cannot now be found).

The geophysical surveys had identified the precise locations of the furnace remains and indicated that material with significant thermoremanent magnetisation survived at each site. This raised the possibility of dating the last firing of each furnace using archaeological analysis, at which point English Heritage’s Centre for Archaeology became involved. By 2002, 14 furnace locations had been excavated and subjected to the technique; a fifteenth (site 4) had been dated during Crossley’s excavation in 1966.

THE DATES

The dates determined from the 14 furnace locations investigated in 2000–2002, together with that from site 4, excavated in 1966, are represented in Figure 2 (for a detailed technical discussion of the results see Linford 2001; Linford and Welch 2001; 2002). The broader section of each range bar represents the date range for the last firing at a confidence of 68%; the narrower is the range at 95%. The dating technique can yield alternative dates and where this is the case the most likely date is indicated in heavier tone. The earliest date is that for furnace 11b, which seems to have been in operation in the second half of the 13th century. There is an alternative date in the 15th century but this latter is thought less likely as the site has yielded some fragments of pottery of the earlier period. Another furnace, 15a, is of the same period, and there then follows a gap until a point in the late 14th century when 15b was in use (although the long 95% error bar should be noted). It is also worth noting that 15b is a near neighbour of 15a on the ground (Fig. 1).

There then follows a long sequence of furnaces from the late 14th century up to perhaps 1550, and that century and a half sees a sequence of 13 furnaces in use. There may have been gaps in the sequence which the resolution of the technique cannot identify, but with a new furnace appearing on average every eleven or twelve years it is reasonable to view this as a long phase of regular, if not continuous, production.

Furnace 13c has given the latest archaeomagnetic date. However, it has already been noted that there are two sites (11a and 16) where furnace remains could not be accurately located, but these can be identified and dated from surface material. Both are characterized by large quantities of glass, where the others have little on the surface, and that glass is of a hard and resistant type that is usually associated with the period of glassmaking following the arrival of glassmakers from France in the mid to late 16th century (Kenyon 1967, 42–3). Pottery from these sites supports a late 16th-century date. The glass found also suggests much of the production was of vessels, unlike the excavated site at Wolseley and Crossley’s site 4. The period of glassmaking by immigrants from Lorraine in Bagot’s Park can be defined with some confidence: in June 1585 an agreement was signed between Richard Bagot and Ambrose Hensey by
which Hensey might make glass in the Park, and glassmaking ended there for ever in June 1615 when glassmaking with wood fuel was forbidden by the crown (Horridge 1955). Furnace 13c spans the period from 1525 to 1565 at the 95% confidence level, leaving at least a 20-year gap between its last firing and the date of the Hensey agreement.

It is possibly coincidence that the two sites (11a and 16) where no furnace location could be detected by geophysical techniques also happen to be the only two in the Park that are of the post-1585 period. However, it might also be conjectured that some technical detail relating to the design of the later furnaces has resulted in an absence of detectable thermoremanent magnetisation in the subsoil.

No record was made of site 7 when it was destroyed in the 1960s, but the suggestion that it was associated with a brick building might suggest a 16th-century date (Crossley 1967, 49).

In summary, there appear to be three broad phases of glassmaking at Bagot's Park: an early phase with a few sites, ending in around 1300, a middle phase with many sites and perhaps continuous production from the last few years of the 14th century until the middle of the 16th, and a late phase associated with the Lorrainers lasting 30 years from 1585.

DISCUSSION

While comparison of the locations shown on FIGURE 1 with the dates given on FIGURE 2 shows no obvious pattern of movement within the Park, it can be seen that where furnaces are near neighbours geographically (6a and 6b; 11a and 11b; 15a and 15b; the group 13a–c) they appear chronologically distinct, albeit with some overlap at the higher level of confidence. The most obvious explanation for this is that the glassmakers are returning to the same location after a period of time, perhaps after a particular section of woodland has regenerated.

FIG. 2 Archaeomagnetic date ranges of furnaces. The broader section of each range bar represents the date range for the last firing at a confidence of 68%; the narrower is the range at 95%.
The distribution of furnace use over time seen in the Park can be supplemented by evidence for glassmaking elsewhere in this part of Staffordshire. At Wolseley, furnace 4 may have belonged to the early phase, although the dating, which was based on associated pottery, was not precise (Welch 1997, 53). Furnace 1 and the associated furnace 2 certainly belonged to the middle phase (contemporary with 13c, and thus late within the phase), and the fragmentary remains of furnace 3 seemed to be of a similar period, although the assumption made at the time that it was probably contemporary might now be questioned in view of the results from similar neighbouring sites in Bagot’s Park (Welch 1997, 11, 16).

Direct documentary evidence adds a few more furnaces to the middle phase. Two rentals from the 1470s indicate that there was one in operation at Wolseley then, and this might be associated with the remains at Cattail Pool which lie 1km away from the Little Birches site excavated in 1991–1992. A further furnace is known to have been in production around 1530 in ‘Assheleyheye’, near Colton, between Wolseley and Bagot’s Park (Welch 1997, 29–32). Place-name evidence suggests the location of two more furnaces of the late, Lorrainer, phase near Bagot’s Park; and there is debris at Cattail Pool that seems to come from a furnace of this period, but there is no documentary evidence for this (Crossley 1967, 48; Welch 1997, 31).

The above evidence confirms that the general pattern seen at Bagot’s Park is repeated over the whole area of glassmaking in this part of Staffordshire. In total there are perhaps three sites belonging to the early phase, but four can be added to the 13 of the middle phase, emphasizing the impression of continuous production through the 15th century and into the first half of the 16th. In the later, ‘immigrant’, phase there are probably four and perhaps five sites in this area.

These patterns can be considered in a national context. There are three specific references known which relate to the sale of glass from Staffordshire in the period 1300–1615, all in the 15th century and all relating to the sale of window glass. Glass was sold to York Minster in 1418 by a glassmaker from Rugley, and again in 1478 by a glassmaker from Abbots Bromley. Glass for the church of the Holy Trinity at Tattershall, Lincolnshire, was bought from Staffordshire in 1480, and this must have come from the Rugley/Abbots Bromley area (Welch 1997, 2, 37; 2003).

The apparent gap around the middle of the 14th century is intriguing. Marks notes the general lack of large-scale glazing schemes in the period 1350–1380 (1993, 166). In 1366 glass was brought to Nottingham Castle from London, when it might be expected that it would have been obtained from a source much closer in Staffordshire, but this certainly does not prove the absence of an industry there (Salzman 1928, 190). Glass was sought in Staffordshire in 1349 for St Stephen’s Chapel at Westminster, and a glassmaker came from the county to run a furnace in the Weald in 1380, which must imply that there was an industry in the area at this time. Perhaps the apparent gap between the early and middle phase is local to Bagot’s Park itself and other sites from the 14th century remain in the area to be discovered and dated (Kenyon 1967, 25, 31). An example might be the undated site found at Lount Farm, which lies between the main concentrations at Bagot’s Park and Wolseley (Welch 1997, 32).

Furnace 1 at Wolseley, sites 4 and 13 in Bagot’s Park and the site at ‘Assheleyheye’ can all be reasonably said to have been in use in the 1530s and 1540s. The cessation in glassmaking after about 1550 is thus particularly striking and seems to represent a sudden end to a thriving industry rather than a dwindling of activity, but it may again be possible that other sites remain to be discovered and to bridge the gap.

CONCLUSION

Further documentary research may alter the general pattern outlined above. Even if it does, the evidence for the high level of activity in the middle phase from the late 14th century to around 1550 would remain to suggest that at this period Staffordshire was supplying a large amount of glass to the market. This is also the period when documentary evidence for glass production in the main area of glassmaking in England, in the Weald on the Surrey/Sussex border, is particularly scarce (Kenyon 1967, 29). The archaeological evidence from Wolseley and from Crossley’s excavation of site 4 clearly shows that the main output of these sites was crown window glass, and this is supported by the few references to actual sales, which are all related to church glazing. This was also the period when the Perpendicular style predominated in England, with its emphasis on large areas of glass; Marks comments on Tattershall that it was ‘primarily a glass-house’ (Marks 1979, 138). If the rather sudden end of the middle phase is a real, and wider, phenomenon perhaps it can most readily be explained by the Reformation. After the 1530s wealth was redistributed from the church to the crown and laity on a massive scale, bringing to an end a thriving market for window glass, and the statement by Thomas Charnock in 1557 that glassmakers were scant in the land is well known (Platt 1994, 16). The market only reappeared towards the end of the 16th century, and then it was the laity who provided the demand, and the immigrant glassmakers the supply.

FURTHER WORK

Documentary research will now continue in order to firm up the picture emerging from the Staffordshire glass industry. Some of the sites in Bagot’s Park have been fieldwalked and initial results from this are promising; it is hoped to move to a full programme of analysis in the future and the programme of dating has now provided a framework within which this can take place.

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REFERENCES

Horridge, W., 1955. ‘Documents relating to the Lorraine glassmakers in North Staffordshire, with some notes thereon’. Glass Notes 15 (December 1955), 26–33.

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