The Finds Research Group AD700-1700

DATASHEET 38

Rotary querns *c.*700-1700

by

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This *Datasheet* is concerned with the design and development of rotary querns from *c.*AD 700 to 1700 and for ease of reference is divided into three periods: Saxon/early medieval *c.*700-1100, medieval *c.*1100-1500 and post medieval *c.*1500-1700. Rotary querns are essentially small hand-operated millstones, the upper stone of which is turned by a handle projecting from its top or side. The upper stone is held in place over the lower stone by means of a bridge or rynd, of wood or metal, across the eye or central feed hole, which pivots on the spindle projecting upwards from the lower stone. The dividing line between querns and millstones is rather difficult to assess but it is now generally considered that stones with a diameter of greater than 600 mm are too large to have been turned by hand, although conversely millstones of smaller diameter are also known.

Querns were principally used for milling grain for flour but they were also used for grinding other food stuffs such as malted grain for brewing, mustard seed and other spices and for crushing non-food products including the tempering materials used in pottery production and metallic ores. They are durable objects with a potentially long life span and, in addition, broken or disused querns were frequently used as building material or for paving or hearths. Consequently, the date of deposition of quern fragments in the archaeological record may be many decades after the date of the stone's initial manufacture and use and it is not unusual, for example, to find residual quern fragments from the Roman period on Saxon sites.

Saxon/early medieval period c.700-1100

There appears to have been a considerable resurgence of the trade in the importation of querns of lava stone from the Mayen/Niedermendig area in the Eifel Hills of Germany to southern and eastern England from at least the seventh century. It is thought that the black stones referred to in a letter from Charlemagne to King Offa in AD 796 were lava querns (Whitelock 1979, 849). Lava is a relatively light stone and, therefore, comparatively easy to transport but it is also brittle and although its vesicular texture provides an excellent milling medium it wears rather quickly. Examples from sites in Southampton (Addyman and Hill 1970, 78-9), London (Goffin 2003, 207) and York (Rogers 1993, 1329), and St Neots in Cambridgeshire (Addyman 1973, 88-9), Goltho in Lincolnshire (Smith 1987, 195) and Maxey in Northamptonshire (Addyman 1964, 59) indicate that lava quern stones varied in diameter from *c.*330 mm to 600 mm and in thickness from 25 mm to 90 mm, although thinner stones are probably worn examples.

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They have a slightly sloping or flat grinding surface that is generally simply pecked to further roughen the surface for grinding. Upper stones typically have a collar around the eye, although flat-topped examples are also known, and frequently have more than one handle hole which may be either upright or L-shaped, that is drilled through from the top to the side of the stone (Figure 1). The reason for the additional handle holes is not clear as they are usually close to each other and can only have weakened the stone at that point.

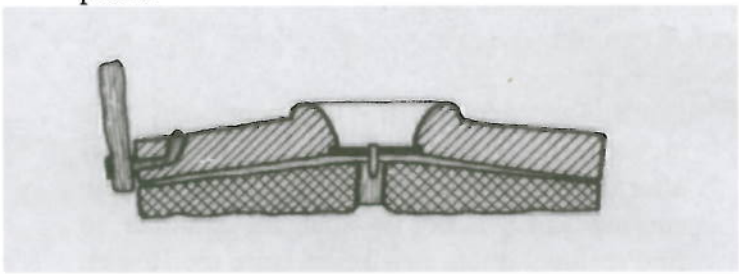

Figure 1: Reconstruction of an early medieval lava quern, c.480 mm in diameter, showing the rynd bridging the spindle projecting up from the lower stone and an L-shaped handle hole with a tanged metal loop to hold a wooden handle (M. Watts)

It is generally considered that the stones were transported partly finished from the Rhineland to workshops in trading centres in eastern and southern England such as *Hamwic*, *Lundenwic* and *Jorvik*. By middle Saxon times large amounts of lava were being transported, for example, to sites up the Thames, such as Lake End Road West, Dorney (Foreman *et al.* 2002, 37). Two blank stones were recovered from the Graveney boat that sank off the Kent coast in the 10th century (Fenwick 1978, 173) and querns have also been found in other wrecks in the Rhine. The large number of broken and unfinished querns that were discovered behind a 10th-century waterfront on the Thames Exchange site in London are thought to represent the waste from a nearby quern finishing workshop and two unfinished stones were incorporated within the foundations of a 10th- to 12th-century building in Pudding Lane (Freshwater 1996; Vince 1991, 162-4).

Saxon and early medieval querns were, of course, also made from native stone and it was not uncommon for settlements to utilise stone from more than one source. At Wharram Percy, Yorkshire, for example, fragments of querns made from Crinoid Grit, Millstone Grit and limestone have been found as well as fragments of lava querns (Watts 2000, 111). Native querns appear to have been similar in size and shape to lava querns with a collar around the eye and upright handle hole(s). Fragments of six querns of local limestone found at the Anglo-Saxon settlement at Medmerry Farm, Selsey, Sussex came from stones varying in diameter from 406 mm to 510 mm (White 1934, 398). At Goltho the remains of a coarse sandstone quern originally some 460 mm in diameter was found (Smith 1987, 195). The complete upper and lower stones of a sandstone quern found in an 11th- to 12th-century pit at Fishergate, York were *c.*100 mm thick and *c.*400 mm and *c.*410 mm in diameter respectively. The upper stone has a slight collar around the eye and two upright handle holes. It also has two shallow rynd chases (Rogers 1993, 1322).

In Scotland and Ireland two forms of rotary quern were used: the collared and the flat, although it seems that the collared form gradually gave way to the flat, which was often more oval in shape than round. They are made of native rock. The handle hole is upright or L-shaped and there are often rynd chases cut into a generally flat grinding surface. They are well represented by the 54 examples found during excavations at Dunadd, Argyll, the majority of which are made from rock from the crag of Dunadd itself (Lane and Campbell 2000, 185-6). Several exhibit some form of decoration and it seems that decoration in the form of concentric rings, a small cross, or a larger cruciform pattern is not an uncommon feature of early medieval querns in Scotland (Anderson 1883, 126; Lane and Campbell 2000, 185) and more particularly in Ireland (Bennett and Elton 1898, 142-5; Waterman 1954, 147; O'Kelly 1958, 103). Querns with similar characteristics have also been found in Wales and England (Bennett and Elton 1898, 142; Watts 1997, 48-9).

Medieval period c.1100-1500

Although the use of querns was widely prohibited during the medieval period and tenants were obliged to use the manorial mills, the picture is not that straightforward, for many people were permitted to use their own querns. Just as there is documentary evidence relating to fines imposed for the illegal use of querns so there are documents granting permission for their use. Finds from monastic and manorial sites indicate that these establishments also kept querns for their own use (Biddle *et al.* 1961, 189; Smith 1974; Mayes 2002, 131). With the exception of pot querns, medieval quern stones seem to have been simple in form, varying greatly in diameter from *c*.250 mm to *c*.570 mm, with a flat or slightly concave grinding surface, the upper stones generally having a flat, collarless top with an upright handle hole.

Medieval manuscripts (e.g. Bodleian Library, University of Oxford, Ms. 264, part 1, f.170v; British Library, Royal 10 E. IV) show querns mounted in a wooden frame, the upper stone turned by means of a long upright handle, one end of which was fixed in the stone, the other held loosely in a ring or hole in an overhead beam (Figure 2). The spindle could be lengthened to pivot in a bearing set in a board beneath the lower stone. By raising or lowering the board slightly the gap between the upper and lower stones could be altered and thus the fineness of the ground product, an action known as tentering. However, a small lower stone set in the floor of the kitchen area in one of the cottages in the deserted medieval village at Thrislington, County Durham, suggests that in some establishments the quern was used on the floor. This had the advantage that, if it was in use illegally, it could be quickly covered if necessary. At Thrislington an upper stone was discovered hidden in a pit close by (Austin 1989, 69-70, 145).

Early in the Middle Ages a new form of rotary quern was introduced. Called a pot quern, the upper stone fitted neatly into a recessed lower stone, the ground meal being ejected through a spout cut through the side of the lower stone (Figure 3).

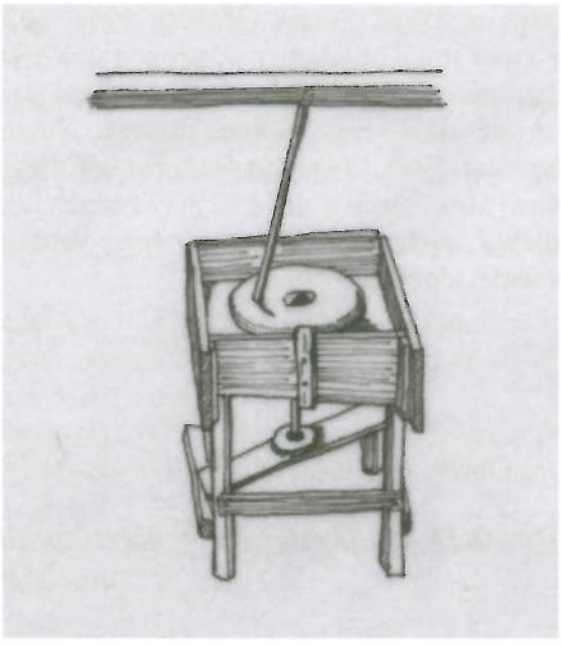

Figure 2: Reconstruction of a quern mounted on a stand (M. Watts after Thomas 1971, 121)

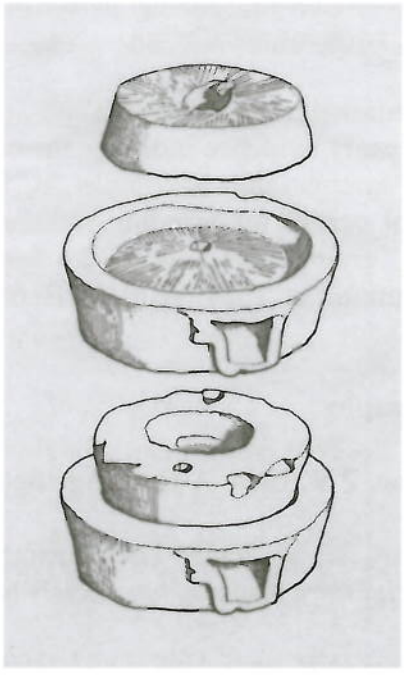

Figure 3: Lava pot quern found in St Martin's-Le-Grand, London, showing the furrowed dressing on the grinding surfaces. The lower stone is c.406 mm in diameter (M. Watts after Price 1871, pl. II)

Evidence from Winchester suggests that they were in use in Britain by the mid 12th century (Biddle and Smith 1990, 881). The pot querns found on medieval sites are frequently made of imported German lava although they were also produced in locally available stone and they vary considerably in design. The lower stone may be round or hexagonal externally and occasionally has more than one spout hole. The spout hole sometimes takes the form of a carved head and the meal is ejected through its mouth. The upper stone, *c*.230 mm to 350 mm in diameter, may have a flat, domed or dished top with one or more upright handle holes. The grinding surface is frequently dressed, that is pecked, with a series of furrows. Such dressing, found on imported lava querns and some locally produced querns of the Roman period, does not seem to have been a feature of Saxon querns but was reintroduced in the later medieval period. The purpose of dressing is to provide a series of cutting edges to break open the grain and to help the flow of grain and meal through the stones. However, stones with a gritty or vesicular texture such as Millstone Grit or lava can perform grinding without recourse to dressing, particularly if the grinding surfaces are sloping.

Post medieval period c.1500-1700

Documentary evidence indicates the continued use of querns and handmills in the post medieval period for grinding ordinary grain, malted grain and mustard for home consumption. In 1587 William Harrison, for example, tells how his wife grinds 'good malt upon our quern' to save paying a toll (Edelen 1968, 137). The reference by Ralph Sheldon of Beoley to black millstones in 1588-9 shows that lava stones continued to be imported (Steer 1969, 41). Many household inventories of the 16th and 17th centuries also contain references to querns and mills (see for example Havinden 1965; Cash 1966; Steer 1969). These inventories suggest that mustard mills tended to be kept in the kitchen or buttery whereas malt mills were found in the kitchen or in the malt or brewhouse, stable or barn. Generally mustard mills appear to be of less value than malt mills implying they were smaller or simpler, although 'two great mustard querns' are mentioned in the will of Wistan Browne in 1580 (Emmison 1978, 60).

By the 17th century handmills turned with a cranked handle(s) through a pair of gears were coming into use and these it seems were mainly used for grinding malt (Watts 2002, 44, 141). However, there is also evidence to suggest that pot querns continued to be used in the post medieval period. An almost complete lava pot quern was discovered in the rubble beneath the bread oven of a 17th-century cottage at Shere, Surrey (Holling 1964, 103). An upper stone of another was found in a layer of hardcore over a 17th-century cobbled yard at Anne of Cleves House, Lewes, Sussex (Marsden 1983, 74). A number of lower stones also survive in country houses and gardens, such as in the kitchen yard at Cotehele, Cornwall.

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