



It is difficult to ascribe a definite usage to these worked stones, with a range of flat surfaces and rounded corners. Relevant references include:-

- “Slightly glossy flat surfaces .. suggest that it may be a polisher, possibly for leather working or else as a smoother for pottery” ER McSoy, WANHM, 2011, p89
- Quartzite pebbles with distinctive wear in the form of shiny, polished surfaces are commonly found on IA and Roman sites. Could be used as pot-burnishers (Wainwright 1968, 137), as slickstones for leather working (Barford 1985, 130) or even as linen smoothers (Roe pers.comm.) D Stansbie et al, 2011, Yarnton Vol II, p64:
- A Croom: describes them as “circular, slightly domed glass or stone discs that were rubbed across the cloth while it was stretched over a suitable flat surface”. (2011, *Running a Roman Home*, p108)
- A typical [Roman] linen-smoother has a slightly dull face, with microscopic scratch marks on it, whose direction suggests a back-and-forth action, rather than a circular movement (Walton Rogers, 1997, Arch York Fasc 17/11, fig 828)

### Unworked Stone

Date	No	Dimensions (max)	Lithology	Comment
2017	SF 7	195 x 140 x 30-35	Sandstone	Irregular block
2017	SF 12	170 x 120-170 x 40	Sandstone	Unworked slab
2017	S7	5 small frags	Limestone (?)	One has natural hole
2017	S8	105 x 130 x 120	Baked Clay (?)	
2017	S9	100 x 45 x 20-45	Sandstone	Fossil impression?
2017	S10a	200 x 145 x 25-30	S/S	Naturally rounded edges
2017	S10b	110 x 45 x 20	S/S	Unworked
2017	S10c	140 x 85 x 33	S/S	Slab with curving edge
2017	S11a	95mm long: 50mm max diam	S/S	Oval, rounded pebble, used as hammerstone
2017	S11b	50 x 35 x 30	S/S	Rounded pebble
2017	S11c	60 x 50 x 45	Quartzite	Pebble - hammerstone

### Quern Catalogue

**West Hagg Farm: Site 103, Reeth** [SE: 0567.9901]

**Upper Stone: ‘Collared Hopper’ Disc Hand Quern:** (2011) SF 16, Context 203 + (2017) SF 11, F1

Description: Two non-joining fragments, ca 35% survival: mostly broken radially: The upper surface of SF 16 is roughly peck-dressed flat (with 10-15mm diam, 3mm deep impressions), the surface of SF 11 has had more handling wear before deposition: both have their upper sides parallel to the grinding surface (“G/S”) and rise to a neatly dressed, round profiled, hopper collar (50mm wide, 15mm high). The peck-dressed hopper is convex. The grinding surface is smoothly worn (with concentric markings), concave (by an unspecified amount) and its outer 200mm is worn flat, but the inner zone is less worn.

Lithology: Sandstone: Fine to medium grained, with sparse coarse grains (quartz pebbles up to 9mm length): Gritstone.

Dimensions: Diam 550mm: Height, Rim 50mm, Collar 65mm: Hopper width 120mm, Depth 50mm: Feed-pipe diam, c.85mm: Total wt 9.5kg (Est intact wt c.27kg): YQS 5286.

Context: (2011) Trench 2 Extension: Phase 2: Dated by ceramics to AD 370+: (2017) cobbled ‘yard’ also AD 370+.

Comment: The similarity in dimensions, profile and lithology make it reasonably certain that both fragments are from the same stone. Although no evidence survives of a radial slot in the upper surface for a handle, the modest weight of this stone and its profile similarity to SF 5, suggests that it was a large hand-driven quern of ‘Traprain Law’ type. The rim height suggests it was not heavily used.

**Upper Stone: 'Traprain Law' Disc Hand Quern:** (2017) SF 5

Description: 24% fragment: a radial break on one side and a chordal removal on the other: the upper surface is neatly pecked: its profile is similar to SF 11/16 (above), with the upper surface parallel to the G/S and a curved outer edge: The collar around the hopper is rounded (50mm wide, 15mm high): The convex hopper is pecked, with no feed-pipe evident: the G/S is flat and worn smooth.

Lithology: Fine grained gritstone.

Dimensions: Diam 400mm: Height Rim 45mm, Collar 65mm: Hopper width c.120mm: Depth 65mm: Feed=Pipe diam 50mm: V-shaped radial handle slot is 100mm long, max width >15mm (est ca50mm): Total wt 3.5kg (Est intact 14.5 kg): YQS 7599.

Context: (2017) cobbled 'yard' also AD 370+.

Comment: From rim height, its absence of a feed-pipe and its est. weight, this appears to have been more used than SF 11/16. Its radial slot shows it to be a Traprain Law-type of hand quern, with a similar profile to SF 11/16,

**Lower Stone: Disc Hand Quern** SF 4

Description: 45% fragment: ca 95% of its G/S edge has been deliberately removed: G/S is worn smooth, with its outer 110mm flat, but the inner area sl. convex (5°): It has a peck-dressed edge and a drum-shaped profile: The base is flat and unusually has been neatly peck-dressed.

Lithology: Fine grained, with sparse coarse inclusions: Gritstone.

Dimensions: Diam 430mm: Height Rim 90mm, centre 110mm: Hour-glass perforation, Diam top 30mm, min 15mm, base 60mm: Weight 10.5kg (Est intact 23 kg): YQS 7601.

Comment: Deliberate removal of G/S edge is a 'native' practice, more usually associated with the users of beehive querns. From its rim thickness and weight, it is estimated to be only 25-50% used.

**Probable Lower Stone: Disc Hand Quern** SF 6

Description: 10-15% rim fragment: broken radially, with ca75% of its G/S edge removed: G/S is worn, with outer 60mm horizontal and inner 140mm sl convex: Profile is drum-shaped, with a peck-dressed edge and a well finished base, with a more roughly pecked area 20mm wide and 3mm deep, some 20mm from the edge.

Lithology: Fine to medium grained sandstone: Gritstone?

Dimensions: Diam ca500mm: Height rim 65mm, centre >70mm: No surviving perforation: Weight 3.8kg (est intact 32kg): YQS 7660

Comment: Assumed to be a lower stone as a) G/S profile is sl convex, b) no apparent space for a 'hopper', but there is room for a typical base perforation (min 50mm (+/- 25mm), c) within expected weight range of 30kg (+/-15kg). From rim height and est weight, this stone was ca 50% used.

**Lower Stone: Probable Beehive Hand Quern** SF 10

Description: ca15% fragment, apparently reshaped into a rectangular block for re-use: G/S is smooth and sl. convex: the edge is almost completely removed, with only a hint of a roughly worked lower section: the base is roughly dressed flat and horizontal.

Lithology: Fine to medium grained, with sparse, coarse (12mm quartz) pebbles. Gritstone?

Dimensions: Diam 360+ mm: Height Rim ca70mm, Centre 90mm: Non-perforating conical spindle hole, Diam 20+mm, depth 50mm: Weight 3.25kg (est intact 22 kg): YQS 7602

Comment: An intriguing stone, with two possible reconstructions:-

- The non-perforating spindle hole is normally indicative of a beehive quern: if so, its diameter probably exceeds that expected for a beehive ie: 32cm (+/- 4cm), so it could be a 'Developed Beehive' – which were influenced by standard Roman disc querns, which tend to be ca 40cm diam: If so, its presence in a late 4<sup>th</sup> C context indicates either a surprisingly long period of usage, or (perhaps more likely) that an Earlier Roman beehive base had been split in half, though its spindle hole, and discarded, then later reshaped for subsequent late 4<sup>th</sup> C re-use.
- Alternatively, we don't know what sort of base stone was used with a Traprain Law-type upper, so the non-perforating spindle hole could be a conservative feature, contemporary with the late 4<sup>th</sup> C context.

## General Comments

### Notes on 'Traprain Law' Upper Stones

The rounded collar on its hopper rim (has been recorded on only 62 of the 7,600+ querns in the Yorkshire Quern Survey ('YQS') archive. Of these examples, 17 also have a radial slot cut into their upper surface, enabling a vertical handle to be fitted. As no other type of handle fitting is currently associated with these collared hoppers, we are probably safe to assume that most of these querns originally had similar radial slots (although there are a few intact stones without such slots, which presumably are small millstones). They are generally made from local stone, usually described as Millstone Grit or gritstone.

In just four of the English examples, the handle slot is also surrounded by a moulding, similar to that around the hopper rim. Euan McKie (pers.comm) has identified three similar examples of this type in Scotland, which he has named after the published quern from Traprain Law, East Lothian (Close-Brooks, 1983, p214), which he dates to the 2<sup>nd</sup>/3<sup>rd</sup> centuries AD. In our remaining ten examples, the radial slot lacks any such mould. We are unclear about either the chronological or geographical significance of these moulded slot types.

The diameters of collared hopper querns range between 350-550mm, spanning the full range expected from a hand-powered quern (see below). It is interesting that both SF 11/16 and SF 5 share the same characteristic profile (with the upper surface being roughly parallel to its grinding surface). However, whereas SF 11/16 has a diameter shared with six other English examples in the diameter range 480-550mm (see below), our SF 5 has a smaller diameter, which lies comfortably within a smaller sub-group, whose diameters range from 350-470mm.

	Diam (mm)	Radial Slot	Date (AD)	Site	Ref	YQS
Piercebridge	c.480	-	-	Fort	Gwilt A, Unpublished	1066
Dishforth (A1)	480	-	250-400	Civil?	SF19: Cruse RJ (in prep)	3263
Dalton Parlours	495	-	200-400	Villa	SF 1178A: B&M, 1990	2167
Catterick	510	Moulded	U/S	Fort	Wright, 2002, 274, No17	3273
Dalton Parlours	525	-	200-400	Villa	SF 1478: B&M, 1990	2178
Adel	540	No mould	-	Vicus	SF2: Cruse RJ (in prep)	2029
West Hagg Fm	550	-	370+	Native	SF 16	5286

Beehive querns rarely exceed 30-35kg in weight or 550mm in diameter (Cruse & Heslop, 2013, 167). SF 11/16 is thus a very wide hand quern, but was little worn, whereas SF 5 was smaller and more intensively used. We do not know whether these two different size ranges have any functional explanation.

The distribution of these collared hopper querns is quite interesting. Their English core area appears to be delimited by Wharfedale, Ribblesdale and Swaledale, with no examples being found east of Dere Street. Of the smaller and medium diameter stones (between c.350-450mm), we have an example from Castleford fort (Cool & Philo, 1998, 61, SF 2668) dated to 85AD and another photographed at the 1906-7 excavations at Melandra Castle (Hammett, 1908, 321), a fort abandoned by 140AD (Bidwell & Hodgson, 2009, 95).

Thus, whilst the smaller querns have been found in and around the Early Roman auxiliary forts in the Pennine military area, our example (SF 5) shows continuity of use into the late 4<sup>th</sup> century AD. The larger examples (listed above) come from a more restricted range of Later Roman contexts. These are sited along, and just to the west of, Dere Street, occurring in both civil and military sites. Such sites have also yielded a considerable number of millstones, suggesting that, in Later Roman times, a significant volume of corn grinding took place along this corridor, potentially linked in the State's requirement for *annona*. The collared hopper and lateral handle slot, often with added circular moulding to the upper surfaces, continue to be popular features into the 5<sup>th</sup>- 6<sup>th</sup> centuries AD in Shetland and in the Outer Isles – so these features were both long-lived.

Against this background, the presence of SF 5 & 11/16 in Upper Swaledale, relatively far from the Roman road system, is somewhat anomalous. Their lithology provides few clues, as such gritstone sandstone could well be relatively local. By 370AD, there is little evidence from PAS records that a coin-based economy still operated in this area (Collins, 2012, 59, Fig 3.3), so these querns either have been:-

- a) obtained for local usage by either barter [or theft] from somewhere further east, along Dere Street, perhaps from settlements around Catterick fort or
- b) brought in by external processors, perhaps to facilitate the export of their ground products (as '*annona*'?) to consumers further east.

### Notes on Quern Fragmentation Practice

Previous studies at Wattle Syke (Cruse & Heslop, 2013, Table 32) have shown that beehive upper stones were particularly susceptible to having their grinding surface edge removed, prior to division and deposition, but that this phenomenon was far less marked for Roman-inspired disc querns. It is therefore interesting to find that the lower stone (SF 4) of a disc quern from Hagg Farm had been treated in this 'old-fashioned' manner – perhaps suggesting that someone on the settlement still maintained such 'traditional' practices.

### References

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6/12/17 (amended)