

Letter to the Editor

CALVER MILL

Nick Laffoley

The mill machinery described in the last Bulletin (Willies 1989) may be more interesting than the author realised, so far as I can tell from his descriptions and diagrams. It is obvious that what machinery has survived is of the conventional type called "planetary geared", with the millstones driven by small stone units from the periphery of the spur wheel, which from the description is of the "clasp arm" type construction. The timbering arrangement surrounding the pit wheel is quite conventional and is known as the "hoist frame" or simply the "hoisting".

However the four horizontal timbers that were morticed into the vertical posts (p272, No.2) would not have braced the structure to the wheelpit wall. These horizontal timbers were called "tentering beams", and were raised and lowered by tentering screws to adjust the gap between the millstones overhead, and they carried the weight of the upper or "runner" stone. This area would have been boarded off to keep flour dust out of the gears. Cleaning dust from the gearing is otherwise a miserable job, but has to be done to inhibit mill moth.

It is the power train which looks really interesting. Normally in planetary gearing the waterwheel axle (the "watershaft") extends inside the mill and its inner end has a pit wheel mounted on it in a vertical plane. This meshes with a gear called a wallower, which was generally of iron, mounted on the vertical shaft under the spur wheel. However the author states the shaft is round above and below the spur wheel, and the diagrams show no space for a pit wheel. Curious. The drive must therefore have been to the rim of the spur wheel.

The author states the power was taken from the rim, also curious. I cannot speculate as to what the actual gearing system would have been, but the mill obviously once had a most unusual set of machinery. The presence of the fifth set of millstones is again very unconventional. I doubt that they would have been driven by a belt drive.

The cage-like drive system is another curiosity, though stone drives do tend to vary quite a lot. In the photograph at the bottom of page 283, I can see a conventional bearing block, with a funny cage on top around which the runner stone would have revolved. The cage would have remained stationary.

So what can be made of this? At a guess this mill has had a major machinery rebuild during its life as a cornmill. It started off with a basically constructed set of planetary machinery. The spur wheel and vertical shaft would date from this period. Then subsequently it underwent severe modifications. The pit for the pit wheel was filled in, the wallower was removed, and the shaft "tidied". A new wheel was installed, a new "line shafted" drive train was put in, and the fifth stone pair was installed, possibly through the bricked up opening shown on the plan, since the iron castings which came into use in the 19th century were

difficult to handle. The addition of the fourth storey may also date from this period, since this was very common with mills, and was often associated with the installation of hoists or other auxillary machinery.

So the machinery is pretty unusual as far as can be ascertained. The only waterwheels that I have seen with rim drive have been of all iron construction, and were associated with cotton mills and the like, not flour mills. Could it be that the machinery is the product of what happens when a cotton millwright gets his hands on a corn mill? (Colin Laidler, here in Africa like me comments on the general unsuitability of a high rev and low torque drive for a corn mill).

The burr-type stones "probably from France", would definitely have been so. The only source was the Paris basin, from quarries at La Ferte sous Jarre. This place is now better known as Orly Airport, and when the airport was built the supply ceased. Since the stones are the very best for milling wheat, they are now much sought after by milling concerns producing stone-ground flour. The plaster used to bind the stone is produced from gypsum beds in the Paris basin, thus the term "plaster of Paris". French burr is full of natural cavities, and it is common to fill the largest cavities. I generally use plaster of Paris, but lead is also commonly used, and indeed is used a lot in the general business of setting and running millstones. The fifth stone was probably installed to increase versatility - for various technical reasons it is normally totally impractical to use more than one pair of stones at a time.

REFERENCE

Willies, L. 1989 Calver Mill. *Bull.PDMHS*. Vol.10, No.5, pp.276-283.

Comment by Lynn Willies:

Nick Laffoley provides a rational explanation to what were several puzzling features: the rebuild would probably coincide also with the use of water from Calver Mill Sough after the closure of Calver Sough Mine. The cotton mill millwright has a likely ring to it!