

## A NOTE ON THE MILITARY USE OF MILLS

### Food Supply and Strategic Aspects

Michael Organ

This is a very recent study and I would welcome members' views on possible sources. To date I have collected five items:

- 1) A contemporary account of the siege of Colchester in the Civil War. It contains descriptions of several skirmishes; all attempts by the Parliamentary forces to capture or destroy mills in order to starve the garrison into submission. It also describes the efforts to counteract this by the use of horses to turn millstones, and by erecting a windmill on top of the Castle. (Carter, Mathew; 'Expedition of Kent, Essex and Colchester in 1648')
- 2) Description and drawing of a Field or Carriage Mill used by the military in 1735 (Beyer, J C; 'Theatrum Machinarum Molarium, oder Schauplatz der Mühlenbaukunst,' Leipzig, 1735, pp 79 7 80, and plate XXVII)
- 3) Print of a horse-drawn mobile military mill at the siege of Lochum (Netherlands) in 1606. (original source not yet traced; plate from Major, J K; Animal Mills)
- 4) Description and plans of mills installed aboard ships to supply bread to the British forces at the siege of Sebastopol in the Crimean War of 1856. (Transactions of the Institution of Mechanical Engineers, 1858)
- 5) References in Bennett & Elton Vol 4 to the use of windmills in war:

Edward III watching the progress of the battle of Crecy, 1346.

Charles I witnessing the battle of Edge Hill, 1642.

Charles I witnessing the battle of Naesby, 1645.

Charles II escaping after the battle of Worcester. After hiding in the oak tree he rode the mill horse of the mill at Whiteladies near Boscobel.

#### The Field Mill as Described by Beyer

The following abridged description is based on a word for word translation of the original German text.

Field or Carriage-Mills were used by armies in camp where more permanent mills were unavailable. The carriage being drawn by two pairs of horses on the march and one pair when milling.

The mill was supported on a timber frame about 18' (5.5 m) long and 4' (1.2 m) wide which was attached by a swivel to the limber at the front and the wheel axle at the rear.

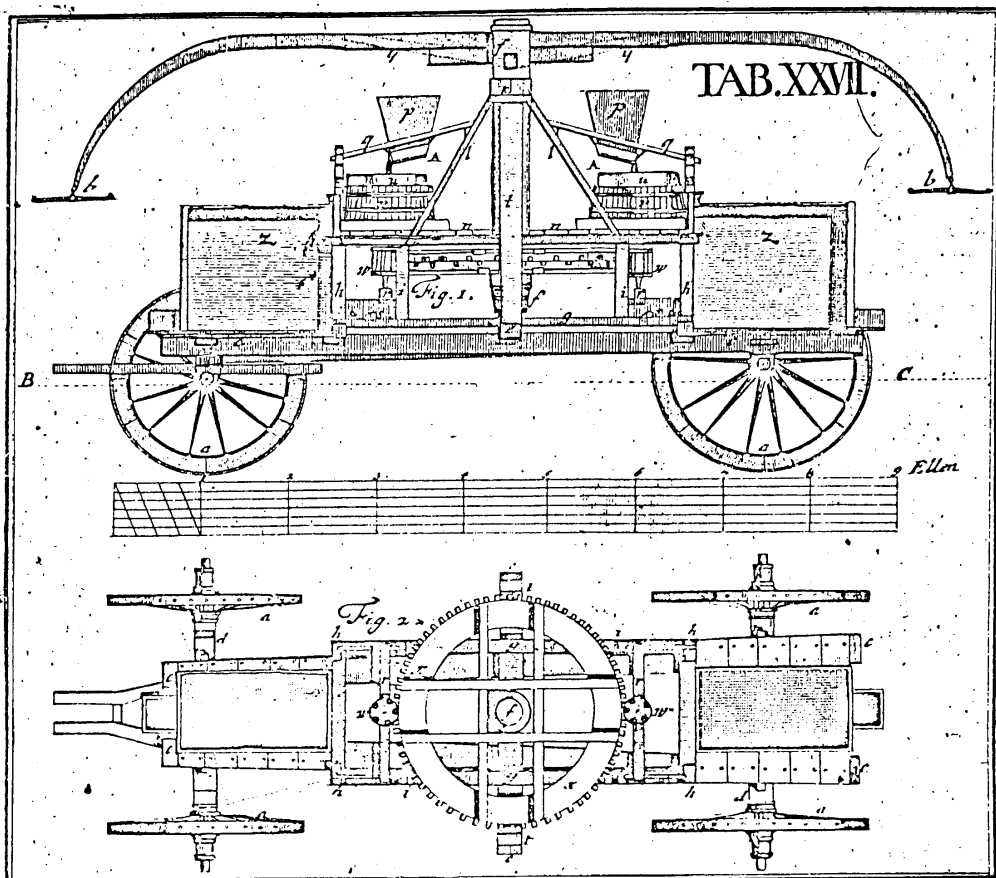
The upright shaft was set in a footstep bearing at the centre of this frame and steadied by a neck bearing, supported by struts about 4' (1.2 m) above the base. The top of the shaft was morticed to take a pair of horse arms. The horse arms curved downwards at their outer ends and were fitted with swingle trees. The diameter of the horse arms was about 23' (7.0 m). When milling, the carriage was sunk in the ground almost to the wheel hubs (line B C in Fig 1) presumably for stability and to and to bring the horse arms down to a reasonable working height.

The drive to the stones was by means of a clasp-arm spurwheel 5.75' (1.8 m)

in diameter with 60 cogs, engaging with a lantern pinion with five rungs each; a ratio of 12 : 1. The two pairs of underdrift stones were on a hurst frame and were about 2' (60 cm) diameter. They were capable of coarse milling only but a sieve was sometimes attached to make fine flour for the high-ranking officers.

On the march the horse arms were dismantled and stowed on the carriage. The hoppers, shoes, and their supporting framework were stowed in the meal bins. The bins and millstones were covered, like all military wagons, with oilcloth.

General Spinola of the Imperial Spanish Army used similar carriage mills in the field more than 100 years previously (to 1735).



Speed: Track diameter 23' (7 m), therefore circumference 72·3' (22 m)

Speed of horses: say 2·5 mph (4 kph) = 220 ft/min (67 m/min), therefore 3 rpm.

Gearing of 12 : 1 gives stone speed of 36 rpm.

### Discussion

- Organ I would be interested to hear of any more sources. In particular, I don't know what happened in later wars, up to the time of the South African war. Of course, there was steam and roller milling by that time.
- Harverson Have you considered the effect on milling of this scare at the end of the 18th century, when we had this 'Posse Comitatus' recording milling capacity and mills round the coasts, etc.
- Organ I have only seen mention of it in John Vince's book on Bucks mills.
- Freedman It was originally a sort of manpower census.
- Harverson It includes all the mills.
- Organ It is useful for the local mills, but it wasn't a direct milling census.
- Jarvis You didn't mention the boat mill, which was a direct military invention, for countering the Goths besieging Rome in 547 A.D.
- Organ An amusing remark in the contemporary article in the Crimean mills; 'Modern armies render the soldier more dependant on the cares of the administration than was formerly the case. The French, Spanish and other continental troops can live upon a moderate allowance of vegetable and farinaceous food, and a lump of oil cake will sustain a Russian for a week, but it is very different for the English, who become who become disorganised when their rations fail'!
- Freedman In case this may be relevant; Agostini Ramelli's book of machines contains many watermills, but he was a military engineer, and his book also contains a number of siege machines, so it might be worth searching the work for possible connections between the subjects. He is very theoretical, and says little of his experiences in battle.
- Norchi Are gunpowder mills military? Most of their output was for this purpose.
- Bryan Presumably the sailing ships might have carried querns to grind fresh meal on board.
- Organ I am not aware that they did. The normal practice on ships of the 17th and 18th centuries was to carry their bread in the form of hard biscuit, even up to the Second World War.
- Bryan So there was no baking on board.
- Norchi And yet, on the last grain race, there was. They had fresh bread on Sundays, and Christmas, baked on board.
- Jarvis There were substantial galleys on the Mary Rose, which I believe included ovens.
- Jones A great deal of food would be needed; it was very heavily manned, with soldiers as well as sailors.
- (After odd comments on Fairbairn's mill ships),
- Organ From the hold to the final bagging, all handling was mechanical. They also had something in the bakery which must have been revolutionary at the time - a kneading machine.

Bryan            In the confined space of a ship, mechanisation would have been essential.

Organ            It didn't take the cargo of grain, that was obtained locally. They mention how it had to be cleaned; it was very hard, and full of stones.

Jones            It is easy to see why it was mechanised, but a remarkable achievement in a rush job.

Jarvis            When the government decides it wants something and is prepared to pay for it, wonders can be done.

Organ            They didn't have to build it all - they bought the ship - but design and installation took three months.