

KILCOTT MILL

W. G. MEDLAM ©

Kilcott Mill lies approximately $\frac{1}{2}$ mile east of the village of Hillesley, and is one of many mills that used to operate in South Gloucestershire. Today it is believed to be the only mill in that area still using its historic machinery, driven by water. Another mill, Priston Mill, south of Bath still grinds corn but does not use water as its sole source of power.

The water supply comes from the Kilcott Brook which rises just over a mile upstream out of springs from the Cotswold escarpment. The flow is not what it used to be but is just enough to restore the level of the mill pool after grinding for an hour or two. Experience shows that the flow in the brook is declining and the help of all and sundry is required if extraction is to be closely controlled and the decline in flow arrested.

History of the Mill.

As far back as 680 AD a religious house was founded at Pershore and given lands which included the parish of Hawkesbury and part of that parish later became known as Killcott.

The first record of a mill was the Doomesday Book of 1086 which listed Hawkesbury as having three mills of an annual value of nineteen shillings and two pence.

Enquiries at the Gloucestershire Records Office has yielded a wealth of information about the property. The mill itself was rebuilt in 1655, and many later alterations can clearly be distinguished. In 1677, the present mill house was built as a separate dwelling and remains, except for the installation of sanitation, electricity and water, as it used to be. Every effort has been made to preserve features such as internal window shutters, fan-lights, built-in clothes closets and stone flagged floors.

In the mill, the same policy has been followed, and repairs and restoration have faithfully followed previous patterns and styles.

Production Layout.

1. The Wheel Room.

Water is taken from the millpool, along a short leat into the penstock. The wheel is pitchback, perimeter fed, at approximately sixty degrees to the vertical diameter, into forty-two buckets of a capacity of eleven gallons each.

The tail race enters a tunnel which runs under the millyard, under the house, for about a hundred yards and out the other side to rejoin the overflow stream which comes from the millpool, over the weir, through a tunnel under the garde and along the orchard.

The water wheel is approximately eighteen feet in diameter and when grinding hard breadwheat will turn between four and five revolutions every minute. It is directly keyed by an iron shaft, into the pitwheel, which is in the cog-hole adjacent to the hursting on the ground floor.

The wooden cogs on the vertical pitwheel engage the angled wallower on the vertical shaft which is the power shaft for the whole mill.

2. The Ground Floor.

Sacks of wheat are delivered through the door and by use of the sack hoist described below, lifted to large bins on the bin or top floor.

Immediately above the wallower on the vertical shaft is the great spur-wheel which meshes with a cog-wheel called the stonnut to drive the runner stone. Opinions vary on which wood to use for the wooden cogs in the wheels, some say apple wood for the pit wheel and hornbeam for the spur wheel, but as neither of these woods was available in good mature quantity and quality, cogs at Kilcott Mill were restored in oak during the recent work.

When the stone nut is meshed with the great spur wheel it drives a spindle which passes through a bearing in the bedstone and drives the upper or runner stone.

Two adjustments affect the stones, one lowers or lifts both stones together and the other lifts or lowers only the runner stone. This latter adjustment is one of the adjustments which controls closeness of grinding.

3. The Bin Floor.

Grain in bags comes through the door on the ground floor and each bag is attached by a shackle to the chain of the sack hoist which lifts the bags up through floor hatches to the top floor.

Two cords operate the clutch of the sack hoist, one engages a dog clutch on the bin floor whereby the shaft attached to the crown wheel at the top of the vertical shaft, which passes power up the mill through the wallower on the ground floor, engages with the drum of the chain hoist. The other cord disengages the clutch and both cords can be operated on any floor of the mill.

Each bin has a wooden floor and wheat which is damp or dusty is spread out on the floors to dry. A hand winnower turns a set of fans which blows on the dust, wild oats and other unwanted material out of the heavier wheat or barley which falls into a collecting box for feeding to the stones.

Sluiceways can be operated to ventilate the bin floor and control the dampness of the grain.

4 The Stone Floor.

On this floor there is a pair of stones (100 years ago three pairs) encased in wooden tun lines with zinc. Both stones, comprising the pair, are composition stones of French Burr and it is said that they have been in situ for 100 years, certainly memories confirm that they have been there over 70 years.

The runner stone revolves by being supported by a cast iron rynd which fits into a cast iron mace-head revolved in its turn by the stone spindle which is turned by the stonenuit on the ground floor. The stone spindle runs through bearings in the bedstone made of carefully and accurately machined brass lubricated by tallow.

Sitting on top of the tun is the horse which carries the hopper which feeds grain into the eye of the runner stone, down a funnel called a tin, into the space between the stones. The hopper feeds a shoe and the feed can be stopped by a simple wooden gate from the hopper to the shoe, and the shoe itself can be raised or lowered to control the feed to the stones. To stop the shoe becoming clogged it is tapped by a spindle called the damsel, probably because its operation gives a constant and intrusive chatter to the operation as the spindle nudges a clapper on the shoe. A piece of springy wood, usually a twig about a foot and a half long, called the miller's willow, keeps the shoe in contact with the damsel.

The chatter is a useful help to the miller who will listen to the frequency and loudness of the damsel as an aid to stone speed and good grinding.

The angle of the shoe controls the quantity of grain falling into the stones, and is controlled by a piece of twine called the crook-string which runs over the horse and down through the floor to the ground where the miller stands by the meal spout feeling the meal between finger and thumb as it drops into the sacks. If it runs hot he can immediately raise the runner stone, or raise the shoe by means of the crook-string or close the paddle of the penstock to reduce the supply of water to the water wheel.

An important attachment to the horse is a bell on a spring. Great harm is done to stones if they are allowed to run without grain between them. Three turns of stones grinding on themselves is said to be equal to a weeks grinding.

The bell is held away from a snib on the top of the damsel as it turns, by a cord which is attached to a weight, carefully balanced to the spring bell, which floats on the grain in the hopper. As the grain level sinks, the float falls, pulls on the cord and eventually brings the snib into contact with the bell.

Stones are dressed, or cut into grooves for grinding, in a variety of ways. The task of stone dressing is a long and painstaking work done by a dresser wielding a mill bill. This is a tool which has a long handle and a head into which is fitted a pick or stone chisel.

Kilcott Mill has only lately been restored and is still in process of testing and trials. Today there are far more rules and regulations than there were 70 years ago to produce exactly the same product. Additionally there is a multitude of returns to be made, more bureaucrats to receive with their many questions, again for exactly the same product as 70 years ago.

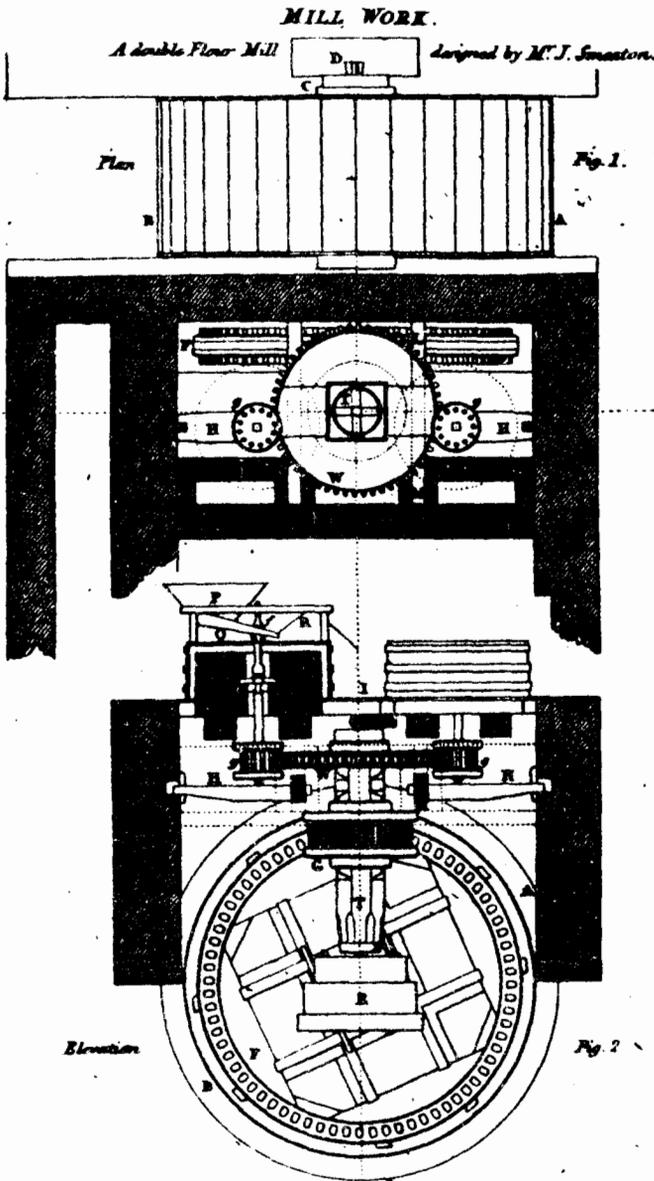
Bureaucrats and regulations apart it is doubtful if a water powered, stone grinding, wholemeal flour producing mill can ever again be a commercial proposition. Such a mill can only be operated as a sideline and it will be a fortuitous fluke if it reaches break even point.

Left alone as a desirable and harmless anachronism, doing its bit to satisfy the immense demand for 100 per cent wholemeal flour, such a mill can perhaps survive into the future. If it is crippled by forms, returns, visits, inspections, regulations and bureaucratic impositions, even the keenest of water millers will lose heart.

GLOSSARY.

- Bedstone... the static stone of a pair above which the runner stone turns.
- Buckets.... the receptacles on the perimeter of a waterwheel for receiving the water. They are various shapes
V L U C etc
- Crookstring the string used to control the angle of the shoe and so control the amount of grain entering the tin.
- Damsel..... (also called a Dandelion) a device for jogging the shoe and so keeping a controlled supply of grain entering the tin.
- Hopper..... the receiver, in inverted pyramid in shape, through which the grain passes to the shoe.
- Horse the cradle for the hopper.
- Leat the water channel from the millpond to the penstock. (Also called a flume).
- Macehead... the block at the top of the stone-driving spindle which drives the rynd in the runner stone.
- Millbill... the implement used for stone dressing, i.e. cutting the grooves for grinding. It consists of a thrift (the handle) into which is fitted a pick, a bit or a fusil (a stone chisel).
- Penstock... a device for controlling the flow of water to the waterwheel.
- Pitchback.. an overshot wheel (i.e. a wheel where the water meets the wheel near its top) which turns so that the water is not carried over the top of the waterwheel but is carried on to the wheel so that it revolves anticlockwise and carries away the water in the same direction as the flow.
- Pitwheel... the first gearwheel on the mill, directly linked into the waterwheel by an iron (sometimes oak) axle.

- Runner Stone ... the stone, of a pair, that turns and grinds the grain against the bed stone.
- Rynd the flat-iron shaped fitting let into the underside of the runner stone which supports it.
- Shoe the chute leading from the hopper to the hole in the centre of the stones.
- Spur wheel the wheel which gives driving force to the stone nut.
- Stonenut the pinions which engage the spur wheel to the stone driving spindle.
- Tailrace the leat which carries away the water after it has driven the wheel (also called a millrace).
- Tin a cylinder of tin which receives grain from the shoe and takes it to the centre of the stones.
- Tun the removable casing round the millstones.



A double Flour Mill designed by Mr J. Smeaton.

For illustration sources see page 51.

Scale of Feet.



Reduced from the Original drawing in the possession of Sir Joseph Banks, B.B. by J. Ferry Jun^r