

# The Landmark Trust

## TANGY MILL History Album



**Researched and written by Clayre Percy 1981  
re-presented 2015**

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## **KEY FACTS**

**Built** c.1820 possibly replacing an earlier mill

**Acquisition by  
Landmark** 1973

**Restoration** 1979-81

**Architects** Possibly David Carr Architects

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Tangy Mill circa 2012

## Summary

The Mill that we see today seems to have been erected in about 1820, but it probably replaces an earlier mill in a similar position. It was built to serve the big arable farms of the region. The L-shaped building is constructed of whinstone rubble laid in coarse lime mortar, and the dressings are of pinkish brown sandstone quarried from Kilkivan. The roof is of slate secured to 12" wide wooden sarking boards by wooden pegs known as 'dolls'.

The Mill was principally used for grinding oats. Because of the wet climate, this grain had to be dried before grinding and this took place in the two storey kiln with its big revolving ventilator, known as a 'granny', on its roof. Here the oats were spread six inches deep on a perforated iron floor. The fire below in the furnace chamber incorporates a central kiln surrounded by a brick vault which provided a void beneath the drying floor for the circulation of the hot air thus providing the heat to dry the grain - the granny ensured a steady draught.

The main block, consisting of three storeys of 'lofts' was where the oats were ground. The machinery was driven by the backshot waterwheel alongside the east gable, which was fed from a small dam at the head of a waterfall just above the Mill, while the main reservoir, Tangy Loch, lies a little further upstream. Two sluices controlled the flow.

The Mill was originally used for grinding oats for both human consumption and cattle feed, but latterly cattle meal alone was produced. Tangy Mill finally ceased operations in 1961, not least because the last miller, Mr Neil McConnachie had the nasty experience of falling through the rusting kiln drying floor into the furnace chamber. Although he emerged unscathed, that was the end of his milling career and the end of milling at Tangy Mill.

## Restoration of Tangy Mill

The Landmark Trust acquired Tangy Mill in 1973 from Mr McConnachie although it was not until the summer of 1979 that restoration work began.

Although the Mill had been disused for so many years, all the machinery was still there, and so, as much as possible, we have tried to leave it as it was, with the accommodation and furniture fitted amongst it all.

The outside of the building is unchanged except for one new window to light the bathroom. The south front door had rotted beyond repair, but the hinges are original. The stone lintel above it had to be replaced, as had several others. Fortunately, the Kilkivan quarry, near Machrihanish, from which the stone for the original quoins and lintels came, was still in use and so the new stone came from there.

Inside the walls are plastered as they were originally. The wooden posts are original, still with the burn marks from where lanterns were hung on them. The floor is pine, like the old one, but new.

To left of the door, as you enter, was a small office with the fire in it. The fire is as it was, except the original lining of lime mortar and cow dung, a traditional method in this area, had to be replaced. The stairs had been put in in 1913, but the hand rail, glazed fire door and panelled enclosure are new, as of course is the partition with the kitchen fittings.

The bedroom on the drying floor of the kiln has a door that had been used as a ramp for wheelbarrows. You can see where they have worn it away in the middle, and it has had to be strengthened. There used to be a board across the door to keep in the grain, and the slots that held it are still there. The chute above the door is where the oats poured in. The perforated cast iron floor is the original that Mr McConnachie fell through into the fire with his barrow of oats. He managed to get out by pushing up the iron panels which were fortunately not fixed.

The 'granny' is a replacement, and the original would have been open at one side, but this would have made the room too cold and so the new one is closed in. The shaft used to be wood but was too noisy and so it was replaced with a steel one.

The windows are as they were with original sliding wood panels. The other bedroom on the middle loft contains the threshing machine. This was moved three feet to make more room for the beds, and it is the only piece of machinery in the Mill that was shifted. By the door there is an old repair where the barrows came in. The bathroom was partitioned out of the rest of the middle loft.

The top loft with its two further beds has been lined with insulation board and some of the rafters needed reinforcement. The window frames are new. The roof was in a bad way and new coping stones were put on the west gable. The slates all had to be re-laid. Finally, in May 1981, the walls were re-harled and painted in limewash as they had been originally.

## An historical description of Tangy Mill

This description of Tangy Mill was provided in *The Ancient and Historic Monuments of Scotland.; Kintyre; Industrial and Engineering Works 1967* and describes the mill as it would have been seen in 1967:

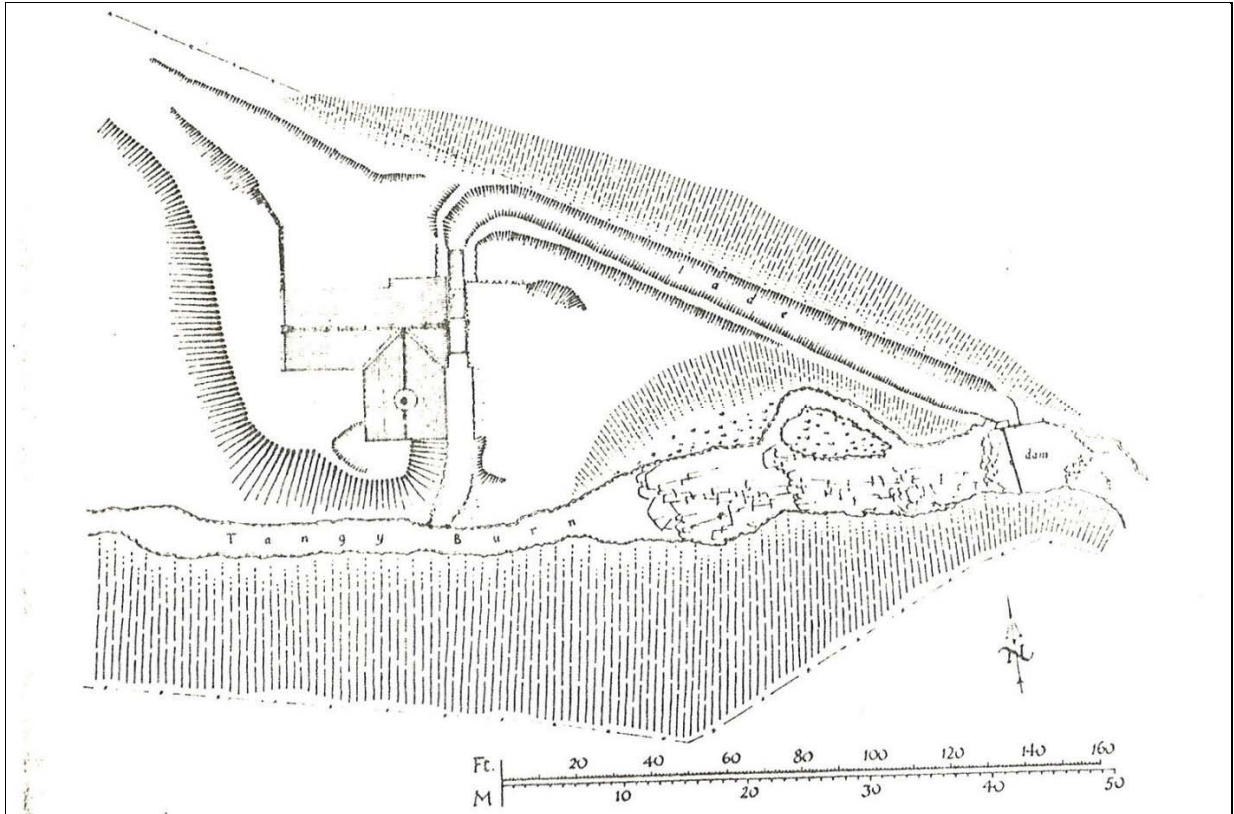
This mill stands on the north bank of Tangy Burn about 3km north west of Kilchenzie. The existing structure seems to have been erected in about the first quarter of the 19th century, but probably replaces an earlier mill in a similar position.

The building is L-shaped on plan and comprises an oblong three storeyed main block together with a square kiln extension of two storeys which rises to the same height as the main structure. The masonry is of whinstone rubble laid out in coarse lime mortar and the dressings are of pinkish brown sandstone probably quarried from Kilkivan. The roof is of slate secured to sarking-boards by wooden pegs; the ridge of the extension carries a conical revolving ventilator.

The immediate source of water supply is a small dam at the head of a waterfall just above the mill while the main reservoir, Tangy Loch, lies about 1.6 km. further upstream. From the dam the water is led to a pitch-back overshot wheel situated alongside the E. gable-wall of the main block, the flow being controlled by two sluices, of which one is incorporated within the dam, while the other is placed midway along the timber flume. The wheel, which is of cast-iron construction with timber buckets, has a diameter of 5.44m and a width of 1.25m.

The main block contains three timber floors known respectively as the bottom, middle and top lofts, and the bank-side position of the mill enables direct external access to be obtained to the two lower floors. The floors are carried on central longitudinal timber beams, of which that in the bottom loft is supported by stone

cross-walls, and the remainder by timber posts and bearing-plates. Access between floors is obtained by means of a loft-ladder rising against the North wall, and there is also a vertical arrangement of hatches for a sack-hoist.



Extracted from **The ancient and historic monuments of Scotland.**  
**Kintyre. Industrial and Engineering Works 1967**

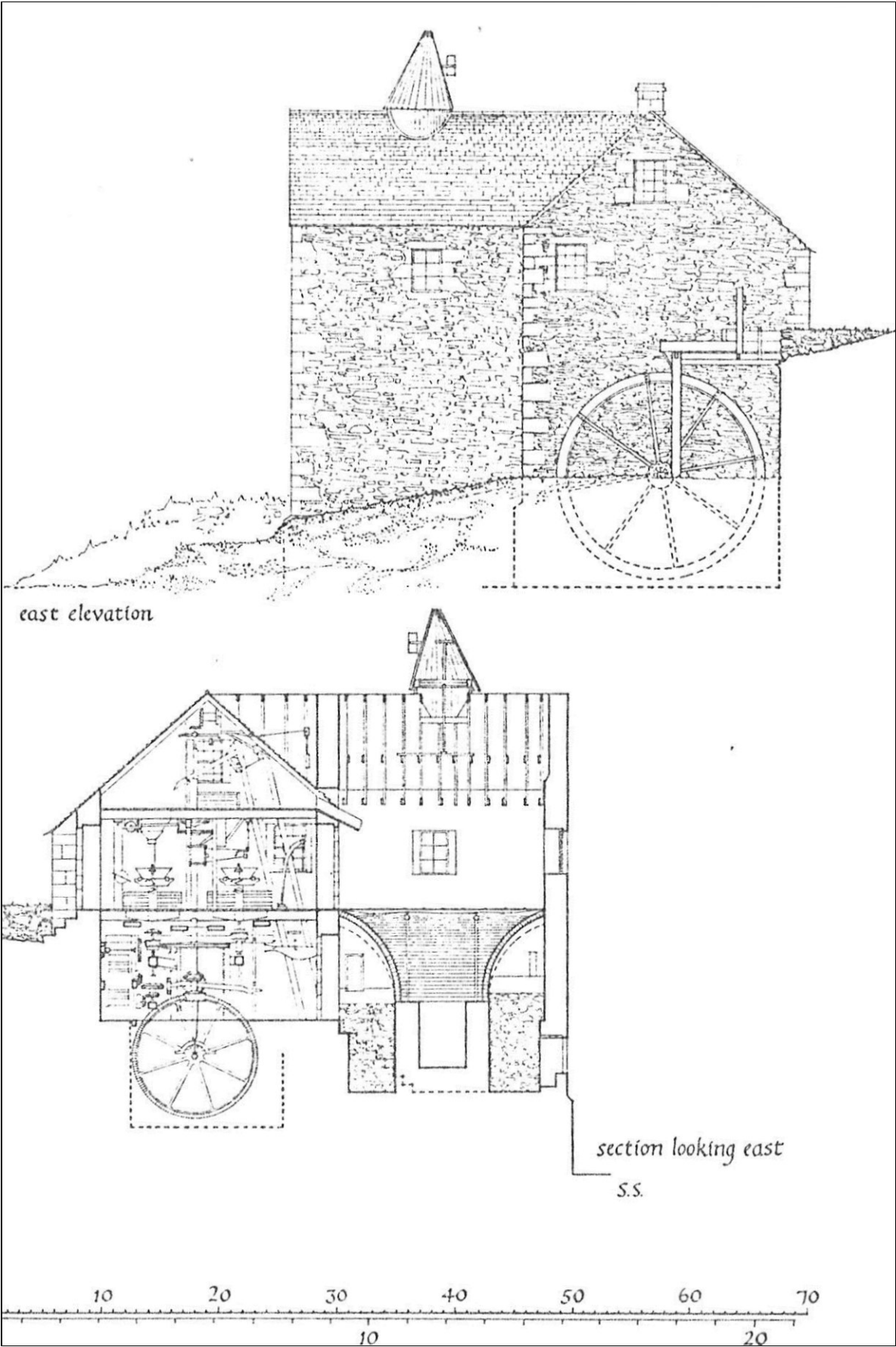


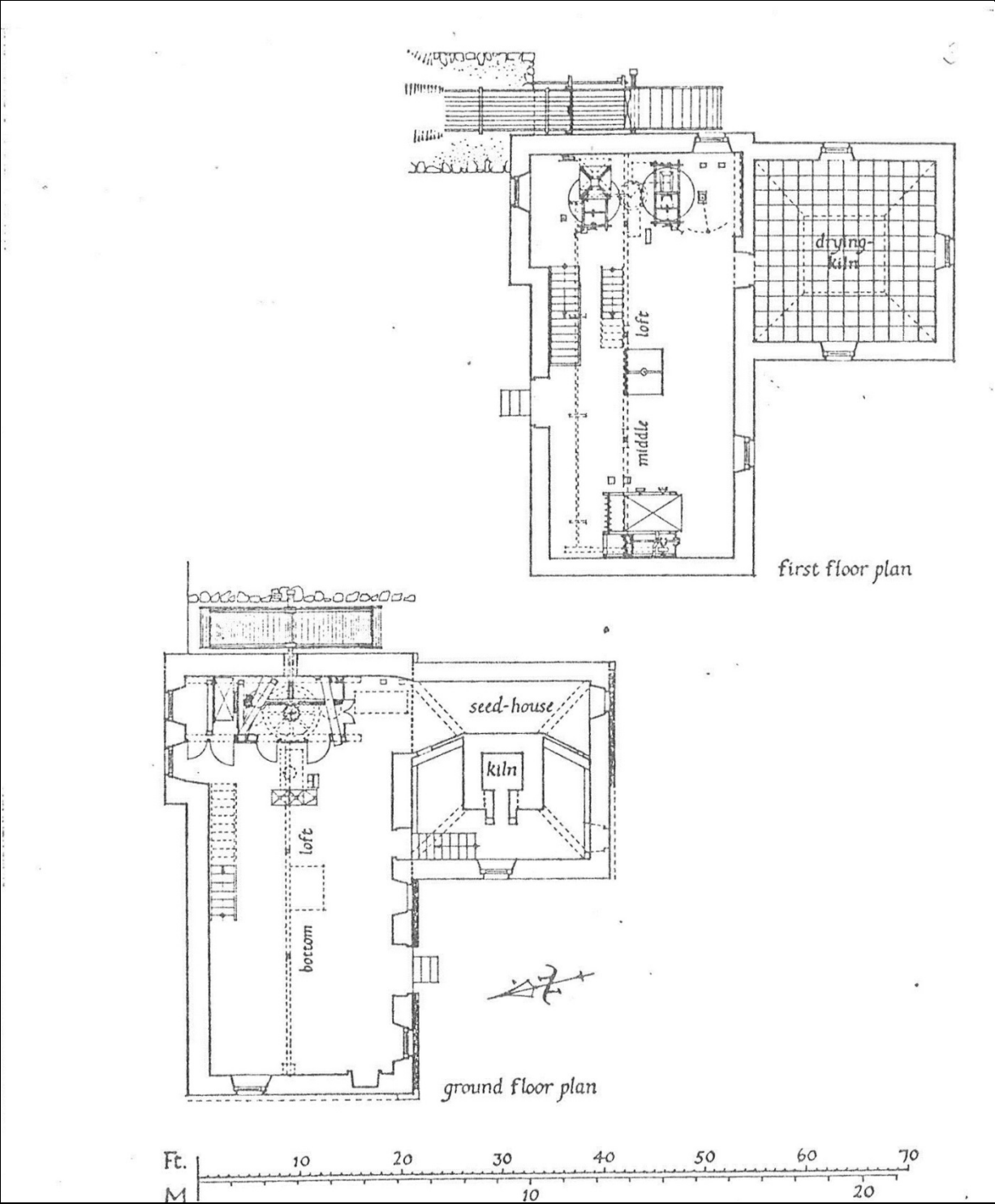
The bottom loft contains the gear-cupboard which is lit by two windows in an adjacent outshot formed in the North wall. A doorway to the South gives access by means of steps to the lower floor of the adjacent kiln. The West end of the main block is left clear for the sack-hoist, but there is a fireplace towards the South end of the West gable wall.

The middle loft serves as the stones-floor and contains two pairs of stones at the East end, where the sides are slightly expanded in order to allow space for manoeuvring the crane and dressing the stones. A door in the south wall opens onto the drying floor of the kiln. The West portion of the loft contains the sack-hoist, and also houses a threshing-machine. The top-loft, or bin-floor is formed wholly within the room space and the East portion contains hoppers serving the stones below. A small shute at the base of the South wall enters the upper part of the drying chamber. Apart from housing the sack-hoist, the remainder of the top loft was originally used for storing sacks of grain prior to drying in the kiln.

The kiln-extension comprises a furnace chamber and a drying-floor. The furnace-chamber incorporates a central kiln surrounded by a brick vault which provides a void beneath the drying floor for the circulation of hot air. The drying floor itself is covered with perforated iron-tiles. The walls of the compartment are plastered and whitewashed and the roof space is left open to enable air to circulate through the ventilator. The East portion of the furnace-chamber is partitioned off and contains an intermediate floor, level with that of the lower loft in the main block, and known as the seed-house; this apartment formerly housed a winnowing machine.

The mill was originally used for grinding oats both for human consumption and for use as cattle meal, but latterly cattle meal alone was produced. Operations ceased in 1961.





Figures extracted from The ancient and historic monuments of Scotland. Kintyre. Industrial and Engineering Works 1967

## Architectural descriptions of the building when it functioned as a mill

The exterior - The mill was 3 storeys high, known as the bottom, middle and top lofts. Its walls were of whinstone rubble bonded and pointed in a coarse lime mortar. There were pinkish brown sandstone dressings weathering to grey, probably quarried locally from Kilkivan. The slate roof was secured with wooden pegs (dolls) on 12" wide sarking.

The mill was built into the slope of the bank so that there was an external entry to the lower and middle lofts. Both entries were preceded by a short flight of steps and the north one adjoins a made-up forecourt or yard approached from an earth ramp. The latter joined the narrow cart-track which leads to the mill from the north and descends round the west gable to the low entrance.

The source of water supply was a small dam at the head of the waterfall 50 yds. upstream on the Tangy burn. From here the lade led at an east gable. The main block measured 44 ft. by 22 ft over walls 2 ft. in thickness and the wing to the south has a projection of 19 ft. 6 ins. and a width of 21 ft. 6 ins. The main block in addition incorporated a shallow outshot at the east end of the north wall covered by a catslide. Although there was a vertical building-joint at the junction between the wing and the main block both parts were likely to be contemporary and were necessarily complementary to the milling process (infra). A bevelled plinth of 6 ins. projection ran along the south and west sides of the main block and along the south side of the wing.

The building was uniformly treated with flush dressings to quoins and openings, wrought with a lightly stugged surface and a 2 in. draft margin on the exposed angle. The latter was finished with a square arris. The windows contained sash or fixed frames, some of the latter incorporating two-leaf shutters in their lower half for ventilation. On the ridge of the wing was a revolving cone-shaped ventilator known as a "granny".

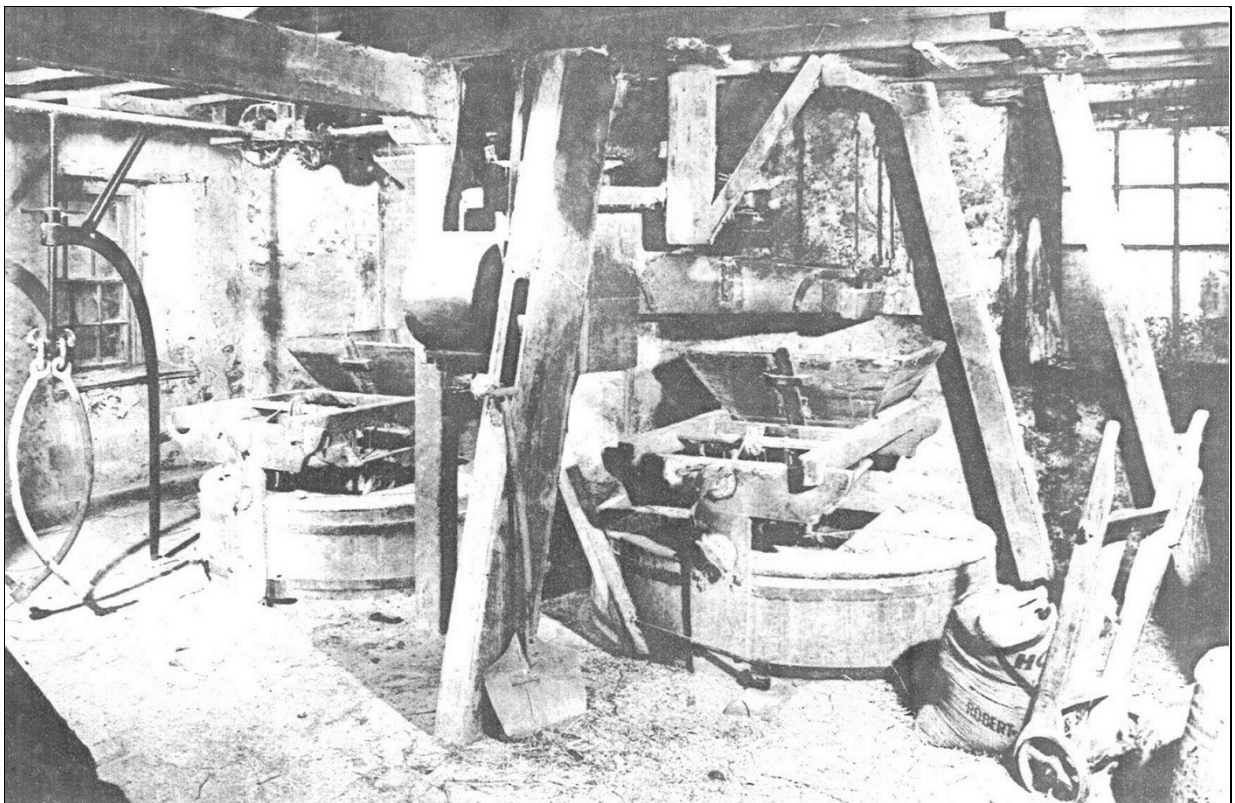


**The mill before restoration**

Interior - The lower loft was carried on a central longitudinal beam supported at intervals on stone cross-walls, which provide a good air-space beneath the floor. The upper floors were also carried near the centre on longitudinal beams, 10 ins. by 5 1/2 ins. in section, which in turn were supported on a row of 5 1/2 ins square timber posts. The heads of the posts had 2 ft. long by 4 in. deep timber bearing-plates moulded at the ends with an ogival profile. The beam beneath the lower loft was supported at its west end on a large stone corbel. Access between floors was provided by a loft-ladder along the north wall and in addition there was a vertical arrangement of hatches for the sack-hoist.

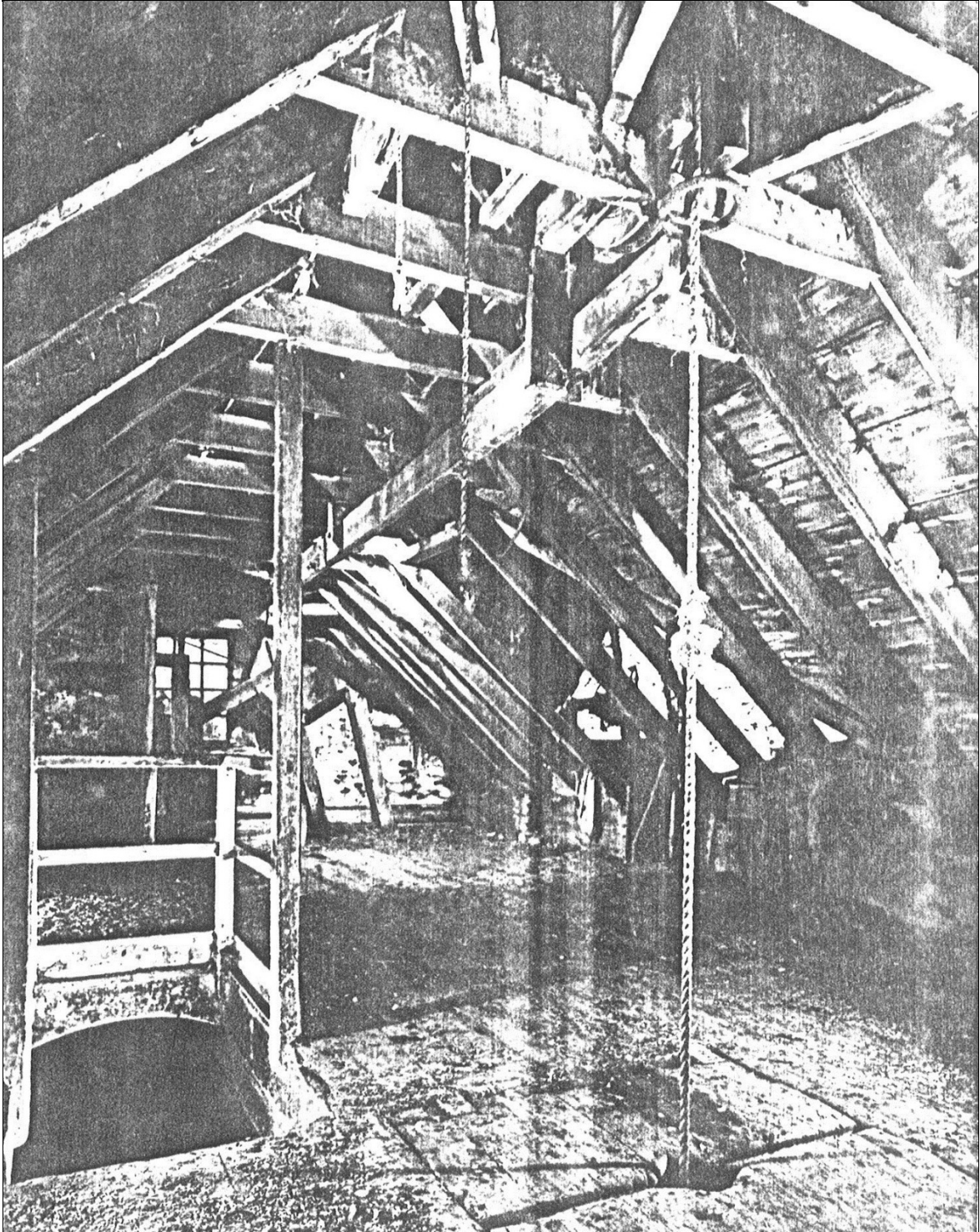
The lower loft, which was entered from a double-leaf door in the south wall, contained the gear cupboard at its east end and gave access to the kiln on the south. The outshot on the opposite side was provided with two windows presumably to throw light on the gear cupboard. The latter was enclosed by a thin lining of pine, constructed of moveable sections which were secured to the frame by wooden snibs. Several doors were hung on 'T' hinges with expanded ends. The west end was left clear for the sack-hoist and in the gable was a fireplace built with 3 1/4" wide stone jambs and an 8" deep lintel.

The middle loft served as the stone-floor. It contained two pairs of stones at the east and where the sides are slightly expanded in order to allow space for manoeuvring the crane and dressing the stone. In the south wall a double-leaf door opened on to the drying floor of the kiln. The west half was kept clear for the sack-hoist and the outside entrance which was also fitted with a double-leaf door. In addition the west end housed a thrashing machine.



**The middle loft, or stones floor, in 1962, when still in use.**

The top-loft or bin floor, which is wholly in the roof space, at its east end contained the hoppers which were located above the stones. A small chute at the base of the south wall enters the upper part of the drying chamber. Apart from the sack-hoist, the rest of the top-loft was originally used for storing the sacks of grain prior to it being 'baked' in the kiln.



The top loft on 1967

The kiln, occupying the south wing, consisted of a furnace chamber and a drying floor above. The floor of the furnace chamber was 6 ft 6 ins below that of the lower loft with which it communicated via a flight of stone steps. In addition the eastern part of the chamber was partitioned off to contain an intermediate floor level with the lower loft. This was known as the 'seed house' and accommodated a 'blower' or winnowing machine. A brick vault - formed by half-ribs springing to the side walls from the central furnace-block - provided a void beneath the drying floor for circulating hot air. The drying floor, which was covered with perforated iron tiles, was entered from the middle loft. In addition grain could be shot down from the top loft. The walls of the compartment were plastered and whitewashed and the roof space was left open for the purpose of circulating the air through the rotating ventilator on the ridge.

### How the mill machinery worked

The lade terminated with a timber flume which directed the water on to the water-wheel just below the crown to produce a back-shot action. Mid-way along the flume there was a second sluice-gate which regulated the flow of water and hence the speed of the wheel. It was operated from within the mill by a small hand-wheel on the fable wall, north of the stones. The water-wheel had a radius of 8 ft. 11 ins. and a width of 4 ft. 1 in. It was constructed of cast iron with a 10 in. wide rim and eight spokes, the latter being of 'T' - section and radiating from an octagonal shaft of 6 1/2 ins, diameter. The wheel was fitted with wooden buckets, made up of a face and sole set within the flange.

The water-wheel drove an 89-spoke iron pit-wheel of 10 ft 6 ins in diameter, and a 2 ft. 2 ins diameter horizontal wheel ('wallower') transmitted the drive to the main shaft. The latter was of wood, 5 1/2 ins. square but tapered to a circular section on the lower two feet. It was pivoted on a 3-leg iron bridge-piece over the spindle of the water-wheel. Above the 'wallower' the shaft rose 4 ft. to the underside of the spur wheel. The edges over this length of shaft were chamfered



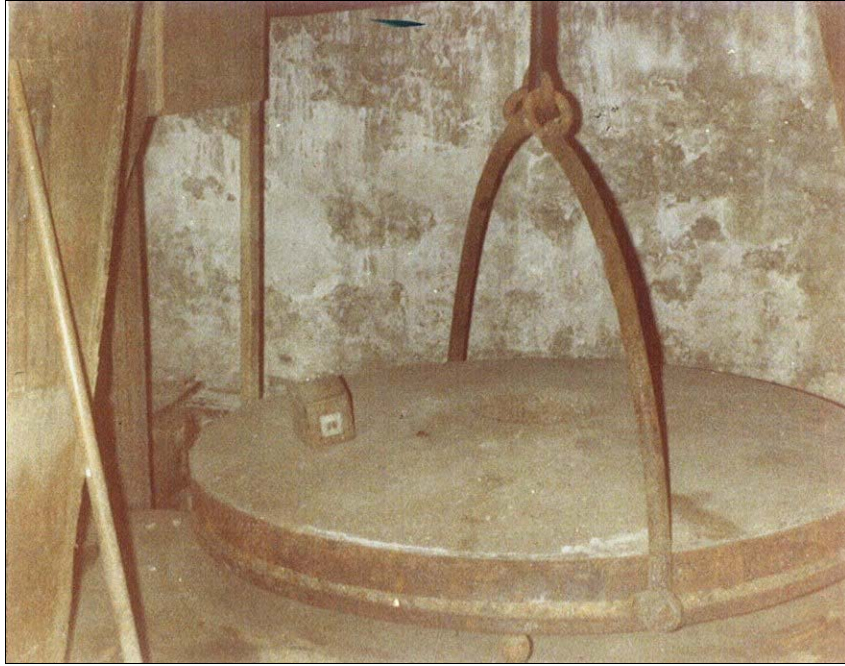
with stopped ends. The 8-spoke iron spur wheel, of 6 ft. diameter, was fitted with wooden teeth - wedged and mortised into the rim - for quiet running. Above the spur wheel the shaft fit into a heavy timber block and continued up as a 3" diameter octagonal iron shaft. A bevelled pinion-wheel, midway between the spur and wallower-wheels, drove the winnowing machine formerly occupying part of the wing. The pinion was engaged by lifting a horizontal lever, held in position by inserting a wedge at its extremity.

A secondary driving shaft, north of the spur wheel, drove a 'husking-machine' in the small outshot to the north. The runner stones each turned on a vertical spindle connected to a stone nut (of 17 ins. diameter) which meshed with the spur wheel. The nuts were raised and lowered by a vertical screw which brought the nuts down on to a tapered iron block or seating when in the engaged position. The nut-spindles rested from the stone-floor could be raised or lowered in order to make a fine adjustment to the space between the bed and runner stones.

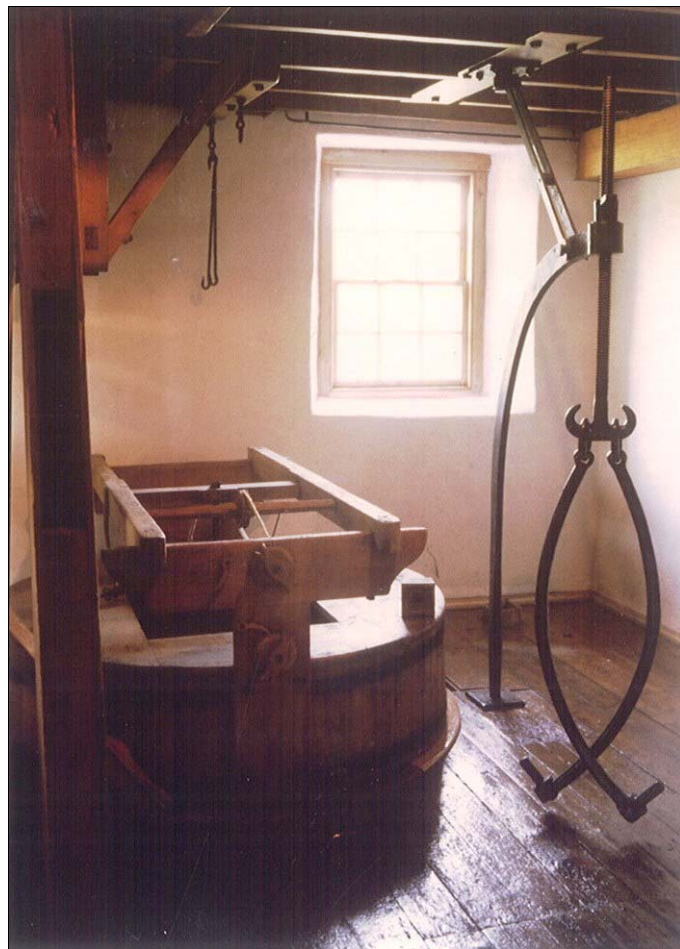
The south pair of stones had a diameter of 5 ft. 3 ins. and the north pair, 4 ft. 3 ins. The former was a softer stone - probably a Peak stone - and was used for the initial grinding of the grain and for cattle meal. The north stone was a French burr stone and was used for the second and finer grinding. It bears the maker's name:

"JOHN REID MANUFACTURER OF FRENCH BURR MILLSTONES  
ANDERSTON GLASGOW ESTABLISHED 1840."

Each stone was enclosed in a casing of 'tun' of timber in order to retain the meal when it emerged at the outer edge of the stones. A scraper of 'tag' on the perimeter of the runner stone swept the grain through a hole in the floor to the meal spout below where it was passed for further processing or into sacks. Above each pair of stones was a wooden frame or 'horse' which carried a wooden hopper.



**The millstone lift in action. The weight balanced it so that the stone was perfectly horizontal.**



The 'horse' consisted of two 'T' pieces and cross-bars for holding the hopper. The ends of the 'T' piece were moulded and carefully dressed, as also was most of the woodwork in the mill. Beneath the mouth of the hopper was an inclined tray which transferred the grain to the stones. It was kept in perpetual motion by a three-armed iron block (known as a 'tickler' in local dialect) fixed to the drive spindle which would strike against a hardwood block or 'rap' on the side of the tray. The tray was kept in tension by means of a wooden leaf-spring the free end of which was tied to the tray. The tray could also be elevated by strings to a pair of wooden ratchet wheels fixed on the face of the 'T' piece. A curved cast-iron crane could be set in sockets to the north and south of the stones for the purpose of lifting them out of position for dressing.

At the head of the vertical shaft on this floor is a 2 ft. 5 ins. diameter bevelled pinion which worked a riddle over the stone and engaged with a horizontal shaft to work the threshing mill situated at the west end of the loft. It also worked other auxiliary machinery including a small fanner for blowing off the husk and a belt-elevator.

The hoist mechanism in the top-loft was also driven by a bevelled pinion on the main shaft. The pinion engaged with a drum-hoist which was knocked in or out of gear by a combination of ropes and levers. The sack hoist in the centre of the floor incorporated an automatic cut-out, consisting of a long horizontal bar pivoted at the centre and fitted at the end over the hoist with an iron ring. When the sack would strike the ring it pushed up the bar that lowers the opposite end which freed a second lever to throw the drum-hoist out of gear. The match-openings were fitted with double-flaps which closed automatically when the sack has passed through.

In the kiln, the base of the furnace-block was built of stone but the interior of the fuel box was lined with brick and incorporated four horizontal flues behind for transmitting the draught. The draught was admitted by an external opening

which controlled the draught in conjunction with the revolving cowl above the drying floor. The cowl or 'granny' was also designed to prevent a down-draught or 'blow-down'.

The drying floor was supported on a cast iron framework built within the void above the vault. It consisted of four circular stanchions resting on the corners of the furnace-block, which carried main cross-beams running from each to west. These in turn carried filler joists on which 18 ins. sq. perforated iron tiles were laid to form the floor. Both tiles and filler joists were removable.

The stanchions were circular in section and tapered to 2 in. diameter at the head. Both main joists and filler joists were of 'T' section and were bowed on the underside in accordance with early 19th century beam construction.

The main joists had a 2 1/2 ins. flange and the web tapered from 4 ins. at the centre to 3 ins at the ends. The latter were cast with square knuckles which were gripped round the heads of the stanchions by means of an iron collar. The filler-joists were of lighter section, having a 2 in. flange and a 3 1/2 ins. web tapering to 2 ins. and had notched ends to fit the main joists.

### Historical activity

When the Landmark Trust acquired the mill, the last miller to own the mill, Mr. Neil McConnachie, passed on the following information. The mill was in working operation until the 1960's when latterly it was used for grinding cattle meal. It was in full operation during the second world war when in 1939 the buckets of the water-wheel were renewed.

Originally the mill was used for grinding oats, either for human consumption or for cattle meal ('hash'). The former was carefully refined, passing through both sets of stones and the grading sieves- sometimes several times. The cattle meal

was a coarser grain and was usually restricted to one crushing on the larger 'Peak' stones. Prior to grinding, the oats were spread on the drying floor about 5 ins to 6 ins. deep. They were turned twice in 4 1/2 hours, or once in 2 hours in the case of cattle meal. The drying process was an essential preliminary to grinding the grain owing to the damp atmosphere prevailing in Kintyre.

The stones which each weigh about 1/2 ton were lifted out of position and dressed once a year. They were kept running at a steady speed so that the sieves and trays operated smoothly. When the stones 'ran dry' (i.e. ceased to be fed with grain) the miller knew immediately by the sound and quicker motion of the machinery. It was important to stop the machinery at once under such conditions in case the stones caused sparks by their adjacent surfaces coming into contact.

The mill was at its busiest in the Autumn and Winter and began to slacken about June.



**Tangy Mill in the 1960'**

## The renovation of Tangy Mill

The Landmark Trust acquired Tangy Mill in 1973, from Mr McConnachie, the last miller to use the mill. Work on its renovation began in the summer of 1979.

Already in 1967 the investigator who did the survey for the Ancient and Historic Monuments of Scotland noted that it had begun to deteriorate and a great deal had to be done to restore it to its former self.



**Tangy Mill at the start of renovation**

The outside of the building was left unchanged, except for one window, for the bathroom which is new. The south front door had rotted beyond repair and is new, but the hinges are original. The stone lintel above it had to be replaced, as had several other lintels. Fortunately, Kilkivan quarry, near Machrihanish, from which the stone for the original quoins and lintels came, is still in use and the new stone came from there.



**The north side in 1979**



**The north side in 1980**

On the north side a drainage trench was dug along the front and the steps were temporarily removed. A vertical damp-proof course was fixed internally and, externally, the bottom of the wall was painted with bitumen.



**The trench at the front and external damp proofing**



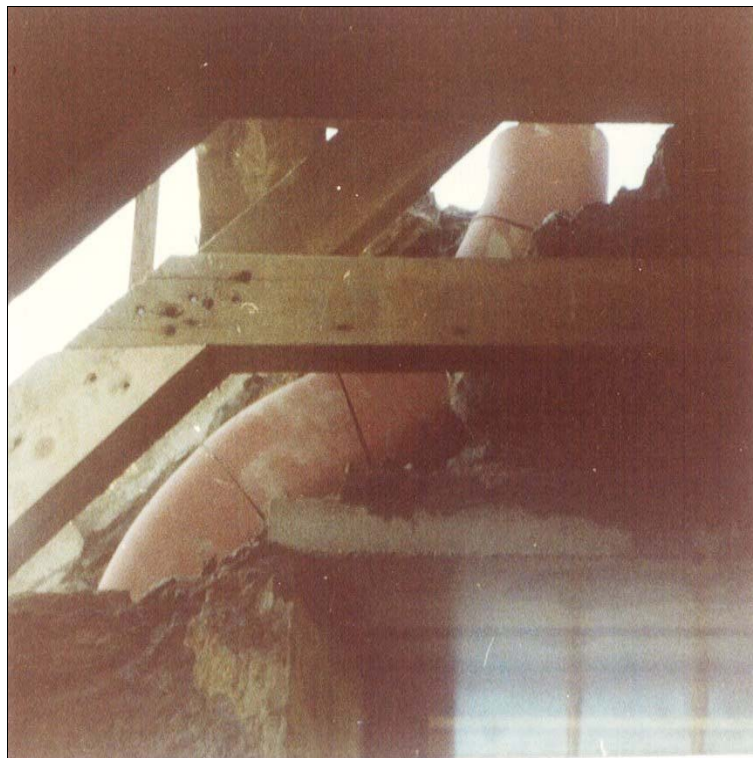


The sitting room has been left as much as possible as it was. The walls were plastered as they are now. The wooden posts are original, burn marks can still be seen where lanterns were hung on them. In front of the outside door there are dents on the central beam, made by a big wheel brought in by Mr. McConnachie. The stone corbel on the left had to be renewed. The floor is pine, like the old one, but new.

To the left of the front door, as you enter, was a small office with the fire in it. The partition extended to the central beam. The fire is as it was except that the chimney had to be relined. The original chimney was lined with lime mortar and cow dung, which is traditional in the area.



**The chimney being rebuilt**



**The chimney liner in position**

The stairs were put in in 1913. The hand rail, the glazed fire door and panelled enclosure are, of course, new, as is the partition with the kitchen fitments.

The first bedroom used to be the kiln room. The door into this room had been used as a ramp for the wheelbarrows. You can see where they have worn it away in the middle of the bottom, and it has had to be strengthened. There used to be a board across the door to keep in the grain, and the slots that held it are still there. The shoot above the door is where the oats poured in. The perforated, cast iron floor is original but used to be over the whole floor. Some of the panels have rusted through. Indeed, the final reason for Mr McConnachie giving up the mill was because one day as he wheeled a barrow of oats onto the floor, it gave way and he and the barrow fell down onto the fire below. He managed to get out by pushing up the iron panels which were fortunately not fixed, but he had a narrow escape.



**The thresher room became bedroom number 2. The machine was moved 3' to the left to make more room in the bedroom. It is the only piece of machinery in the mill that has been shifted.**



**The windows are generally as they were, some with original sliding wood panels. The bathroom had the only new window in the mill. It was partitioned out of the middle loft.**



**The new granny being fitted**

The rafters are original, but the pine lining is new. The rotating ventilator, or "Granny", had to be renewed. The shaft used to be wood but it was too noisy, so was replaced with a steel one from a boat. The old "Granny" was open at one side, but this would make the room too cold and the new one is closed in.



**Finally in May 1981, the mill was harled**



**In 1981, after harling. The north door is original.**