

Lyvennet Mill and its Tail Race Tunnel

Lyvennet Mill (NY 611231) lies c 7 km north-west of Appleby, and 1.2 km north-east of Morland, in which parish it lies, on the west bank of the small River Lyvennet, which flows into the Eden 3 km to the north. The mill, the greater part of which was demolished during the 20th century, stands alongside a minor road from Morland to Bolton and Appleby.

The two surviving buildings of the mill complex stand 100-150 m from the meandering course of the Lyvennet, with the road threading its way between them and the steep wooded side of the flat-bottomed valley to Lyvennet Bridge 120 m to the north-east. The valley side has outcrops of red sandstone, which opposite the mill have been cut back to accommodate further buildings. Ordnance Survey maps show an open head race to the mill (later simply labelled 'drain') running alongside the road, and served by a weir 100 m to the south; this has been infilled relatively recently; none of the maps show any tail race.

Historical Notes

The Mill was formerly known as 'Morland Walk Mill'¹; the earliest reference traced is in 1714². The 1799 enclosure map³ shows the building, probably in a stylised form, as a simple rectangle with the text 'Christopher Temple's Walkmill Field' alongside. The 1st edition Ordnance Survey 6":1 mile map (1863) shows the mill as 'Walk Mill, corn and sawmill' and the 1898 25":1 mile map 'Lyvennet Mill'. Successive editions of Kelly's Directory provide some information as regards the millers; in 1858 a John Blacklin ran the 'Walk Mill' which was then a corn and saw mill, also manufacturing railway keys and trenails. In 1894, 1906 and 1910 Gilbert Hayhurst was listed as farmer and miller, then in 1914 Mrs Sarah Hayhurst, presumably his widow; in 1925 and 1938 Moses Hayhurst was miller. Moses was one of a number of brothers⁴, all with Biblical names, several of whom were killed in World War I. He continued until the 1940s, and afterwards the mill was taken over by his son Stephen, who remained as miller until the Mill was bought by the Crossrigg Estate in the 1960s. It was closed, and, together with the adjacent Mill House on the north side of the road, soon demolished. The surviving structures were subsequently used for agricultural storage by the Estate but allowed to fall into poor condition.

Two of the sons of Stephen Hayhurst still live in the area. It is reported that the miller's family traditionally carved their names and dates on the sandstone rock face adjacent to the road, close to the bridge east of the Mill, but rampant ivy growth has obscured these..

The Present Buildings

Two structures remain from the complex of buildings around the Mill, both orientated roughly north-south, a two-storeyed block and an L-plan single-storeyed outbuilding range to the east.

The two-storeyed block is a complex building with fabric of a variety of different periods. The oldest section appears to be the central part of the east wall, in which former angle quoins indicate a building that has been both extending to the north and south and also heightened. There are various blocked openings, both nothing to give a clear indication of date; it may well be of the 18th-century. The north end of the building has a straight joint in its lower part, a metre or so from the west end, which may mark the end of the older fabric, the west side of the structure seems to have been rebuilt at some time between 1863 (when the OS map shows it attached to the main mill building) and 1898 (when it is shown as a separate structure, as at present); the gable is clearly secondary as well, being of squared and more elongate blocks than the roughly-coursed walling below. Towards the centre of the wall at ground floor level is a low opening, its lintel formed of three big blocks, now blocked⁵. A first-floor

¹Walk (or Waulk) Mill - a mill used for beating and cleaning cloth, using fuller's earth (also sometimes Pecking Mill or Tuck/Tucking Mill). Often later converted into corn mills.

²Cumbria Sites and Monuments Record (SMR no 15530)

³Westmorland archive, County Hall, Kendal, ref WQR/I/68

⁴Much of the subsequent information regarding the mill and its history is from Mr Addison, of Woodhead, who has known the site since his childhood.

⁵This is the sort of feature that one might find in the end wall of the wheel-house of a mill; given its proximity to the tail race within, the possibility that this building may at one stage have housed a subsidiary wheel (or turbine?)

doorway at the west end of the wall has its doorframe set skew to the wall-face- this is reported to have opened onto a bridge to the main building.

The west side of the building is much plainer than the east elevation, and is, as already mentioned, probably all of late 19th century date. There is a tall cart entrance, its timber lintel just below the eaves, to the south of centre, which is now blocked. The dressed blocks of the north jamb of this are identical to those of the north-west angle of the building, whilst those of the south jamb like the quoins of the south end, implying that the southern extension took place after the initial remodelling that separated the building from the main mill⁶. The south end has another full-height cart entrance, its upper part boarded over, the lower with large double doors.

Internally the building has little of interest; it is divided, to the south of centre, by a full-height cross wall, perhaps contemporary with the latest remodelling. The section of the building to the north of this wall has an upper floor, reached by a wooden stair set against the cross wall. Nothing remains of either of the end walls of the earliest structure, indicated by the quoining on the east wall. The tall cart entrance in the west wall is blocked internally in grey brick; subsequent to this blocking a floor has been inserted and then removed (the stub ends of its beams remain); an animal feeding trough, with fodder racks above, is set against the north wall, blocking the doorway at its east end which formerly opened into the northern part of the building. Further evidence of extensive alteration at a relatively recent date; a yellow brick partition wall in the ground floor of the northern part is also of no great age.

Whilst the present buildings are of some minor interest, the structures demolished in the 1960s were clearly of greater historical and architectural value. The old painting here reproduced her (which was made from an old photograph) shows the main mill building as a three-storeyed structure with stone-mullioned windows, and what is clearly a corn-drying kiln at its north end. The extant building is visible to the right, apparently with a steeper stone slate roof. To the left is the Mill House, also of 18th-century appearance, cut into the valley side so that the native sandstone formed its rear wall⁷. Although the outline plan of the Mill changes considerably between the 1863 and 1898 Ordnance Survey maps, it is clear that the original building was retained. Simple outline plans such as this do not distinguish between the principal structures and accretions such as timber outbuildings, such as those shown in the painting, formed from old railway wagons.

The Tail Race Tunnel

The 1863 and 1898 maps both show a head race to the Mill, as an open channel running alongside the road, but neither shows any tail race. The recent collapse of part of the floor of the principal surviving building exposed a stone-built tunnel with its floor c 4 m below ground level. This was explored, photographed and surveyed on September 13th 2005 by the writer and Ernie Shield.

The tunnel was exposed by the collapse of a block, around 1 m square, of the relatively recent concrete floor, immediately within the threshold of the doorway in the north wall. Beneath this was a sizeable cavity, its cobble/gravel fill having subsided into the tunnel below. Access to the tunnel was possible by carefully sliding down beneath the broken end of its arching, trying to ignore a dangling sandstone slab from an older floor directly above. There was no visible evidence of the upstream continuation of the tunnel towards the now-demolished principal building of the Mill. The downstream tunnel however appears to be in relatively sound structural condition. It is stone-walled with a semicircular arched top; initially the tunnel is c 2 m high (although the slumped fill reduces the height of the first few metres) and 1.2 m wide, but after 14.6 m⁸ the height steps down to 1.2m, then after 34m the roof steps up again to another 2 m high section; solid sandstone now appears in the side walls of the tunnel, up to a height of 1.2 m. After 41m there is a manhole⁹ above, and a road drain entering in the l. side 1.5 m

cannot be ruled out.

⁶Although - in as much as can be judged from the small scale of the map - the building does not seem to have been lengthened since 1863. Perhaps its south end was rebuilt.

⁷This cut face still survives alongside the road, with sockets for floor beams and a recess used as a cupboard.

⁸All subsequent distances are quoted from the present access point to the tunnel.

⁹This manhole is reported to have been in the end of the garden attached to the mill, but was covered over some

above the floor. After 52m the roof steps down a second time to another lower section, walled and arched again; and here the tunnel, which has previously run virtually straight, curved round to the left. After 70 m the arching ends and the remainder of the tunnel is cut in solid sandstone; although slightly sinuous, it runs on a fairly consistent bearing a few degrees to the west of true north. The passage, floored by mud (sticky in parts) maintains a consistent width of c 1.2 m, but the cross section and height vary and there are occasional alcoves or shelves in the side walls. Stooped walking is possible for much of the length, although in one or two sections one is forced onto hands and knees. After 256m there is a large recess on the right, coinciding with a temporary change in alignment through 10 degrees or so, perhaps suggesting that this is the meeting point of tunnels dug from opposite directions. After 300 m there is an unusually wide (1.8m) section with a shelf along the left (west) wall, and at 329m there is a junction where a side passage enters at right angles from the right (east), sloping uphill for 18.5 m to emerge on the river bank. The main tunnel continues a further 28m to a taller cavity (2.3 m high) which extends back c 3 m on either side, possibly the result of a natural fissure or fault; 7.5 m beyond this the original exit of the tunnel is virtually blocked by earth, although daylight enters, and egress could be forced with a little digging. The total length of tunnel surveyed (including the branch) was 383.24 m. Survey was carried out using a handheld Suunto compass and clinometer, and a Leica distometer for the measurements. For the majority of the tunnel the angle of descent was too low to properly measure.

The side tunnel exits from a low rock face in woodland a few yards beyond the gate at the north end of the field to the north-west of Lyvennet Bridge; access to the original outlet of the main tunnel entails wading in the river (shallow, and flowing on a solid sandstone bed) round the base of a cliff. The blockage here is due to earth slipping down from above; it would appear that the outlet could be cleared out without great difficulty.

All the rock-cut sections of the tunnel appear to be in remarkably sound condition; the stone-arched sections appear to be generally in good repair, without significant distortion and more than the odd loose stone. The tunnel is also well ventilated; with the door to the mill building open, a through draught was set up sufficient to visible move vegetation around the downstream exit.

Discussion

The tunnel clearly formed the tail race to the Mill. A great deal of effort clearly went into its construction; the only reason for this can be to have gained a little extra fall for the race, thus allowing a larger wheel to be used in the Mill. There is a local tradition that it was cut single-handed by a Canadian, perhaps in the 19th century; the fact that no surface tail race is shown on the 1863 Ordnance Survey 6":1 mile map suggests that it was already in use then.

Mr Addison recounts a secondary use of the tunnel; he recalls that when young he used to go through the tunnel to collect fish stranded when the sluice that fed it was turned off.

Acknowledgements

I should like to thank Mr Addison, of Woodhead, for providing valuable information and a copy of the painting of the old mill, and Ernie Shield for helping with the exploration and survey.

Peter F Ryder
September 2005