

ART. XIII. – *Civil Engineering, c. 1250: the St. Bees Mill Leat.*

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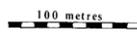
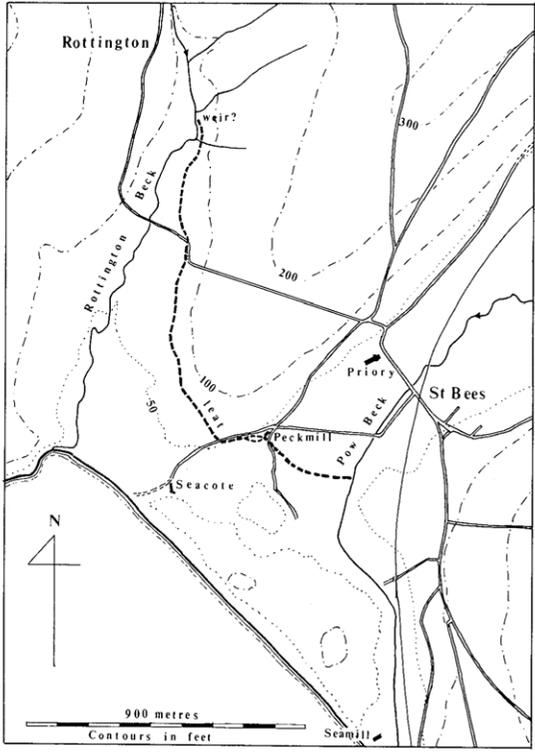
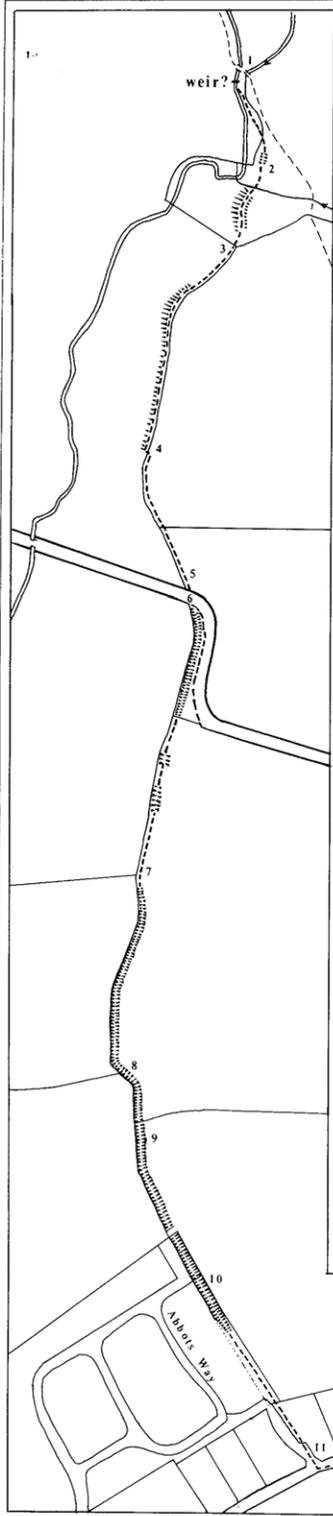
THE management of water was one of the more highly developed parts of medieval technology. Kings straightened and canalised rivers, as at Rhuddlan, where two miles of the Clwyd were made navigable by a team of professional *fossatores* – at times a thousand strong – between 1277 and 1280.¹ Castle-owners made moats and lakes, as at Kenilworth, where the level of the mere was raised in the thirteenth century to surround the castle with water, serving the purposes of defence, fish supply, water power and ornament.² Monks dammed and diverted streams for mills, fishponds, sanitation, drinking water and the transport of stone. The Cistercians of Rievaulx caused two canals to be constructed in the twelfth century to bring stone to their walls.³ The recent excavation at Norton priory near Runcorn, and the survey at Bordesley abbey in Worcestershire, have disclosed complex water systems.⁴ Another branch of the art was the making of water pipelines. Systems have been studied at Canterbury, Lichfield, Worcester, Pershore and most notably at Waltham Abbey, where the pipeline crossed under the river Lea.⁵

One of the most common types of earthwork was the mill leat, usually tapping the water of a small river at a weir, leading it along the side of the valley until sufficient height had been gained to drive the mill, and discharging the water back into the same river. When nearly every parish depended upon locally-grown cereals, a corn mill was not only a useful piece of equipment, but a source of profit to the lord. Its importance is illustrated at the end of the twelfth century by an incident at Bury St. Edmunds reported by Jocelin of Brakelond. Herbert the Dean set up a windmill within the liberty of Bury, competing with the abbey's water mill. Abbot Samson vowed angrily "by God's face, I will never eat bread till that building be thrown down".⁶ Domesday Book records many mills in the northern counties, although it has no relevant entries for Cumberland, Westmorland or Lancashire: at least 92 serving 1,830 places in Yorkshire, 81 for 297 places in Nottinghamshire, 51 for 335 places in Derbyshire, and 18 for 264 places in Cheshire. H. C. Darby comments: "we can only suppose that we are told of but a fraction of the total number of each".⁷

The Benedictine priory of St. Bees could therefore be expected to require a mill for its small community and for the villagers on its lands. The priory lies in the valley of the Pow Beck, a sluggish stream with a fall of about 13 metres in the last four kilometres of its course. In the next valley, however, Rottington Beck falls 65 metres in 2.5 kilometres. The priory was founded between 1120 and 1135. A mill is first mentioned in 1211, but we do not know where it was.⁸ It would have been located conveniently at the mouth of Rottington Beck, but there is no evidence that a mill has ever stood there. It may have been located on the Pow Beck, and proved unsatisfactory. Around 1250, however, the monks solved their problems in a logical and enterprising manner. To a mill at Peckmill (National Grid reference NX 9655 1188), conveniently situated 320 metres from the priory, they brought the waters of Rottington Beck (see map on p. 124).

In order to tap the Rottington Beck, it was necessary to lead water round the ridge

ST BEES MILL LEAT



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between the two valleys for 1300 metres. In a far from exhaustive search of the literature of mills, no instance has yet been found of a mill leat of proven medieval date which transferred water from one valley to another.⁹ This is not to claim that the St. Bees leat was unique. Students of mills have until recently been more concerned with the buildings and the machinery than with the watercourses serving the mill. There have been few excavations of medieval mills, compared with those of other industrial sites such as kilns.¹⁰ I hope this article will catch the interest of someone who will undertake further comparative studies.

Documentary history

The evidence for the origin of the Peckmill leat is a charter of Benedict of Rottington in the cartulary of St. Bees priory, described in the medieval list of contents as “concerning the leading of the mill water down to *Peckmyln*”.¹¹ The text of the charter, translated and somewhat abbreviated, is as follows:

Benedict of Rottington sends eternal greeting in the Lord to all faithful Christian people . . . You should know that I have given . . . to God and to St. Mary and St. Bega and to the prior and monks there serving God all my water of Rottington, to hold for ever: i.e. that water which is the boundary between the land of the said monks and my land of Rottington. They shall have freedom to take and lead the water wherever they wish, and to make a dam on my land where it is most expedient for them to divert the said water and lead it to their mill, without any hindrance from me or my heirs for ever.

The editor, James Wilson, dated this charter between 1240 and 1265.¹²

By 1500, the priory had two mills. One was a fulling mill, possibly represented by the Sea Mill at the mouth of the Pow Beck. There was another “mill for corn below the site of the cell” – evidently Peckmill. The rental of 1500 records that the latter mill used to be let to the inhabitants of St. Bees at the rent of £4 a year, but was then in the hands of the prior for the use of himself and the brethren.¹³ The accounts which survive for some of the years between 1512 and 1530 show that the mill remained in the prior’s hands until after 1519/20. By 1523/4 the practice of letting it at a fixed rent was resumed. The rent was £4 in 1523/4 and 1524/5. In 1529/30, it was down to £3 16s. 8d.¹⁴ In the royal survey of 1535 the mill was valued at 40s., but it was not mentioned in the survey taken at the time of the dissolution of the priory.¹⁵ After the priory had been dissolved in 1539, the lands were mostly granted to Thomas Leigh and then to Sir Thomas Chaloner, who let the mill to William Latus in 1561.¹⁶ The tenants of the mill (and ‘kill’ or kiln) can be traced subsequently in the rentals of the Lowther family, eventual successors to the lands.¹⁷ In 1717 the manorial court at Sandwith found the miller or owner of the Peck Mill liable “to cast or cleanse the Dam or Race from the trough to a piece of earth hedge above the head of the Damm . . . seven feet wide at least”. The court also ordered “a sufficient and convenient stile to be made at the damm-head”.¹⁸ Both mill buildings and leat are shown on a plan drawn for Lord Lonsdale around 1804.¹⁹ The mill is last mentioned in the Lowther rentals in 1841. On the Ordnance Survey map of 1863, the leat is shown as “old mill race”. In 1873, and probably later, it was still being used to flood the field west of the mill for skating. Oral tradition has

it that this was a chancy business: sometimes the leat froze so that no water flowed; and sometimes the water flowed but did not freeze.²⁰

Surviving remains

The mill is now a private house. There is nothing but the thickness of the walls to suggest the age of the present building.

In the present century, the movement of ploughland downhill, the meandering of Rottington Beck, the widening of the Beach Road, and the tipping of rubbish, have combined to obliterate much of the leat's course. To record what remained, the South-Western Regional Group of the Society undertook a survey in 1983-4 which is the basis of the accompanying table and map. In the following description, numbers in brackets refer to points on the map.

The weir at the head of the leat has been totally destroyed. Neither the Lonsdale plan nor the Ordnance Survey map shows exactly where it was. It probably lay just south of the footbridge at NX 9632 1292, where there is a scatter of large boulders in the stream-bed (1). The leat then followed the beck at a higher level: a trace of its ditch survives at (2). Just to the south, a tributary cuts a small valley into the hillside. There is a curving embankment across the valley. Levelling suggest that the leat must have run in a channel along the top, with an aqueduct to carry it over the tributary. For most of its remaining course the leat followed a hedge-bank, probably formed from the upcast of the ditch. At first it lay on the west or downhill side, where a raised platform survives. The Ordnance map shows that it crossed the hedge-bank at (4), although the Lonsdale plan puts the crossing nearer the road. The St. Bees-Rottington road kinks to follow the course of the leat for 100 metres. Evidently the leat influenced the alignment of the road. In the next 500 metres there are several stretches where the leat is well preserved as a ditch on the east side of the bank. The watershed is crossed at (10) behind the houses in modern Abbots Way. Here the cutting is three metres deep on the uphill side. The widening of the Beach Road has obliterated the mill dam (12) which is clearly shown in the Lonsdale survey, but it may be represented by the rounded bank of earth projecting into the recreation ground immediately to the west of Peckmill. We know neither the level of the dam nor the exact position of the mill wheel, but the head of water must have been at least four metres, sufficient to drive an overshot wheel. The wheel was probably on the south-west gable wall of the mill. A small window in the wall may originally have taken the shaft into the building, or, more probably, a lever controlling the flow of water to the wheel. The tail water flowed south-eastwards to the Pow Beck. Theories that it ran southwards to the Seamill are untenable. There is a hollow way on the west side of the beck, but it runs uphill as well as down, and is an ancient trackway, not a watercourse.

In 1978/9 the writer dug a single metre-wide trench across the leat at (10). This showed a section of the leat, traces of wooden revetment on the steeper eastern side, and a clean pebbly bottom over sand. There was nothing to date the section, and the ditch was doubtless recut many times during its existence.

In 1978 the owners of 14 Abbots Way found a sandstone-lined culvert in their garden, apparently running away from the leat in the direction of the Seacote (once a farm, first recorded in 1474).²¹ It seemed to be pre-Victorian. In that position a field drain seemed

unnecessary, since the mill leat would intercept water flowing down the slope. It is more likely that this was a water supply tapped off the leat itself.

In spite of the instances mentioned above of ambitious schemes of water management, mistakes could occur. Jocelin of Brakelond gives us another example. Abbot Samson "raised the level of the fish pond of Babwell by the new mill to such a height that, owing to the holding up of the waters, there is no man, rich or poor, having lands by the waterside, from the Towngate to the Eastgate, but has lost his garden and orchards".²² So at St. Bees it would not have been an entirely straightforward matter to maintain an even gradient, to an objective out of sight in the next valley, over the best part of a mile. We have no idea how it was done. Practically nothing is known about how levels were measured for long watercourses in the middle ages. There is no general treatise on surveying before Fitzherbert's in 1523, and so far as is known medieval surveyors were more concerned with surface measurement and description of land.²³ It may be that whoever planned the St. Bees leat was able to take advantage of the bird's-eye viewpoint afforded by St. Bees Head on the west side of Rottington Beck, and worked out his general line from there. But the very gentle gradient observed from (1) to (10) on the map (see table of levels) must have called for considerable judgement if the flow of the water was not to be impeded. The amount of earth moved must have kept the monks' tenants busy for some time. Their work lasted for six centuries. Even now, another century on, enough remains for us to wish that it was better protected against further loss, as an unusual example of medieval civil engineering.

Actual and assumed levels and assumed gradients along the St. Bees leat

Point on map	Level above or below datum (metres)	Assumed level of original leat bottom	Distance (m) from previous point to north	Assumed gradient (%)
1	+2.57	+1.07 (note 1)	—	—
2	+0.92	+0.52 (note 2)	65	0.8
3	+1.34	+0.34 (note 3)	62	0.3
4	+0.16	-0.34 (note 2)	184	0.4
5	+0.17	-0.63 (note 4)	107	0.3
6	0	-1.00 (note 5)	10	3.7
7	-1.32	-1.82 (note 2)	216	0.4
8	-2.48	-2.98 (note 2)	159	0.7
9	-2.81	-3.31 (note 2)	53	0.6
10	-3.50	-4.20 (note 6)	113	0.8
11	-7.50	-8.00 (note 2)	150	2.5
12	-8.88	-9.88 (note 7)	103	1.8
13	-14.28	-14.28 (note 8)	86	5.1
			1308	

Notes to the table

1. Point 1 is on top of the footbridge over the beck. There is no way of knowing where the crest of the weir was. It would have been feasible to construct a weir 1.5 m below the bridge level.
2. Assuming 0.5 m of silt in the ditch at these points.

3. The dyke across the leat at point 3 has raised the ground surface by more than the ordinary amount of silting.
4. There has been an unusually large amount of silt washed down the field at point 5: assumed depth 0·8 m.
5. The datum point 6 is on the surface of the modern road. It is assumed that this is 1 m above the leat bottom underneath.
6. The measured depth of silt at point 10, where the cutting was unusually deep, was 0·7 m.
7. The road has so affected levels that 1 m is guesswork.
8. Point 13 is a modern ground level by the gable end of Peckmill, and therefore the assumed level of the tail race.

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- ⁷ *The Domesday Geography of Northern England*, H. C. Darby and I. S. Maxwell (eds.) (Cambridge, 1962), 425, 499.
- ⁸ *The Register of the Priory of St. Bees*, James Wilson (ed.), Surtees Society, 1915, 435 (cited henceforth as *St. Bees Reg.*).
- ⁹ There is no survey of Cumbrian watermills to match the windmill survey by J. Hughes, 'Cumberland Windmills', CW2, lxxii, 112-41. For the Kendal area, however, see John Somervell, *Water Power Mills of South Westmorland on the Kent, Bela, Gilpin and their tributaries* (Kendal, 1930). The Society for the Protection of Ancient Buildings has published a number of booklets on mills (all undated): Paul N. Wilson, *Watermills: An Introduction*; R. A. Pelham, *Fulling Mills*; Kenneth C. Reid, *Water Mills and the Landscape*; D. Luckhurst, *Monastic Watermills*. See also J. Hillier, *Old Surrey Water-Mills* (1951).

- ¹⁰ Helen Clarke, *The Archaeology of Medieval England* (London, 1984), map on p. 128.
- ¹¹ *St. Bees Reg.*, 22.
- ¹² *St. Bees Reg.*, 423-4.
- ¹³ Cumbria Record Office, Carlisle (henceforth C.R.O.) MS D/Lons/W/.St. Bees Misc./item 13.
- ¹⁴ C.R.O. D/Lons/W/Deeds register c. 1639 fos. 55v-66; D/Lons/W/St. Bees Misc./item 1.1.
- ¹⁵ *St. Bees Reg.*, 595, 597-8.
- ¹⁶ *St. Bees Reg.*, 423-4, footnote. This is a receipt by Latus for the original charter by Benedict of Rottington.
- ¹⁷ C.R.O. D/Lons/W/Rentals.
- ¹⁸ St. Bees School MSS, St. Bees Court Book.
- ¹⁹ C.R.O. D/Lons/W/Surveys. There is no tithe map for this area.
- ²⁰ St. Bees Women's Institute, MS Memoirs of William Sewell, copy A fo. 28, and conversation with the late Tom MacKay of St. Bees.
- ²¹ *St. Bees Reg.*, 484.
- ²² *The Chronicle of Jocelin of Brakelond*, 131.
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