

Map of the embanked ponds.

# THE EMBANKED PONDS OF THE PENALLT-WHITEBROOK-REDBROOK AREA AND THEIR INDUSTRIAL USES

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UNTIL THE ADVENT of steam power in the 18th century, water-wheels provided the most reliable and economical power available for driving mills, forge hammers, etc. They were therefore numerous in this country (as in others) through most of the medieval period and particularly in the era immediately preceding the Industrial Revolution. Even in the 19th century they were widely used because of their cheapness, and some have lingered on, in use, until the present time. Some water-wheels were driven directly by a river or stream, or by water diverted through a mill-race. It was, however more usually necessary to build a dam and create a pond in order that a somewhat irregular and unreliable river or stream could be converted into a steady water supply for the wheel.

In the Lower Wye Valley and the Forest of Dean there was industry from early times with metal ores that needed blast for smelting, and there was agriculture producing grain that needed grinding. So the little streams that abound in the hilly country were harnessed for power and their flow was such that ponds were needed to store water in wet periods for use when the natural flow was low. Stone dams were built to form these ponds, and most of them can still be found.

The number of ponds built is quite surprising and in the particular area of about 7 square miles which is the concern of this article there were no fewer than 35 ponds built at various times. Not all those which can now be traced were built for industrial purposes; some were almost certainly built only as fish ponds or farm ponds, and one or two have evidently been built for ornamental purposes in the last century after water-power ceased to be used on a large scale. It is extremely difficult to trace

the history of the ponds themselves, but we do know something of the industries which used them. Our purpose here is to draw attention to the subject and outline the probable history of the ponds in the area embracing Penallt, Whitebrook and Redbrook just to the south of Monmouth. Since the main stream in the northern part of Penallt is the Black Brook, one is tempted to refer to the area as that of the Black, White and Red Brooks. But there are also the Cadora and Manor Brooks on the west of the River Wye, and the Valley Brook at Lower Redbrook.

A diagrammatic representation of the streams of the area showing all the present and former ponds which the author has so far been able to trace is shown in Fig.1, and these 35 ponds are defined more accurately in the Table. With the basic information presented in this compact way, there is little need for further description in the text, and we can proceed to the history of the industrial uses of the ponds.

## *The 14th Century*

William Rees, in his remarkable historical maps,<sup>1</sup> shows a 'Watermill of the Lord' at Vishpol in the 14th century, and another at or near Whitebrook (or Gwenffrwd in Welsh). The former can hardly be located otherwise than on the Black Brook and could well be the ruined dam numbered 4 in Fig.1. The latter is less certain and could be on the White Brook itself or on its tributary the Manor Brook. These mills would, of course, have been for grinding grain.

Probert<sup>2</sup> states that the manor records of the 15th century refer frequently to 'New Mills' (which may be the present place of that name at the top of Whitebrook) and to the water mill



Pond No. 9 (Duke's Pond)



Pond No. 17 (Clearwater)

'called fyshe pole myle in the ldschip of Trelecke', which he identifies with the mill on the Black Brook.

### *Industrial developments in Whitebrook*

Apart from corn milling, the first industrial use of water power in Whitebrook was probably by the wire works which were built there as an extension of the famous Tintern wire works about 1595.<sup>3</sup> The Mineral and Battery Corporation owned the works, but the land belonged to the Earl of Pembroke, who was a Governor of the Corporation. One of the Earl's copyholders had a mill (possibly the mill referred to above) on the site, and complained that the new works affected his interest. In 1625, Lord Herbert, son of the Earl, questioned the right of the Society of Mines Royal to construct water courses to the cutting-house. So it is clear that there was industrial use of the White Brook around 1600. It is difficult to determine just where the wire works were situated, but presumably they would be near the River Wye to simplify transport. One clue which has not so far given definite results is that in 1621 a Mr. Hackett was involved in a dispute with Sir Richard Cachemay over a right of way to the Whitebrook works through a meadow called 'Bannat Tree Lane.' Now it is odd that a meadow should be called 'lane'; could this be a transcription error for 'ham'?—which Ekwall<sup>4</sup> shows to mean a meadow. It is then perhaps significant that the Tithe map of 1846<sup>5</sup> and the associated Apportionments show a 'Burnt Tree Ham' just south-east of the mouth of the White Brook, bordering the River Wye. If this could be a corruption of 'Bannat (i.e. Walnut) Tree Ham', then this would be confirmation that the wireworks were near the mouth of the brook.

The ponds not only supplied power for the works; they were also used for the 'watering' process by which the iron was desulphuretted by long immersion in water before being drawn into fine wire.<sup>6</sup>

The wireworks ceased around 1720. The next industry was paper-making, which started about 1760. The author has set out the history of this industry in Whitebrook fairly fully elsewhere<sup>7</sup>, so the present account will be brief. There were certainly five, and possibly six paper

mills built altogether, and there were four of them in operation by 1816. They all used water power, and ponds Nos. 12,15,17,18, and 21 were certainly used for this purpose; some of the others may also have been. It is very difficult to identify all the mills, as known from their remains, with those referred to in the old documents, but it is reasonable to suppose that the earlier mills were those nearer the River Wye, since all their supplies and products were transported by river from and to Bristol. The industry probably prospered at first, but recurrent bankruptcies and closed mills from around 1826 onwards, together with a low recruitment of new workers, indicate a continued depression in the business. Turbines were introduced to use the water power more efficiently than the older water wheels did, and around 1865 steam power was tried. But still the industry failed to prosper; it dragged on until about 1885, but the plant was finally disposed of in 1888. Fernside Mill and the chimneys at Sunnyside and Clearwater remain as monuments of this industry.

The ponds (perhaps together with some new ones) were then used for another industry: fish rearing. Bradney,<sup>8</sup> in 1913, says that after the decline of the paper mills, 'some of the ponds have been purchased by Mr. Markham David, who has established a farm for rearing trout'. Pond No. 14 was certainly marked as a fish pond on the 25-inch O.S. maps of 1879, revised in 1921. In 1926 Christopher C. Browne of Fernside was shown in a directory<sup>9</sup> as 'trout farmer, Wye Valley Trout Farm.' There are many small stone tanks near the ponds — and a large series of tanks at Fernside Mill—all supposed to have been used in this fish-rearing industry.

Corn-milling, at the mill associated with pond No. 11, may have gone on until at least 1926 for in that year John Robins was shown<sup>9</sup> as a 'miller (water), New Mills'.

### *Industrial developments in Redbrook*

The details of the early industrial developments in Redbrook are not very clear, but there seems to have been an iron smelting furnace in Upper Redbrook in 1628. The late Mr. P.G. Harris<sup>10</sup> told the author that he believed it was operated by Benedict Hall at pond No.24; it seems at first unlikely that the first furnace should be so far from the River Wye, but in fact



Pond No. 18 (Wye Valley Mills)



Pond No. 23 (Swan Pool)

this site is the nearest to the local sources of iron ore.

Copper smelting was done at both Upper and Lower Redbrook, using for a few years local ores, but then importing ore from Cornwall. This activity was started in 1687 by John Coster who lived<sup>11</sup> at 'The Elms' beside pond No.27. In 1692 the headquarters of the English Copper Company were at the large house next to the site where the tinplate works were later set up at Lower Redbrook. Early in the 18th century there were 26 copper furnaces at Upper Redbrook and 16 at Lower Redbrook. There is some doubt as to whether the reverberatory furnaces used for copper smelting needed a forced blast, but other power needs make it certain that the ponds were used during this period.

Copper smelting ceased at Redbrook at some time in the 18th century, and blast furnaces for smelting iron were again developed. These undoubtedly used water power, and probably pond No.28 was the main source. Tinplate works at Lower Redbrook were started in 1771 and these also required water power; but whether the present pond No.34 was in use then, or merely some smaller pond, is not clear. It is certain there was a water wheel for it was removed when steam drive was installed in the early years of the 19th century.<sup>12</sup> There were other iron works at Lower and Upper Redbrook; pond No.33 operated a forge, and there was another tinplate works for some time beside pond No.29. The extract from Charles Heath's book of 1803 which is given in the Appendix records some interesting details of these works.

The metal industries were not the only ones at Redbrook. There was a paper mill there almost a century before paper making came to Whitebrook, for there is a record of a paper mill already converted to a copper works by 1691.<sup>13</sup> (The author is indebted to Mrs. Joan Day for this information and reference). This must have used a pond, and it is probably a good guess that it was No.28. There is apparently only one earlier reference to a paper mill in Gloucestershire, namely at Wick in 1639.<sup>14</sup> The paper mill at Redbrook appears to have been overlooked by historians until now.

Corn mills probably existed at Redbrook quite early, but there were certainly such mills at ponds Nos.25 and 26 in the 19th century and early 20th century. The Wye Valley Flour mills, burnt down in the 1920's, used pond No.29

and the wheel pit is still recognizable. Steam power eventually supplanted water power, however, in this last mill. There was also a brewery in Upper Redbrook, established in 1825.

The last of the industries to close down was the Redbrook Tinplate Works at Lower Redbrook, which survived, with electric drive replacing steam, until 1961.

### Conclusion

While it is evident that Whitebrook and Redbrook became busy industrial centres, no such development came to the Black Brook, which is a comparatively small stream. Considerable use was made of the water power in the area, but it was far below the maximum available; for example, at least two-thirds of the fall of the White Brook was unused. Technical details of most of the mills are not known, but a 25ft. water-wheel<sup>15</sup> fitted at either pond No. 12 or No.15 was probably the largest used. That at the Flour Mills (Pond No.29) was probably nearly as large, and about 3 ft. wide judging from the remains of the wheel pit. The wheel at pond No.5 must have been about 20 ft. diameter, but it was very narrow. The other wheels must have been rather smaller, judging from the height of the dams; but where one cannot find the remains of the wheel pit one cannot, of course, be very sure.

### Appendix

Extract from the book . . . *Tintern Abbey* . . . by Charles Heath, Monmouth, 1803.

*Redbrook*: 'This industrious hamlet. . . Upper Redbrook forms part of the estate of the Right Hon. Lord Viscount GAGE, whose seat is at High Meadow, about a mile distant, who owns an extensive property in the parish and neighbourhood;—the works, which consist of a furnace, forge and rolling mill, are held under his Lordship, by Messrs Davis, Hall & Co. who succeeded Mr. *Tanner*, their late occupier.

'Lower Redbrook works, were formerly the property of the English Copper Company in London, who carried on a considerable trade in that line here, till they sold them to Mr. *Tanner*, before mentioned:— they are now held under his assignees by Messrs. Cowley, Hathaway, and Co., and consist of two rolling mills, two forges, and an extensive work for rolling tin plates. . . . .



Pond No. 25 (Upper Mill)



Pond No. 28 on Upper Red Brook

'The stream which considerably supplies the wheels, is one of the greatest curiosities of the kind in the kingdom. It issues at the bottom of a grand woody hill, and is formed by *three*

*distinct streams*, which pour their contents into a bason, that empties itself into an adjoining pool,—discharging a large and unceasing torrent of water at all seasons of the year.'

#### POSTSCRIPT

Three other sites should perhaps be mentioned:  
(a) At grid ref. SO 563 092 (rather outside the 7 sq. miles covered by the Table) a mill-pond on the headwaters of the Valley Brook, shown on the Tithe Map.

(b) At grid ref. SO 537 107 a probable site of a pond, not shown on the Tithe Map.

(c) At grid ref. SO 524 071 a tiny dammed pond probably of recent construction.

#### REFERENCES

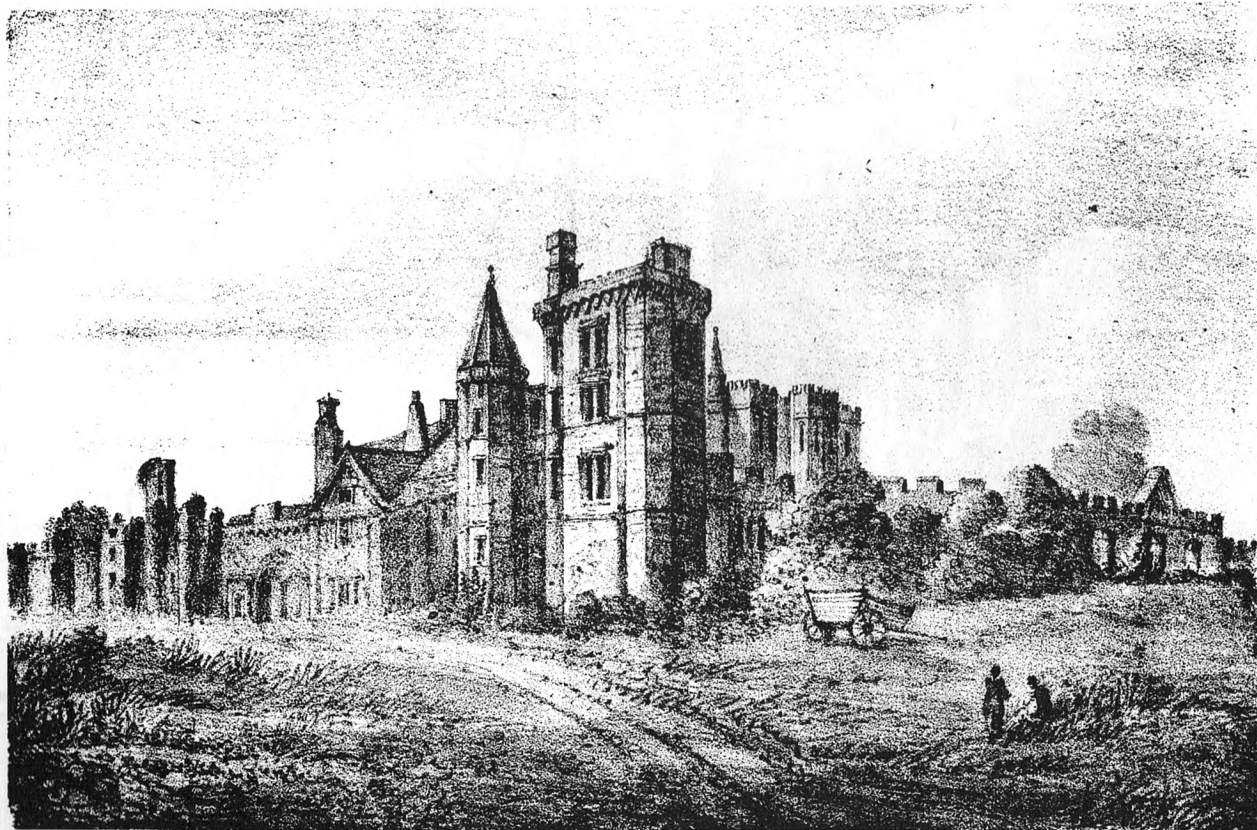
1. William Rees, *South Wales and the Border in the Fourteenth Century*, Historical maps.
2. Y.R.H. Probert, *Parish of Penallt, second edition* 1966, pamphlet obtainable at Penallt Old Church or at Penallt Vicarage.
3. William Rees, *Industry Before the Industrial Revolution*, Univ. of Wales Press, Cardiff, 1968, pp. 628-9.
4. E. Ekwall, *The Concise Oxford Dictionary of English Place-Names*, Oxford, 1936 (4th edition 1960), p.214. 'Old English ham(m), hom(m) "meadow, especially a flat low-lying meadow on a stream", also "an enclosed plot, a close" is a very common element in place-names. It is frequently used alone to form place-names—. It is difficult to distinguish from HAM, unless early spellings with *mm* or *o* occur -----'.
5. Tithe Map and Apportionments, Parish of Llandogo, c. 1846, National Library of Wales, Aberystwyth.
6. T.G. Grey-Davies, 'Metallurgical history of the valley of the Wye', *Metallurgia*, 72, 1965, pp. 153-8.
7. D.G. Tucker, *The Paper Mills of Whitebrook. Monmouthshire, Archaeologia Cambrensis*, in course of publication.
8. J.A. Bradney, *A History of Monmouthshire*, Vol.2, Part 2, 'The Hundred of Trelech', Mitchell, Hughes and Clarke, London, 1913, p.222.
9. Kelly's Directory of Monmouthshire, 1926.
10. Personal discussion of 4 Sept. 1969, just a few weeks before Mr. Harris's death.
11. Joan Jones, 'Redbrook-on-Wye', *Presenting Monmouthshire* (J. Mon. Local Hist. Ccl), No.29, 1970, p. 41-7.
12. T. Grey-Davies 'Redbrook Tinplate Works: The last of an era', *Presenting Monmouthshire*, No. 27, 1969.
13. Indenture of 1709, Gloucestershire Record Office D 1677 GG 1352-1357. In this deed it is recited that 'Henry Benedict Hall late of High Meadow . . . by Indenture of Lease . . . 16 July 1691 . . . did grant Sett to farm and let unto John Coster of the parish of Newland . . . All that Mill then formerly used or Employed as a Paper Mill now converted into a copper works . . .'
14. A.H. Shorter, *Paper Mills and Paper Makers in England 1495-1800*, Paper Publications Soc., Hilversum, Holland, 1957.
15. Advertisement for sale of plant at Fernside Mill, *Monmouthshire Beacon*, 25 August, 1888.

#### Notes to Table overleaf

- \* indicates rough estimate only. All other areas are taken from the 25-inch O.S. map.
1. These old mill-ponds are now lawns.
  2. Not shown as ponds on the 25-inch O.S. map (1879/1921) and therefore, with the exception of No. 10, probably derelict around the turn of the century.
  3. Shown clearly as ponds on the Tithe Maps and therefore constructed before, and not derelict by, the middle of the 19th century.
  4. Not shown on the Tithe Maps and thought to be derelict before the middle of the 19th century.
  5. Not shown on the Tithe Maps and believed to have been constructed after the middle of the 19th century.
  6. Pond constructed before 1864, as it is shown in a sale catalogue (Auctioneers: Debenham and Tewson) for auction on 29 August 1864.
  7. Pond constructed before 1919, as it is shown in a sale catalogue (Auctioneers: Stephenson and Alexander of Cardiff) for auction on 24 Oct. 1919.



Pond Number	Name of pond or nearest house (if any)	Grid ref: SO...	Size (Acres)	Orig. purpose (where known)	Present Condition	Earlier Name
1	Troy Farm <sup>5,7</sup>	509 111	0.34	Farm pond & Sheep dip	Derelict	
2	Llananant Farm <sup>3</sup>	522 100	0.23	probably ditto	Derelict	
3	Fishpond <sup>5</sup>	525 099	0.80	Fishpond	Fair	
4	Millbank Cottage <sup>4</sup>	526 099	0.1*	Fishpond or mill	Derelict	Vishpol (14th cent).
5	Wheatsheaf <sup>2,3</sup>	533 102	0.06*	Corn mill	Dry <sup>1</sup>	
6	The Argoed <sup>5,6</sup>	522 085	0.59	—	Overgrown	
7	The Generals <sup>2,4</sup>	530 086	0.05*	Corn mill	Dry <sup>1</sup>	
8	Ty Mawr <sup>5</sup>	507 076	0.19	Fishpond	Overgrown	
9	Duke's <sup>3</sup>	511 076	0.31	Fish or Storage	Good (recently restored)	
10	New Mills House <sup>2,5</sup>	513 073	0.1*	Ornamental	Good	Modern Construction -1962.
11	New Mills <sup>2,3</sup>	514 073	0.1*	Corn mill	Dry <sup>1</sup>	
12	Mill House <sup>3</sup>	516 073	0.32	Paper mill	Good	Fernside Mill
13	ditto <sup>5</sup>	517 072	0.03*	—	Derelict	ditto
14	Traligael <sup>5</sup>	518 071	0.16	Fish or storage	Good	Sunnyside
15	ditto <sup>3</sup>	519 071	0.41	Paper mill	Good	ditto
16	ditto <sup>5</sup>	521 071	0.27	Paper mill	Good	ditto
17	Clearwater <sup>3</sup>	532 067	0.26	Paper mill	Derelict	
18	(Wye Valley Mills) <sup>2,3</sup>	533 065	0.15*	Paper mill	Derelict	
19	(Manor Brook) <sup>2,4</sup>	530 062	0.4*	Fish or storage	Derelict	
20	— <sup>2,3</sup>	532 064	0.12*	Corn mill	Dry <sup>1</sup>	
21	Whitebrook Farm <sup>2,3</sup>	535 067	0.13*	Paper mill	Derelict	The Glyn
22	Tump Farm <sup>2,3</sup>	537 068	0.1*	Mill	Derelict	
23	Swan Pool <sup>3</sup>	545 107	1.25	—	Fair	
24	— <sup>2</sup>	545 109	0.6*	—	Derelict	
25	Upper Mill <sup>3</sup>	542 108	0.25	Corn mill	Derelict	
26	Redbrook Mill <sup>3</sup>	540 108	0.29	Corn mill	Derelict	
27	The Elms	538 108	0.05	Furnace?	Derelict	
28	— <sup>3</sup>	538 107	1.15	Furnace	Fair	
29	Flour Mills <sup>3</sup>	537 103	0.46	Corn mill (or tinworks?)	Derelict	
30	Tan House <sup>2,3</sup>	552 092	0.3*	—	Derelict	
31	Valley Farm <sup>3</sup>	551 082	0.1*	—	Derelict	(Actually a double pond)
32	— <sup>2,4</sup>	544 086	?	—	Derelict	
33	Forge Pool <sup>3</sup>	543 093	1.35	Copper works?	Derelict	
34	Tinplate Works <sup>3</sup>	541 096	3.0	Copper works?	Derelict	
35	— <sup>2,3</sup>	538 097	0.4*	Copper works?	Non-existent	



Thornbury Castle, Gloucestershire by Samuel Ireland