

Updated Summary of the Locations and Types of Watermills – April 2022

1. Introduction

Towards the end of 2021, we published a Pamphlet, **Investigations into Watermill Locations and Types on 34 River Catchments** centred on Tables dealing with individual river catchments. The watermills were those which had operated after 1750. We indicated that some of the data was incomplete, but that updates on the website, historicaljourneysalongbritishrivers.com/ would remedy that situation in stages. This is such an update. Our methodologies, were discussed at length in the pamphlet, which is posted on the website, so they shall not be further discussed here. There follows a description of the results, which are presented in Tables, similar to those in the pamphlet, and then a short overview section. A brief account of our intentions as regards future work ends the update.

2. Results

Tables 1, 2, 3, 4 deal with the Scottish river catchments, respectively in the Lothians, Fife & Clackmannanshire, Dumfriesshire, and Galloway and are slightly modified versions of the equivalent Tables in the Pamphlet; (5, 6, 7, & 8), we have taken the chance to make minor corrections, alterations and additions.

One addition is to quote river lengths. When reviewing the number of watermills in different river catchments, one factor influencing any differences will be the lengths of the watercourses capable of providing a viable power source, and that quantity will be linked qualitatively to the length of the river. So, as a simple example, if River A is twice as long as River B, one might start with an assumption that there would be twice as many cornmills in the catchment of River A. That will most likely not be the case, and explanations would then have to be sought in such factors as differences in numbers/lengths of tributaries, rates of fall of the streams, or the types of farming practiced in the period of interest. The lengths of the rivers provide a sensible start point for any such investigations.

Our investigations of watermills on Scottish rivers focused originally on what we now call commercial mills. In them, the completion of any milling task involved payment in cash or kind. This could take the form of a farmer delivering his grain to a cornmill, and either selling it to the mill, or paying the miller for his services, recovering the flour, and selling it at a profit. In the latter case, grist (grain) mills operated on the basis of payment in kind, with the miller keeping a fraction of the flour produced from the farmer's grain. (The expression 'all grist to the mill' derived from the fact that all the grain crop contributed to someone's profit).

We soon realised that there was another class of watermill, farm mills, which were mainly threshing mills, though a few were churns making milk products. A farm mill must be regarded as a piece of farm equipment, like a plough or a milking parlour, installed by the farmer, or the landowner; no payment is associated with its use. The mechanical threshing mill was invented by an East Lothian, millwright, Andrew Meikle, and installations spread rapidly across Scotland and into England from the early 1790s. We took on the task of identifying those powered by water, and they were included in our tabulations for Scottish river catchments. At a fairly late stage in our work on Scottish river catchments, we had the privilege of communicating at some length with Professor Paul Bishop of Glasgow University, who sadly died not long afterwards. He explained how horse driven farm

mills, horse gins, could be recognised on 19th century OS maps. It was not feasible for us to identify the horse gins on all the Scottish catchments, but we have looked at a few, and results are given, where available, in the notes after Tables 1 to 4.

In the Tables, all saw mills are classed as commercial, although many were located on estates and farms, and carried out operations at the behest of estate-managers or farmers without payment. However, substantial numbers operated commercially, supplying wood, sized for paying customers; we decided to count all saw mills together, and chose to place them amongst the commercial mills.

Since issuing the pamphlet we have looked at 2 more Scottish river catchments, namely those of the Moray River Avon, and the Lanarkshire Avon Water. The information collected about watermills is presented in Table 5; as regards threshing, horse gins have been enumerated, and the data is presented in the notes to that Table.

The pamphlet contained what are best described as preliminary results of our investigations of watermills in the catchments of English and Welsh Rivers. We have since completed investigations on a number of English river catchments, both as regards commercial and farm mills, and the data for the Rivers Tees, Yorkshire River Esk, Yorkshire River Don, Warwickshire River Avon, Hampshire River Avon, Hampshire Avon Water, and the River Camel in Cornwall are presented in Table 6. The one proviso concerns the Warwickshire River Avon catchment in which the techniques used elsewhere to identify farm mills are yielding puzzling results, which require further consideration before posting.

Finally, Tables 7 & 8, simply repeat preliminary results for English and Welsh river catchments, which were presented in the pamphlet; they will be brought to the same level as for the other catchments, in time.

Table 1. Frequencies of Occurrence of Watermill Types in River Catchments in the Lothians

Watermill Type	Numbers of Watermills in Catchment						
	Avon (31km)	Almond (45km)	Water of Leith (29km)	Esk (64km)*	Tyne (48km)	Smaller Streams	All Catchments
Food, Drink and Beverages							
Corn	20	23	40	18	29	28	158
Farina						1	1
Brewing/ Distilling	2	1					3
Dairy				1			1
Textiles, Leather							
Textile	11	4	13	14	14	6	62
Leather			2	1	5		8
Metals, Construction							
Saw	3	9	9	5	9	7	42
Clay/Brick	2						2
Metal industry	1	2					3
Chemicals, Fertiliser							
Glue			2				2
Paper, Printing	3	5	13	15	2	1	39
Special							
Flint						5	5
Gunpowder				3			3
Snuff/Tobacco	1		3	1			5
Unknown	5	7		2	4	7	25
All Commercial Watermills	46	48	68	53	52	53	320
Farm Watermills							
Threshing	36	61	30	43	58	67	295
Churn	5	3		1			9
All Farm Watermills	38	62	30	43	58	67	298
All Watermills	84	107	97	94	110	120	612

* The length given for the River Esk is the sum of the lengths of the rivers Esk, North Esk and South Esk.

Notes:

1. The total number of watermills operating in the Lothian river catchments at some time after 1750 was 612. Of these watermills, 320 were commercial mills as we have defined them, and 298 were farm mills.
2. Almost half of the commercial mills were corn mills, 158, which aligns with a long history of corn-growing farmland in the Lothians. All 42 saw mills appear as commercial, though some fitted the definition of farm mills.
3. The Table highlights some industrial specialisations in different river catchments like paper-making in the River Esk and Water of Leith catchments, and that textiles were manufactured in all catchments.
4. As regards water-powered threshing mills, they were fairly uniformly spread through all the Lothian catchments. In the River Almond catchment, 123 horse gins were found as well as 61 water-powered threshing mills. So there were 184 threshing mills and 23 commercial corn mills, a ratio of 8 : 1.

Table 2. Frequencies of Occurrence of Watermill Types in River Catchments in Fife & Clackmannanshire

Watermill Type	Numbers of Watermills in Catchment				
	Devon (54km)	Leven (26km)	Eden (48km)	Smaller Streams	All Catchments
Food, Drink and Beverages					
Corn	3	43	46	59	151
Starch			2		2
Brewing/ distilling	1	1	2	4	8
Coffee			1		1
Textiles, Leather					
Textile	29	41	28	28	126
Metals, Construction					
Saw	5	20	12	15	52
Metal industry		2		5	7
Chemicals, Fertiliser					
Bone				1	1
Paper, printing	2	4	1		7
Special					
Flint		1			1
Pencil		1			1
Snuff/Tobacco		1	1	1	3
Unknown		2	10	12	24
All Commercial	39	111	94	124	368
Farm Watermills					
Threshing	12	37	50	47	146
Total: All Watermills	51	147	140	167	505

Notes:

1. The total number of watermills operating in the Fife and Clackmannan river catchments at some time after 1750 was 505. Of these watermills, 368 were commercial mills as we have defined them, and 146 were threshing mills; that balance would have been altered if we had assigned 52 saw mills differently.
2. Almost half of the commercial mills were corn mills, 151, understandable, given that arable farms predominated in large parts of the countryside. The exception was the River Devon catchment, where even given the landscape, high ground upstream, and coalfields downstream, the number is remarkably small.
3. The Table highlights the importance of textile production throughout the area, but the Table hides differences; woollen cloth was produced in the River Devon catchment, but linen was produced elsewhere.
4. As regards water powered threshing mills, they were fairly uniformly spread through all the catchments, including those of the lesser and smallest streams except unsurprisingly that of the River Devon.
5. Allocation of horse driven threshing mills (horse gins) to river catchments must be inexact. However, 179 horse gins were linked to the River Eden catchment, compared with 50 water powered threshing mills; the low rainfall in much of the area, presumably ruled out waterpower. The ratio of the total number of threshing mills 229 to the number of corn mills in the River Eden catchment is 5 : 1. In order to make sensible comparisons between catchments both power sources must be considered.

Table 3. Frequencies of Occurrence of Watermill Types in River Catchments in Dumfriesshire

Watermill Type	Numbers of Watermills in Catchment							All Catchments
	Nith (101km)	Lochar (34km)	Annan (90km)	Kirtle (29km)	Sark (22km)	Esk (77km)	Smaller Streams	
Commercial								
Food, Drink and Beverages								
Corn	31	4	29	5	2	20	3	94
Brewing/ distilling			1			2		3
Textiles, Leather								
Textile	14		10	1		6		31
Leather	3		1			1		
Metals, Construction								
Saw	25	4	25	4	1	8	2	69
Limeworks							1	1
Metal industry	4		1	1	1			7
Chemicals, Fertiliser								
Bone	1		1		1			3
Mining	1	2						3
Unknown		2	4					6
All Commercial	79	10	65	11	5	37	6	213
Farm Watermills								
Threshing	239	29	76	5	6	20	5	380
Total: All Watermills	315	39	141	16	11	57	11	590

Totals cannot always be obtained by adding items because some watermills had more than one function in their lifetimes.

Notes:

1. The total number of watermills operating in the Dumfriesshire river catchments at some time after 1750 was 590. Of these watermills, 213 were commercial mills as we have defined them, and 379 were farm mills; that balance would have been altered if we had assigned 69 saw mills differently.

3. Corn mills and saw mills predominate amongst the Commercial watermills, perhaps highlighting the fact that Dumfriesshire is predominantly rural. The distribution of both indicates the changes in landscape in the upper river valleys; in the 19th century, corn was grown in areas now afforested or rough moorland.

4. As regards water powered threshing mills, they were not uniformly spread through the catchments. They were surprisingly rare in the eastern catchments, i.e. the River Esk, River Sark, and Kirtle Water, common in that of the River Annan, and remarkably abundant in the River Nith catchment, especially in the lower reaches. We have done no assessments of numbers of horse gins so cannot relate numbers of threshing mills to numbers of commercial corn mills.

Table 4. Frequencies of Occurrence of Watermill Types in River Catchments in Galloway

Watermill Type	Numbers of Watermills								
	Piltanton (20km)	Luce (29km)	Bladnoch (40km)	Cree (52km)	Fleet (26km)	Dee (89km)*	Urr (46km)	Smaller Streams	All Catchments
Food, Drink and Beverages									
Corn	1	3	9	7	6	26	17	29	98
Farina	1		1	2	1			1	6
Starch	1		1					2	4
Brewing/ distilling			1	1	1				3
Textiles, Leather									
Textile		3	3	6	5	5	5	9	36
Leather		2		2	2	1			7
Metals, Construction									
Saw	1		6	5	3	10	9	13	47
Quarrying							1		1
Limeworks								1	1
Metal industry			1				2	1	4
Chemicals, Fertiliser									
Bone						1			1
Manure							1		1
Mining				1		1			2
Paper/printing						1	1		2
Special									
Snuff/ Tobacco				2		1			3
Unknown		1	2	1	2	3	3	4	16
All Commercial	4	8	24	23	19	48	36	54	216
Farm Watermills									
Threshing	22	17	37	52	32	118	99	196	573
Total: All Watermills	26	25	61	74	51	166	135	245	783

* The length given for the river Dee is the sum of the lengths of the Water of Deugh, the Water of Ken and the River Dee.

Notes:

1. The total number of watermills operating in the Galloway river catchments at some time after 1750 was 783. Of these watermills, 216 were commercial mills as we have defined them, and 573 were farm mills; that balance would have been altered a little but not substantially, if we had assigned 47 saw mills differently.
2. Corn mills and saw mills predominate amongst the Commercial watermills, perhaps highlighting the fact that Galloway is predominantly rural. In the 19th century corn was grown in areas now afforested or rough moorland.
3. There is evidence for 37 horse gins linked to the Water of Urr catchment, and for 99 water-powered threshing mills. On 11 farms, the latter may have replaced the former, because markers for both are visible on the OS maps. So, there were 136 threshing mills, and 17 commercial corn mills, a ratio of 8 : 1.

Table 5. Frequencies of Occurrence of Watermill Types in 2 Scottish River Catchments

Watermill Type	Numbers of Watermills in Catchment	
	Moray Avon (64km)	Lanarkshire Avon (39km)
Commercial		
<i>Food, Drink and Beverages</i>		
Corn	7	14
Brewing/ distilling	2	
<i>Textiles, Leather</i>		
Textile	1	6
Leather		
<i>Metals, Construction</i>		
Saw	1	4
Metal industry		
<i>Mining</i>	1	
<i>Paper/ printing</i>		1
<i>Unknown</i>	2	1
All Commercial	13	24
<i>Farm Watermills</i>		
Threshing	51	14
Total: All Watermills	64	38

Notes:

1. There were perhaps fewer commercial watermills along the Moray River Avon than might be expected if its length alone is considered, but a substantial part of its course, (and those of its tributaries) is through high moorland on which no cultivation has ever taken place.
2. There was little industry along either river, although woollen material was produced in mills in the stretch of the Lanarkshire Avon around Strathaven, and there were distilleries in the Moray River Avon catchment, and more not far away.
3. The 51 water-powered threshing mills in the Moray River Avon, were not augmented by any horse gins; presumably the abundance of fast flowing streams meant that water power was always the preferred option. With only 7 cornmills in the catchment, the ratio of the number of threshing mills to them is 7.3 : 1. This may give a slightly wrong impression because grain will also have been supplied to 2 distilleries in the catchment.
4. In addition to 14 water-powered threshing mills in the Lanarkshire Avon Water catchment there were 32 horse gins. There were 14 commercial cornmills so the ratio of the number of threshing mills to corn mills is 3.3, perhaps below the emerging norm for Scottish river catchments.
5. The watermills found in these catchments, bring the total number identified in Scottish river catchments to 2619, of which 1154 were commercial mills, and 1463 were farm mills, almost all threshing mills.

Table 6. Frequencies of Occurrence of Watermill Types in 7 English River Catchments

Watermill Type	Numbers of Watermills in Catchment						
	Tees (135km)	Yorks Esk (46km)	Yorks Don (114km)	Warks Avon (136km)	Hants River Avon (96km)	Hants Avon Water (14.5km)	Camel (48km)
Commercial							
Food, Drink and Beverages							
Corn	76	18	108	195	86	3	53
Bean					1		
Brewing/ distilling			3	1	1		1
Textiles, Leather							
Textile	20	6	45	27	19		3
Leather				2			1
Metals, Construction							
Saw	4	1	5	5	4		4
Quarrying							2
Stone cutting			1				
Metal industry	3		153	4	2		1
Needle				17			
Chemicals, Fertiliser							
Chemicals			5				
Glue			1				
Bone			1	1	1		3
Mining	18						2
Paper/ printing	4	1	19	9	3		
Special							
Pencil	1						
Glass grinding			1				
Gunpowder					1		
Ropeworks							1
Snuff/ Tobacco			5				
Engine			1				
Unknown	4		9	42	12	1	4
All Commercial	118	24	332	284	122	4	74
Farm Watermills							
Threshing	19	12	18	*	47	6	95
Total: All Watermills	137	36	350	284	169	10	166

* The number of threshing mills on the Warwickshire Avon has not yet been assessed.

Notes:

1. On each river, except the River Don, the number of watermills, under the umbrella term, cornmill, (essentially all those processing cereal grains) greatly exceeds the number performing all other tasks.
2. The picture for the Yorkshire River Don is completely different from those for all the other rivers in Great Britain, which have been investigated, thanks to the very large number of metal processing watermills in and around Sheffield. The only other major metal-related industries highlighted are needle manufacture in the middle

reaches of the Warwickshire River Avon, and lead mining beside the upper River Tees. Steelmaking near the mouth of the River Tees was a late 19th century development, in the age of steam, unlike the Sheffield Iron and Steel industry which grew up more than a century earlier. It should be noted that there were also many cornmills along the Yorkshire River Don, and its tributaries, mainly higher in the catchment; this is unsurprising given the large regional population to be fed.

3. As regards textile mills, the large number of woollen mills in the Yorkshire River Don catchment is worthy of note, but textile mills are a feature associated with most of the other rivers, an indication of the importance of fabric manufacture from medieval times up to the fairly recent past.

4. The Yorkshire River Don passes through the Sheffield/Rotherham conurbation, and the Warwickshire River Avon skirts the West Midlands conurbation, in which documents of many kinds were indispensable, and this explains the papermaking and printing mills to be found in these catchments.

5. A puzzling feature is the relative scarcity of water-powered saw mills in all the English river catchments considered so far, certainly in comparison with Scottish river catchments. Certainly there are more forests on Scottish hills nowadays, but much of the planting was in the 20th century, so the difference remains unexplained.

6. We have had problems with the Warwickshire River Avon, which show up in a relatively large number of watermills with unknown function(s). As noted earlier, we have not yet been able to come up with satisfactory estimates of the numbers of threshing mills in the catchment. It is to be hoped that we can resolve those issues.

7. Comments on the information gathered about threshing mills will be made in the Overview section.

8. A total of 836 commercial mills have been identified on the 7 catchments, along with 197 threshing mills.

Table 7. Frequencies of Occurrence of Commercial Watermill Types in 6 English River Catchments

Watermill Type	Numbers of Watermills					
	Witham (132km)	Welland (104km)	Yare (84km)	Wensum (75km)	Waveney (95km)	Bure (80km)
<i>Food, Drink and Beverages</i>						
Corn	25	28	15	17	14	20
Mustard			1			
<i>Textiles, Leather</i>						
Textile	1	1	2	1	3	2
<i>Metals, Construction</i>						
Saw	1		1	1		
Quarrying	1					
<i>Chemicals, Fertiliser</i>						
Bone				1		
<i>Paper/ printing</i>	2		2	4		1
<i>Unknown</i>	1					1
All Commercial	30	29	17	18	14	21

Notes:

1. These results cover only the rivers and major tributaries, and not lesser tributaries. Threshing mills are not considered. Further comment will be withheld until more information has been gathered.
2. A total of 129 commercial watermills have been identified on these 6 catchments, so far.

Table 8. Frequencies of Occurrence of Watermill Types in 3 Welsh River Catchments

Watermill Type	Numbers of Watermills in Catchment		
	Teifi (120km)	Towy (121km)	Usk (130km)
Commercial			
<i>Food, Drink and Beverages</i>			
Corn	57	115	52
Brewing/ distilling			
<i>Textiles, Leather</i>			
Textile	84	62	6
Leather		1	
<i>Metals, Construction</i>			
Saw	11	9	3
Metal industry	2	6	13
<i>Mining</i>			
<i>Paper/ printing</i>			4
<i>Unknown</i>	25	49	20
All Commercial	178	239	97
<i>Farm Watermills</i>			
Threshing	*	*	*
Total: All Watermills	178	239	97

Notes:

1. The numbers of cornmills and textile mills taken together greatly exceed the number of all other types, on each river. However, the balance between the types is completely different, with few textile mills in the River Usk catchment, a predominance of them in the River Teifi catchment, with the River Towy catchment in between, though still with a very large number of textile mills.
2. Watermills employed in the metal industry are most common in the River Usk catchment, and specifically along the tributaries of the lower reaches, like the River Ebbw, but the numbers are nowhere near as large as those in the Yorkshire River Don catchment.
3. There are significant numbers of watermills of types as yet unknown to us in these catchments. We are of course at the mercy of such sources as we can find in this regard, but would hope to reduce the number in that category.
4. We have identified 514 commercial watermills which operated in 3 Welsh river catchments, so far, and the data are interesting. However, this is work in progress, and we expect to be able to say more in future, as we attempt to build towards a more comprehensive view.

3. Overview

As a start, it is worth considering how many watermills have been identified, located on sketch maps, or in the case of threshing mills, verbally, and listed in Tables 1 to 8. The numbers are as follows;

	Commercial Mills	Farm (Threshing) Mills	Totals
Scottish	1154	1463	2619
English	965	197*	1162
Welsh	514	**	514
Totals	2633	1660	4293

* Threshing mills have not been identified in some of the English river catchments

** Threshing mills have not been identified in any Welsh river catchments

At this time we have nothing to add concerning commercial watermills to the comments made in the notes to each individual Table.

However, there is more to be said about threshing mills. For countless centuries, different methods had been tried, to separate the grains of corn from the stems, carrying them; none were satisfactory, in early-modern Britain, and elsewhere. A manual process had evolved, to which many adjectives could be attached, none agreeable, including exhausting, dirty, unhealthy, wasteful, and more; it was well-described by a Wiltshire poet, Stephen Duck, who was a farm labourer, when he wrote. Essentially, cornstalks carrying grain cobs were laid out on a hard-core floor, and beaten intensively with flails. Then the stalks, or straw (as it had become when the grain was detached) were removed to become an important animal feedstock, and the detritus was swept up, and sieved to separate the grain, which was bagged. From the mid-17th century onwards, attempts were made to mechanise the process, but they failed as is demonstrated by the fact that none was taken up in significant numbers. Then in c1790, an East Lothian millwright, Andrew Meikle, transformed the situation by developing and making a workable prototype, in which the corn stalks were fed in and beaten between a rotating drum carrying vanes, and a metal cage; the straw passed through, and the grain dropped into a sack. The invention was an immediate success, and thousands were installed in Scotland within a few decades. It spread across the border as well, fairly quickly into Northern England, but less so further south as shall become apparent.

The rotating drum had to be driven, against considerable resistance as it tore off the grain, so a substantial power source was required to generate the necessary torque. In 1790, there were two options, power supplied by a waterwheel, or horse power. The former has been our main focus, but something needs to be said about the latter, to give a full picture. A horse gin, preserved at the Beamish Museum in County Durham, north of the River Tees, is shown alongside; the thick central rotating shaft can be seen. Horses or ponies, often 4 in number,



attached to the shaft were led in circles inside the walls of the 'round' house, and cogwheels either in the roof or below the floor took the movement, by way of drive shafts and gears, to the rotating drum of the threshing machine. In this case, the machine is in a barn to the left of the frame of the photograph.

The decision as to how power would be supplied to a farm threshing mill depended on many factors, not least costs, both capital and operating, which were different for the two systems. Water power could be ruled out in dry, flat areas, as it would be impossible to supply a waterwheel with enough water, flowing sufficiently strongly, while on small farms, providing a team of 4 horses might be too big an ask. By 1830, steam powered threshing mills were being installed in significant numbers in Northern England. Roughly, two decades later, threshing machines could be placed on a cart, with power supplied by a traction engine, which moved the cart, when required. Such portable arrangements did not feature on maps, so methods of locating them vanished, a real limitation for the work described here, when it is remembered that the first OS maps for some areas, did not appear until almost 1880. Nonetheless, the water supply arrangements, and the round houses usually survived for some years after a fixed threshing machine was replaced by a mobile version. Today's combine harvesters incorporate a threshing machine working on Meikle's principles, and move from farm to farm, albeit very slowly.

Table 9 shows how the number of threshing mills of both types and the number of commercial corn mills varied between different catchments. It is reasonable to take the number of cornmills in a catchment as a rough measure of the amount of corn produced there, remembering that in the period of most interest in the present context, 1790 – 1850, transport of bulk materials like grain was difficult and expensive. Consequently, the ratio of threshing mills to corn mills, should provide an estimate of the take-up of threshing mills, (column 6).

Table 9. Numbers of Water-Powered Threshing Mills and Horse Gins compared with Numbers of Cornmills in Selected River Catchments

Catchment	Number of each mill type in catchment				Ratio of threshing mills to corn mills in catchment
	Water-powered threshing	Horse-powered threshing	All Threshing	Corn mills	
River Almond	61	123	184	23	8.0
River Eden	50	179	229	46	5.0
Water of Urr	99	37	136	17	8.0
Moray River Avon	51	0	51	7	7.3
Lanarkshire Avon Water	14	32	46	14	3.3
River Tees	19	108	127	76	1.7
Yorkshire River Esk	12	6	18	18	1.0
Yorkshire River Don	18	9	27	108	0.3
Hampshire River Avon	47	3	50*	86	0.6
Hampshire Avon Water	6	0	6	3	2.0
River Camel	95	8	103	52	2.0
All River Catchments	348	376	724	402	

* It is known that large numbers of threshing mills, in the Hampshire River Avon catchment were destroyed during the Captain Swing riots in 1830. Without this, the ratio of threshing mills to corn mills would probably have been above 1.0.

Emphasising that the numbers in column 6 should be treated as rough measures only, it can be seen that the high values for Scottish catchments imply very high take-up of what was after all, a Scottish invention; indeed it

has been suggested that the market had reached saturation. Moving into Northern England, there still seems to have been appreciable take-up, but it had dropped off rapidly by the time South Yorkshire was reached. Our other data concern the South of England, and here take-up seemed to be appreciable, especially remembering the impact of machine-wreckers. We obviously need more data, to firm up on these ideas. The other qualitative information obtainable from Table 9 is that in drier, flatter catchments to the east, horse gins predominated, whereas in wetter, hillier catchments to the west, the opposite is true.

4. Future Work

As of now we have looked at 39 main river catchments together with a number of smaller streams. However, there is more work to be done on 7 English rivers and 3 Welsh ones, to cover lesser tributaries and farm (threshing) mills, before we shall have a complete picture.

In addition we are currently working on additional catchments; 3 English river catchments and 1 Welsh river catchment, namely the Devon River Avon, the Bristol River Avon, the Little River Avon in Gloucestershire, and the River Afan in South Wales, are under consideration.

This additional work, of interest in itself, should also increase our understanding of geographical trends, such as the differences in take-up of mechanical threshing.

Thereafter we will consider the value of considering additional river catchments.

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April 2022