

# MILLS IN DOMESDAY BUCKINGHAMSHIRE

K. A. BAILEY

*This paper examines one of the principal economic assets recorded in the folios of Domesday Book. Unlike hides, demesnes, ploughlands, ploughteams and manpower, which are ubiquitous, irrespective of location, topography and underlying geology, mills are far from evenly distributed, less so even than slaves which formed the subject of an earlier paper.<sup>1</sup> There are several reasons why this might be so: (1) lack of suitable power sources; (2) local quirks in recording the information (cf. the apparent under-recording of woodland in North Bucks.), and (3) milling was performed by hand (possibly also by animal power), leaving no valuable perquisite to be recorded by the commissioners.*

*It should be made clear at the outset that the term "mill" in 1086 refers to water-driven wheels (vertical or horizontal), providing power to operate grinding stones, and possibly in certain cases to hand-operated querns.<sup>2</sup> The windmill did not appear in England until the end of the twelfth century, with some of the earliest recorded examples in Bucks.<sup>3</sup> Many Domesday entries mention multiple "mills", often indicative of several pairs of stones under the same roof, worked by a single wheel, an early example of mass-production. Such structures imply investment on a scale which could only have been made by manorial lords, who then obliged their tenants to have their corn ground there, part of the nexus of rights and obligations which bound the peasantry to contribute a large proportion of their time, labour and assets to supporting their lords.*

## I

There were 134 mills in Buckinghamshire in 1086, of which 68 were individual mills at separate locations (treating the elements of divided villi separately for this purpose) and the rest are multiple, located on 25 estates. The mill at Farnham Royal had only been built since 1066, and had no value assigned to it, hinting once again at the problems of using the Domesday "snapshot" to evaluate an essentially dynamic rural economy. Two mills are worth special note: Lavendon 2 had one-and-a-half mills, while just across the Ouse Clifton Reynes 5 had half-a-mill. This is the eleventh-century way of saying that a two-mill structure on the Ouse at this point had 75% of its value/output allocated to Lavendon and 25% to Clifton, and in fact the values are 27/- and 11/- respectively [71:29%]. The estates in question were not in unified ownership, either in 1086 or 1066, although they may

have been when the mill was first built.

Not all of the mills have values expressed in monetary terms (almost always in shillings), wholly or in part. The average for those that do is 10/-2\*, p.a. A variety of other measures of value is employed, some of them no doubt of great antiquity, reflecting a time when the money economy was less well developed. For example, Bledlow mill rendered 24 loads of malt, while that at Broughton (Moulsoe) I was merely noted as part of the demesne. Lower Winchendon, Haversham, Lavendon 5 and Stantonbury owed part of their renders in eels, which would have been trapped conveniently in the mill-pond. Apart from the new mill at Farnham Royal, Clifton Reynes 1, Saunderton 1 and two of the three mills at Chalfont St. Giles were worth nothing.

\*10/-2 (ten shillings and two old pence)

The distribution of mills in 1086 is summarised in Table 1.

TABLE 1  
Domesday Mills by Hundred

<i>Hundred</i>	<i>Mills</i>	<i>Single</i>	<i>Multiple</i>	<i>(Total)</i>	<i>Value</i>
Stone	10	4	2	6	
Aylesbury	7	3	2	4	
Risborough	4	2	1	2	
Sub-total	21	9	5	12	170/8
Stoke	13	4	4	9	
Burnham	11	6	2	5	
Desborough	26	4	5	22	
Sub-total	50	14	11	36	466/-
Ixhill	4	4	0		
Ashendon	1	1	0		
Waddesdon	1	1	0		
Sub-total	6	6	0		80/-
Cottesloe	3	3	0		
Yardley	5	0	2	5	
Mursley	0	0	0		
Sub-total	8	3	2	5	82/4
Stotfold	9	5	2	4	
Rowley	8	6	1	2	
Lamua	2	2	0		
Sub-total	19	13	3	6	124/4
Seckloe	13	9	2	4	
Bunsty	8.5	7	1	1.5	
Moulsoe	8.5	6.5	1	2	
Sub-total	30	22.5	4	7.5	412/8
<b>Total</b>	<b>134</b>	<b>67.5</b>	<b>25</b>	<b>66.5</b>	<b>1363/-</b>

It will be seen from these figures that recorded mills in Domesday were heavily concentrated in the Aylesbury, Chiltern and Newport groups of Hundreds, which between them had 101 mills, three-quarters of the total. On the other hand, there are suspiciously few mills in the Ashendon and Cottesloe groups (only 14 between them) and not many more around Buckingham (19 mills). One-fifth of Bucks. mills were in Desborough Hundred, and it is evident that the short, steep course of the River Wye, between West Wycombe and Hedsor provided the power to drive mills on an almost industrial scale, with eleven at Wooburn-Lude and nine at Wycombe, worth 213/- p.a. between them, about one sixth of the total. Indeed, at Wooburn and its satellite Lude, milling alone produced 35%

of their total value. (In this, the Wye resembles the Wandle, whose short, ten-mile course supported a large-scale milling industry from the eleventh century to the twentieth, including the seven mills at Battersea-Wandsworth, worth more than £42 p.a. in 1086, the most valuable in England.)

By contrast, the Thames seems to have been of much less significance, with only Eton, Marlow and Hambleden apparently using this source of power. The Colne valley, on the county boundary with Middlesex was also not so important as one might expect, although its tributaries the Chess and the Misbourne powered mills far into the Chilterns, albeit not very valuable ones. On the other hand, the value of five mills at Wraysbury and Iver on the Colne was 84/-, considerably above the county average. The Thame and its various tributaries provided water for a string of mills from Crendon to Aston Clinton, and the need to gain access to this resource helps to account for the elongation of parishes which lie athwart the Chiltern escarpment, for example Bledlow, Saunderton and Aston itself. The River Ray in the west seems to have attracted few if any mills by 1086, no doubt a reflection of its low rate of flow in generally marshy ground. In the north-east the Ouzel was another stream providing power to a continuous line of mills, from Edlesborough to Newport Pagnell, where it joined the Great Ouse. The latter, along with its tributaries such as the Padbury Brook, ensured a supply to mills from Biddlesden in the west to Clifton Reynes in the east, despite its shallow gradient. These mills had assorted values, for example two worth only 28 pence at Biddlesden, compared with the two at Newport Pagnell bringing in 40/-.

On this basis, it is perhaps not surprising that the areas of Buckinghamshire possessed of few streams of the first or second rank should have had few opportunities for harnessing water power, among which the Cottesloe group, Waddesdon and Ashendon are most noticeable. That this was indeed a physical problem, and not just one reflecting the fact that Domesday Book only presents a snapshot and is concerned with asset values rather than merely straightforward listing, is confirmed by the later medieval evidence. Of those places across the north-central part of Bucks, without watermills in 1086, only fourteen acquired one

subsequently. Sixty-seven parishes in seven Hundreds had only twelve mills in 1086, with twenty added later, of which only a dozen are definitely attested by the mid-14<sup>th</sup> century.<sup>4</sup> Almost of all of these are first recorded the 13<sup>th</sup> century, the final phase of high medieval expansion, when the demand for milling would have reached a peak. By that time, of course, the windmill was firmly established, finally enabling local farmers to overcome the water-power deficit. Early wooden post-mills were often ephemeral constructions, leaving either no physical or documentary trace. Thus while 76 windmills are recorded in these Hundreds, only eight are definitely pre-16<sup>th</sup> century, although many no doubt existed long before, perhaps on different sites.<sup>5</sup> Even taking windmills into account, however, it seems that hand-milling or the use of animal power must have persisted for centuries in this zone, although there was no doubt a trade in surplus grain which took it to be milled at places with capacity for more commercial activity. (It is noteworthy that the shrinkage and desertion of settlements in the late- and post-medieval period was concentrated in the same east-west belt, suggesting that the expansion of the period 1086–1300 was often onto land unsuited to arable farming; the difficulty of growing reliably sufficient crops would have been compounded by the problems of processing them.)

The relative density of Domesday mills may be measured in relation to the number of ploughteams at work:

TABLE 2  
Domesday Mills and Ploughs

Hundreds	Mills	Teams	T/M	Pop/M	Pop/T
Aylesbury	21	299	14.23	37.14	2.61
Chiltern	50	452	9.04	19.16	2.12
Ashendon	6	323	53.80	132.17	2.46
Cottesloe	8	350	43.81	104.12	2.38
Buckingham	19	276	14.50	38.47	2.65
Newport	30	362	12.07	35.83	2.97
County	134	2062	15.38	38.58	2.51

The broad consistency of the ratio between population and ploughs at work in 1086 shows that the need to produce bread grain was ubiquitous, and also that the heavier clay soils of the centre and north of the county required slightly more labour than those further south. The mismatch between

grain production and milling capacity in the Chilterns, Ashendon and Cottesloe Hundreds is equally apparent. In the first case, there seem to be about 40% more mills than required by the Bucks. average on a ploughteams basis, or double based on population. In the central belt, however, with its shortage of suitable streams to provide the motive power for mills, there is a shortfall of thirty mills based on both ploughs and population. In view of the transportation problems inherent in moving the bulk of the production of this area to the mills clustered along the Wye, Colne and Thames, it would be extremely unwise to assume that this is how the imbalance was overcome in the late eleventh century. Some such movement may have taken place, otherwise it is difficult to account for the surplus of mills around the Chilterns and their relatively high value, perhaps between estates linked by common overlordship – before 1066 since most of the mills clearly predate the Conquest. If substantial movements of grain to be milled did occur, it is unlikely to have included that which was required for subsistence purposes on the originating estates. It seems that the demands of milling across a third of Domesday Buckinghamshire were handled by yet more physical labour on the part of the peasantry, grinding by hand, possibly with some assistance from their livestock once the harvest had been gathered in. (The distribution of slaves across the county does lend some slight support to the view that they may have been engaged in milling in place of watermills – the overall proportion was 16%, lowest in the Chilterns (13%), but highest in the north (18–19%); in the central zone it was between 16 and 18%. This suggests that wherever slaves were employed about the demesne for working ploughs,<sup>6</sup> they may well have been engaged in milling, irrespective of location and presence or absence of purpose-built mills.)

The Bucks. ratio of 15.4 ploughs per mill compares unfavourably with many south-eastern counties:

Bedfordshire	14.16	Berkshire	11.40
Hertfordshire	10.23	Surrey	9.57
Middlesex	16.06	Northants.	10.19
Oxfordshire	12.78		

The overall average for this group is 12.45 ploughs/mill, emphasising the problem caused by

the absence of watermills across central Bucks., where the ratio was in excess of 40. The Chiltern and Newport Hundreds compare favourably with most areas in this respect, having nine and twelve ploughs per mill

## II

The consistency with which mills are recorded in Domesday Book indicates their economic importance (see the next section for a discussion of the values). The monopoly which manorial lords had in milling not only their own corn, grown on the demesne, but also that of the tenants, obviously made mills worth recording, more so in this county than churches, which are largely ignored. The possession of what in many cases was a significant investment in plant and machinery, as well as in the labour needed to operate it was, as might be expected, a mark of manorial status on most of the holdings where mills are mentioned. (The manorial descriptors used below (Table 3) are the same as in the recent paper on Bucks. manors.<sup>7</sup> *M* denotes the use of a marginal rubric for *manerium*; *PUM* is for *pro uno manerio*, 'held as one manor'; *Def.* is for *se defendit*, 'answers for x hides'; (*M*) denotes estates which had been manors in 1066, but were no longer so in 1086; and - indicates places which had never been manors. The figures in each column are the number of places with mills, the total number of mills, where different, is in parentheses.)

Overall, about one-third of places considered to be manors in 1086 possessed mills, although their importance was much greater, as 77 estates had 112.5 mills between them, 84% of the total, even though manors account for only 56% of all Bucks. entries. Within this group, the "*M*-rubric" estates had 57% of mills, even though they account for only 31% of holdings of all kinds. These mills were also disproportionately valuable, accounting for 63% of the Bucks. total. The relative shortage of such estates in the northern half of the county may suggest that the problems of providing a purpose-built mill prevented some holdings from achieving this status. Other holdings which were considered to be manors in 1086 had 26% of mills on 25% of estates, while their value was 30% of the mill total. Estates which had ceased to be manors since 1066 had almost one-sixth of all mills, but these were worth only 8% of the total value. Holdings which had never been manors had only two mills (1.5%), worth 13/- (0.9%). It seems likely that the possession of a watermill, often a valuable asset in its own right, was one of the key elements in determining the status of estates, although there must be some circularity at times in the sense that a large agricultural capacity must have helped to create a demand for milling.

## III

The consistency with which a value is assigned to mills in Domesday Book indicates that they

TABLE 3  
Domesday Buckinghamshire: Mills and Manors

<i>Hundred Gp.</i>	<i>M</i>	<i>PUM</i>	<i>Def.</i>	( <i>M</i> )	-	<i>Total</i>	<i>Value</i>	<i>Av.</i>
Aylesbury	9 (15)	1 (2)	2	1	1	14 (21)	170.7	8.13
Chiltern	17 (36)			7 (13)	1	25 (50)	466.0	9.32
Ashendon	5			1		6	80.0	13.33
Cottesloe	2 (3)	1	1 (3)	1		5 (8)	82.3	10.29
Buckingham	5 (6)	5 (6)	5 (6)	1		16 (19)	124.3	6.54
Newport	11 (12)	8 (8.5)	5 (7)	3 (2.5)		27 (30)	412.7	13.76
<b>Total</b>	<b>49 (77)</b>	<b>15 (17.5)</b>	<b>13 (18)</b>	<b>14 (19.5)</b>	<b>2</b>	<b>93 (134)</b>		
<i>Av Value</i>	11.13	11.26	10.35	5.64	6.50	10.17		
% est. with mills	52.7	16.1	14.0	15.0	2.2			
% mills	57.5	13.0	13.4	14.6	1.5			
% value	62.8	14.5	13.7	8.1	0.9			
% category	40.2	23.1	37.1	31.1	1.6			

were important assets for estate owners, although the range from 20 pence at Leckhampstead 1 to 40/- at Olney underlines how variable that worth could be. In ten cases, mills accounted for 25% or more of the total value, and in a further 26 between 10 and 25%. Overall, 6.7% of the total value of estates with mills arose from this source (3.5% of the total for Bucks. as a whole). The high value mills were often on otherwise small estates, with few agricultural assets, which supports the view expressed above that some mills were engaged in commercial activity, drawing part of their supplies from estates with less favourable access to water-power. There are two groups which need to be examined in this respect: those which have a disproportionate value in relation to the estate total, and those which have high absolute values (Table 4).

There is little correlation between high absolute value of mills (Table 4b) and high value in relation to the worth of an estate (Table 4a). Only the double Lavendon/Clifton Reynes mill, Ravenstone, Emberton and Soulbury 4 appear in both lists, all of them but the last on the Great Ouse. All of these except Ravenstone are parts of highly-fragmented villis, in which the value and asset base of each component is usually small, allowing mills to exert a disproportionate influence. Although Ravenstone is a typical five-hide "thegn's" estate, with six ploughs at work, its total value was only £5 (£6 before 1066).

Most of the estates where mills account for more than one-fifth of the value are similar to those mentioned above, and if one takes all of the elements of a divided vill in addition to those with a mill, the impact of the latter is far less. Even Wooburn, with its eight pairs of millstones (probably housed in more than one structure), is little above the average when it comes to absolute value (13/- per mill cf. 10/2).

Mills which were valued at significantly more than the county average (16/- or more) make an interesting group, especially when one considers that the average is consistent across most types of estate on which mills occur. Seven of these places are on the Great Ouse, all downstream from Wolverton, with ten mills worth 222/- between them, one-sixth of the Bucks. total. As with the

TABLE 4  
Buckinghamshire Mills in 1086

*a. 20% or more of total value*

<i>Place</i>	<i>Mills</i>	<i>Value</i>	<i>% Total</i>
Emberton 3	1	20.0	50.0
Lude	3	14.0	46.7
Lavendon 2	1.5	27.0	45.0
Clifton Reynes 5	0.5	11.0	36.7
Wooburn	8	104.0	34.7
Lavendon 5	1	10.0	25.0
Lit. Woolstone 1	1	10.0	25.0
Ravenstone	1	25.0	25.0
Amersham 4	1	5.0	25.0
Maids Moreton 3	1	10.0	25.0
Little Linford	1	8.7	21.7
Caldecote 2	1	8.0	20.0
Amersham 6	1	4.0	20.0
Soulbury 4	1	16.0	20.0

*b. Mill value more than 1 standard deviation above average*

<i>Place</i>	<i>Mills</i>	<i>Value</i>
Olney	1	40.0
Sherington	1	26.0
Ravenstone	1	25.0
Marlow 1	1	20.0
Water Eaton	1	20.0
Newport Pagnell	2	40.0
Emberton 3	1	20.0
Wraysbury	2	40.0
Linslade	1	20.0
Horton	1	20.0
Thornborough 1	1	20.0
Marlow 4	1	20.0
Hambleden	1	20.0
Lavendon 2/Clifton R 5	2	38.0
Long Crendon	1	18.0
Wolverton	2	32.7
Soulbury 1	1	16.0
Soulbury 4	1	16.0
Little Kimble	1	16.0

mills on the Wye, Colne and Thames, these seem likely to have been drawing grain from more than their immediate catchment areas. Another group of valuable mills is found at Marlow (1 & 4) and Hambleden, together worth 60/-. At the south-eastern corner of the county, Horton and Wraysbury also had three mills valued at 60/-. Soulbury (1 & 4) and Water Eaton (52/-) show that

the apparently insignificant river Ouzel could generate considerable power.

#### IV

The watermills of Domesday Buckinghamshire may only have contributed three percent of the recorded wealth of the county, or six percent of that on estates which possessed mills, but they could be locally much more significant than that. The vagaries of power supply in a region which only had major streams running along its outer boundaries, with the exception of the Thame, at a time when every estate was growing corn, meant that large areas were partly or wholly unprovided with the means for milling their grain mechanically. This would account for the early adoption and wide distribution of the windmill from the late twelfth century, replacing the use of hand-milling and probably some animal power as well.

The evidence as usual leaves tantalising clues as to the underlying economy of the eleventh century. The clusters of high value mills along the Great Ouse, Thames and Colne, together with the large number of mills worked by the little river Wye, suggest that there may have been a considerable movement of grain for milling away from the mill-less belt comprising the Ashendon and Cottesloe Hundreds, with an equivalent return of flour once

any surplus had been accounted for. In some cases, this trade will have been between estates under the same ownership, but there must also have been more purely commercial transactions. The radical changes in ownership which occurred after 1066 meant that the land was concentrated in fewer hands than before, and since most of the mills were operating before that date, the sophistication of the system may be understated from looking only at the 1086 data. For example, Burgred, an important thegn who held Olney and several other estates in nearby parishes, mostly without their own mills, probably gathered the produce of all these lands for milling at Olney, and could have imposed the use of this, the most valuable mill in the county, on neighbours who may have been bound to him through more or less rigid feudal obligations.

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