

AN EIGHTEENTH-CENTURY CORN WATERMILL

By R. J. SPAIN

IN 1929 when Mr. L. V. Clark and Mr. T. V. Clark were sorting the effects of the late Thomas Clark, 1838–1929, miller and corn merchant of Fairbourne, near Harrietsham, they found two old mill ledgers belonging to Alexander Bottle, an earlier miller at Fairbourne. Both ledgers have Purchase and Sales sections. The earlier is dated from 30th September, 1751 to 10th October, 1760, and the later ledger from 1st January, 1782 to 31st December, 1784, except for the Sales section which terminates on 9th December, 1784.

This analysis of the ledgers is divided into three sections called, Buying; Production and Custom; and, Income, Expenditure and Profit.

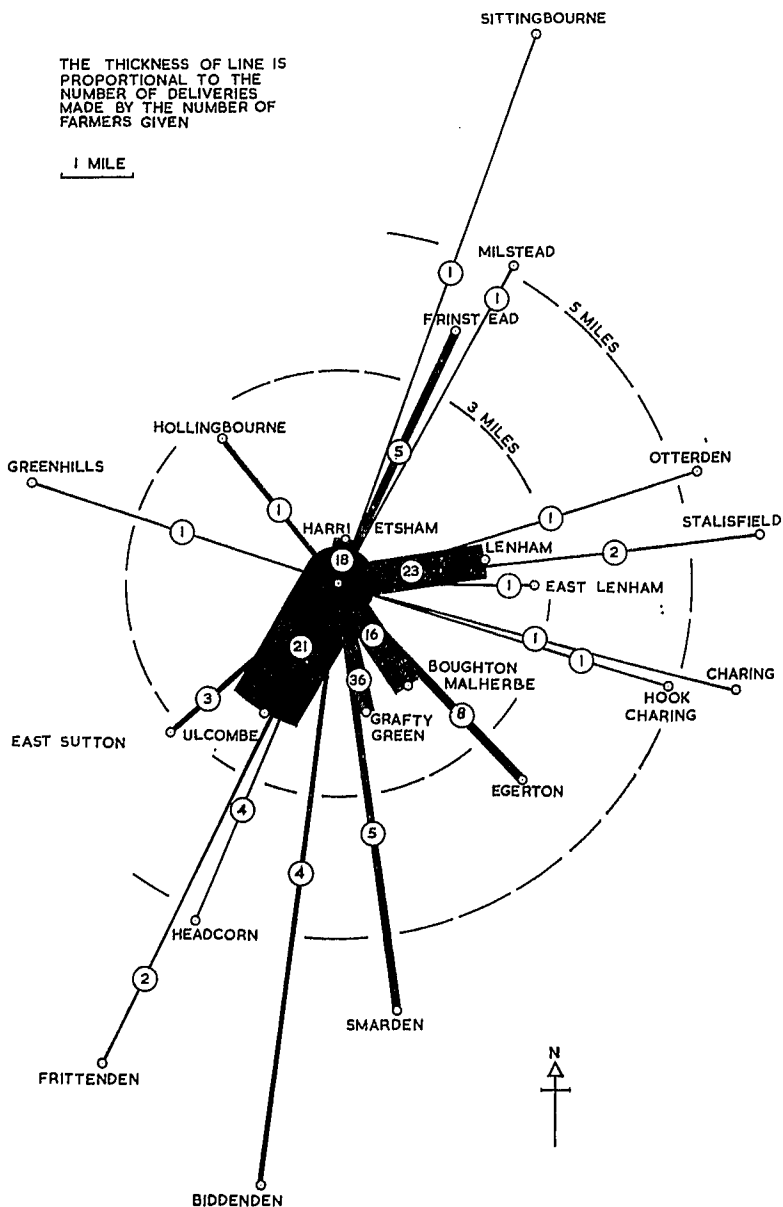
BUYING

All the grain bought by the mill during the 12-year period covered by the ledgers was wheat. Although a considerable amount of mill work was devoted to grinding barley and oats, the miller at no time attempted to satisfy the potential demand for these grains. To have done so would certainly have lowered his profits and probably brought about far more work for his barley-stones which, unlike his burr-stones, required little or no skill. Such work, called grist or hog-milling, which millers were forced to accept with the spread of steam roller-mills a century later, was disliked.

The amount of wheat bought by the miller each year varied considerably from 25–90 tons. Deliveries to the mill were quite irregular in frequency and weight. Sometimes only a sack or two would be brought to the mill, whilst at other times some 20 sacks, each weighing 2 cwt., would arrive. On average the delivery was about one ton per week.

Many different farmers delivered the grain each year. Sometimes one farmer would make two or three deliveries. Fig. 1 shows the distribution of the farmers supplying wheat to the mill during the nine-year period of the early ledger. Also indicated is the number of deliveries from each area. The predominance of local farmers is unmistakable, since some 70 per cent. of all the deliveries came from Lenham, Boughton Malherbe, Ulecombe and Harrietsham. During the nine years a total of 132 different farmers supplied 508 deliveries. Approximately 50 farmers made only one delivery, and most of those came from outlying villages, suggesting that some of the mill intake was from farmers who toured the mills in the hope of selling grain.

AN EIGHTEENTH-CENTURY CORN WATERMILL



THE DISTRIBUTION OF WHEAT SUPPLIED
TO FAIRBOURNE MILL OCT.1751 TO OCT.1760

FIG. 1.

AN EIGHTEENTH-CENTURY CORN WATERMILL

This absence of a delivery pattern is surprising, for the mill production and related customer demand were more or less constant throughout the year. It would have been easy for the miller to have had an agreement with the large farmers to deliver a given quantity of grain every two or three weeks, but this he clearly did not do. There were times when the mill was holding a large stock of grain, sometimes as many as 50 2-cwt. sacks (two months' work in a normal year), and yet this storage level was rarely maintained for the average stock was from 2-10 sacks. Clearly the great number of small farmers that supplied the mill with wheat were not able, individually, to provide enough to maintain regular deliveries. Furthermore, the irregularity of supplier, delivery frequency and amount suggest that the mill purchases were entirely haphazard and devoid of prior arrangement. Perhaps the larger farmers employed agents to tour the mills and, on some occasions, no doubt the miller's lad was despatched to nearby farms when the stocks were low.

Throughout each year the price of wheat rose to a high level just before harvest time when the price would drop sharply, often with the entry 'new wheat' in the Sales margin. From the Purchase entries it is apparent that wheat prices were comparatively stable over a wide area of farmland serving the mill, indicating the responsiveness of the grain market. The remark by John Boys, in 1805, that 'If wheat rises 2s. per quarter at London, it immediately does the same at all the markets in the County',¹ probably held true for the present period.

The stability of the purchase prices points also to the existence of a common grain, most probably the Brown Lammas, which was mellow in grinding and well liked by the millers and was commonly cultivated before the introduction of new species and foreign corn.²

Alexander Bottle was not only a miller but a farmer also, since irregular entries of 'Own Growth' occur most years. He apparently farmed at least 6 acres according to contemporary yields and was able to contribute up to 7 per cent. of the mill's requirements during some years. In only one instance did he buy corn from a market.

PRODUCTION AND CUSTOM

In each ledger one year has been closely analysed and tabulated for various aspects. The years chosen are (i) in the early ledger 30th September, 1751-10th October, 1752, and (ii) in the later ledger 1st January-31st December, 1783. Of prime importance in the comparison of the analyses is the question of whether they were typical years. Certain conclusions would be valueless without due regard to the current harvests, prices and total custom.

¹ John Boys, *General View of the Agriculture of Kent*, Second Edition, 1804, 195.

² *Ibid.*, 91.

AN EIGHTEENTH-CENTURY CORN WATERMILL

Sales—30th September, 1751—10th October, 1752—Early Ledger				
Ledger Entry	Refinement, Grain or Pulse	Typical Price per Bushel	Total Amount Processed in Year (lb.) M	Approximate % of Total Grain Processed Through Mill
'M ^d 'M ^d at twice'	Flour	5/8	45,304	
'2 ^d		5/8	7,420	
'W ^h t'	Wheat bought from the Miller but not processed	4/8	4,547	67½% 0
'W ^h t Gro ^d	Wheat ground—The customers' grain	4d.	1,552	
'Bar' Barley Gro ^d		3d.	25,256	26%
'Oats Gro ^d		2d.	4,263	4½%
'Dogs Gro ^d 'Dogs Meat Gro ^d		3d.	1,650 N	2%
'Bran' 'Bran G ^d '	Offals			

No quantities are given for the entries of bran that occur. No charge was made for bran.

FIG. 2 (Part One).

Sales—1st January—31st December, 1783—Later Ledger

Ledger Entries	Refinement, Grain or Pulse		Domestic or Animal Use	Typical Price per Bushel	Total Amount Processed in 1783 (lb.) _M	% of Total Grain Processed Through Mills
	Flour					
Fine	Fine Flour	Wheaten Breadf	9/4	224		
Course	Coarse Flour	Wholemeal Flour F	8/8	25,247½		
H ^{ds}	Headers		9/4	13,928¼		
Meal	Meal		7/-	10,850	67% 0	
Poll ^d	Pollard	Hogs K	1/-	9,954		
Bran	Bran	Horses O	7d.	11,494		
Hulls	Hulls		?	560		
Wh ^t Gro ^d & Dressed	Wheat Ground and Dressed		6d.	1,075		
Wh ^t Gro ^d	Wheat Ground		4d.	58,593		
Bar Gro ^d	Barley Ground F	Brewing, F Hogs, H Ewes and Lambs I	3d.	19,908	10%	
Hog Corn Gro ^d	Beans or Pease J	Hogs	3d.	13,392	7%	
Oats Gro ^d Fine Q	Oats Ground Fine	Horses G	6d.	27,447	14%	
Beans Gro ^d	Beans Ground	Hogs and Horses D Sheep L	3d.	2,964	1½%	
Peas Gro ^d	Peas Ground	Hogs E Sheep L	3d.	539	½%	
Wh ^t	Wheat Bought from the Miller Without Processing	Handstones?	7/-	408		

- A. Excluding 408 lb. of wheat bought from the miller without processing.
 B. Ignoring a single entry of M^s much used in the early ledger, probably a mistake in this.
 C. Boys, *op. cit.*, 185. 'There are some farmers who allow neither corn nor hay; but, instead thereof, twenty-four strike bushels (about two-hundred weight) of bran, per week, to a team, . . .'
 D. Boys, *op. cit.*, 98.
 E. Boys, *op. cit.*, 103; Bannister, 122, see 'H'.
 F. John Bannister, *Synopsis of Husbandry*, 1799, 98; W. Marshall, *The Rural Economy of the Southern Counties*, 1798, 1, 124.
 G. Bannister, 99, . . . but the chief leading cause of the increased culture of this grain, is the present luxurious stile of living, so prevalent among every rank of people, which has multiplied the number of horses in a high degree . . . ; Marshall, 1, 125-6.
 H. Bannister, 123, . . . so that it is now become a practice with those farmers who are curious in their pork, to feed their hogs on pease and barley meal; 144. 'The most proper food for these shoots (young pigs) is barley-meal, mixed up with water . . . and this is the reason why millers pork is generally preferred to what is fattened by the husbandman.'
 I. Boys, *op. cit.*, 97. 'A winter barley has been lately introduced about Ashford. . . for spring food for ewes and lambs.' This passage, being within brackets, is an addition to the first publication of 1796, nevertheless, it is possible that a very small amount may have been used for this purpose.
 J. Boys, *op. cit.*, 186. 'When hog-corn, such as beans and pease . . .'
 K. Bannister, *op. cit.*, 446.
 L. Bannister, *op. cit.*, 422, feed for couples, i.e. mother and lamb.
 M. Using the avoidupois weight for a bushel of flour of 56 lb.; barley, 56 lb.; oats, 42 lb.; I have employed the bushel weight of wheat as 62.08 lb., being the average given in his purchase ledger for 1751-2 year which compares with the avoidupois weight of 63 lb.; for dogs' meat I have employed 60 lb.; for the year 1783 I have employed the bushel weight of wheat as 62.81 lb., according to his ledger.
 N. Only one customer, a Mrs. Turner, required this service.
 O. Employing the total amount of miller's wheat grain processed in the year according to the purchase ledger entries, stock at beginning and end of year, and allowing for wheat sold without processing.
 P. Some 80 per cent. of all barley was sold in the six months November-April inclusive suggesting that it was used for winter feeding and not brewing. Approximately 50 per cent. was sold in the three months December, January and February.
 Q. There is a single entry of 'oat hulls' which has been ignored as a refinement.

FIG. 2 (Part Two).

AN EIGHTEENTH-CENTURY CORN WATERMILL

It is a coincidence in the later ledger that the years 1782-4 produced unusually poor harvests and that there was a general scarcity of food. In 1782 the imports of wheat were the largest yet known.³ Of the three years covered by this ledger only 1782 and 1783 are fully accounted for and one of these, 1782, shows an unusually low total domestic demand which, combined with the relatively high prevailing prices was probably the result of the bad harvest. Under these circumstances, 1783 has been chosen.

In the early ledger, the last five years of mill production were substantially increased by the appearance of middlemen associated with the Seven Years War. The amount of grain bought by the miller in 1755 was surprisingly higher than the previous three years, and one cannot help wondering if the growing hostilities before the outbreak of war stimulated the normal demand to this high, apparently unrealistic figure. Of the remaining three years, 1751-2, has been chosen for analysis for two reasons, primarily because the earliest available year has the advantage of magnifying the trends and changes in corn-milling that occurred between the two analysis points and, secondly, because the year 1751-2 had an average grain cost which was between the low average grain cost of 1753-4 and high average grain cost of 1752-3, i.e. which would suggest an average harvest.

A comparison between the two ledgers reveals several outstanding facts. The total amount of grinding done by the mill in 1783 was twice that done in 1751. See Fig. 3. This substantial increase is attributable to two causes:

- (a) An increase in the number of domestic customers, especially permanent, together with a slight increase in wheat bought per customer;
- (b) Work on the barley-stone doubled, due to a sixfold increase in the throughput of oats and the appearance of hogcorn, beans and peas. This growth in the production of animal feeds is probably caused by an increase in the practice of keeping horses and hogs.

The grinding of customers' wheat, which in 1751/2 was negligible being some 2½ per cent. of all wheat ground, increased nearly twentyfold by 1783 when it represented some 45 per cent. of all wheat ground. Clearly by 1783 more customers found it cheaper not to buy grain direct from the miller. Allowing for a certain number of farming families who grew their own wheat, it is probable that the majority of customers bought direct from the farmers, though near large towns a middleman may have performed this function.

In 1751-2 only two refinements of wheat were sold, but by 1783

³ Lord Ernle, *English Farming Past and Present*, Sixth Edition, 1961, 267.

AN EIGHTEENTH-CENTURY CORN WATERMILL

Throughput of Grain and Pulse, 1783			
Wheat Stone		Barley Stone	
Miller's Grain	73,392	Barley	19,908
Customer's Grain	59,668	Oats	27,447
		Hogcorn	13,392
		Beans	2,964
		Peas	539
Total	133,060 lb.	Total	64,250 lb.

Throughput of Grain and Pulse, 1751/2			
Wheat Stone		Barley Stone	
Miller's Grain	52,724	Barley	25,256
Customer's Grain	1,552	Oats	4,263
		Dogs' Meat	1,650
Total	54,276 lb.	Total	31,169 lb.

FIG. 3.

seven refinements (including three types of offal) were produced. Fig. 4 shows the relative proportions of these refinements obtained from the grain.

In the early ledger there are several entries of '@ twice' or '@ three times' related to middlings or, in rare cases, barley. There is even one entry of 'Stranger at several times'. This I take to mean grinding the grain more than once, though I cannot reconcile the charges with the number of passes.

An examination of the names of the domestic customers and their trading frequency suggest that they are divisible into two sections, permanent and temporary. The difference between the two categories is not easily defined for many permanent customers occasionally lapsed into buying irregular amounts at irregular intervals. I have, however, assumed the temporary classification when the person has not appeared for such a duration as to suggest that he must have visited another mill for his needs.

The total number of customers of the mill apparently fluctuated considerably. In 1751-2, the figure was close to 60, but by 1758-9 this had dropped to 40. The temporary custom in each case was just over one-third of the total. It is not surprising, therefore, that only about one-fifth of all the customers of 1758-9 are to be found in the list of 1751-2. In the later ledger the total number of customers was close to 90, of which some 20 per cent. were of a temporary nature. This high

AN EIGHTEENTH-CENTURY CORN WATERMILL

Refinement of Wheat by Weight			
1751		1783	
Middlings	74%	Fine Flour	$\frac{1}{2}\%$
		Coarse Flour	35%
Seconds	12%	Headers	19%
Remaindera	14%	Meal	15%
		Pollard	13 $\frac{1}{2}\%$
		Bran	16%
		Hulls	1%
Grain	100%	Grain	100%

A. Established by comparing the wheat bought and processed (purchase ledger) with that sold (sales ledger).

FIG. 4.

percentage of temporary custom suggests the close proximity of other corn mills. In fact, six water-mills and one windmill were operating between one and two miles of Fairbourne Mill.

During the account year of 1751-2 there were four customers who regularly bought large amounts of flour. Together they bought some 29,512 lb. of flour in the year, representing some 56 per cent. of the total domestic sales. Two of them appear in the account for party ear consecutively so that effectively, there were three people at one time who were each taking an average of nearly 30 lb. of flour a day. These people were probably bakers. They normally bought 2 or 4 bushels (112 lb. or 224 lb.) every four or eight days.

The majority of customers made very regular calls to the mill usually once every seven or fourteen days. No doubt these visits were coincident with baking days. A small number of people, probably locals, called at irregular intervals of one to eight days.

For the purpose of this analysis, I have used, as the limit of domestic purchase, one sack of flour or meal. Although this represents by contemporary measure some 280 lb., it is significant that the common farm-house bread recipe of East Kent called for a bushel of meal (56 lb.) at a time.⁴

'. . . to a bushel of meal, add a pint of good yeast well mixed with two or three gallons of warm water, stir the whole well together, and let it work six or eight hours before it is put into the oven.'

In the autumn of 1756, there occurs for the first time a large delivery of flour. The Purchase Ledger shows the following entry:

'August 24 1756 Charrriage of 24 Sacks of 2^d to Chatham and

⁴ Boys, *op. cit.*, 97.

AN EIGHTEENTH-CENTURY CORN WATERMILL

Brompton 4 water & 3 land Carriage	0. 14. 0.
Fullar Carriage to Maidstone	0. 6. 0.'

The Sales Ledger shows a corresponding entry:

'Aug. 23 & 24 deliver'd 24 Sacks of 2 ^d to Maidstone in order to go 10 Sacks to Mr. John Eales of Brompton and 14 Sacks to Mr. John Halfhead of Chatham 31 ^s p ^r Sack	37. 4. 0.'
--	------------

Following this item large deliveries became regular with carriage and cartage costs entered into the accounts. Unfortunately, not all the destinations are recorded, but it is quite clear that the majority went to Chatham.

In the buying section of the year October, 1758 to October, 1759, there is an entry:

'Warter and Cartage of 284 Sacks of Flour to Chatham at 2 ^d p ^r Sack	8. 5. 8.'
--	-----------

Similarly at the end of the October, 1759 to October, 1760 section:

'Water & Cartage of 193 Sacks of Flour to Chatham at 7 ^d p ^r Sack	5. 4. 3.
---	----------

Water & Factorage of Midlings & Course Flour to London	1. 11. 1'
--	-----------

There is little doubt that the names appearing in the Sales section for many of these large entries were victualling agents. In 1756 the Seven Years War broke out in Europe and there was fear of a French invasion. England's navy was rapidly prepared and tenders for wheat and flour invited by the victualling offices of the ports. In the atmosphere of near-panic that swept England, this small isolated country mill contributed by raising her normal domestic output twofold and in 1758-9 by threefold. Such was the potential of the corn-milling industry! Clearly, this mill normally worked well under capacity. One wonders how many of the numerous corn wind- and water-mills that existed were extracting a living at such low working capacity. Perhaps only the rural mills, supporting scattered village populations where transport was at a premium, existed in this state.

Certain of the large customers, particularly those of London, may have been urban mealmen and chandlers.

In Fig. 5 the domestic demand, i.e. excluding all middlemen and victualling agents, for all wheat refinements has been established by comparing the value of the middlemen sales to the total sales (income). The disadvantage of employing a value basis is that middlemen sales only included flour whereas domestic sales included flour and offals. As offals represent some 30 per cent. of wheat throughput (from 1783 entries) and generally command a price of not more than one-ninth of flour prices, the result of employing a value basis is to slightly decrease the true domestic grain demand. So, the figures given for column 5 from

AN EIGHTEENTH-CENTURY CORN WATERMILL

Account Year	Miller's Grain ^A Bought and Sold (Bushels)	Total Profit (£ s. d.)	Approx. % of Throughput by Value Attributable to Middlemen or Victualling Agents	Throughput of Miller's Grain for Domestic Consumption (Bushels)
1751-2	1063·3	90 0 4½	0	1063·3
1752-3	1206	93 8 0¼	0	1206
1753-4	1023	125 5 0	0	1023
1754-5	1774	99 8 0	0	1774
1755-6	2357	160 15 0	22	1815
1756-7	2634	205 11 2	41	1554
1757-8	2774·5	142 0 3¼	61	1074·5
1758-9	3280·5	139 7 11¼	65	1145·3
1759-60	2661	150 1 6½	52	1276
1782	778	110 13 7½	0	778
1783	1176·5c	111 4 6	0	1176·5
1784B	approx. 997	Unknown	0?	approx. 997

A. Taken from purchase entries allowing for stock at beginning and end of financial year.

B. Approximately three weeks' sales accounts are missing from the ledger.

C. A comparison between this and the sales records as embodied in Fig. 2 reveals an error of approximately 1 per cent.

FIG. 5.

1755-6 to 1759-60 are a fraction higher than they should be. Notwithstanding the inaccuracy, it is clear that the total domestic demand for wheat refinements fluctuated considerably from year to year. The first few years of the Seven Years War appear to have stimulated consumption and caused a substantial increase in domestic demand.

Perhaps other mills nearby improved their output to exploit the war effort and discouraged their local custom in favour of a large market in the ports. From 1757-8 to 1759-60, the domestic demand is comparable to the pre-war figures, and suggests a normal level of 1,100 to 1,150 bushels a year.

INCOME, EXPENDITURE AND PROFIT

The prices of flour and offal refinements quite naturally moved in increments of 8d. per bushel, for domestic consumption employed pecks

AN EIGHTEENTH-CENTURY CORN WATERMILL

and gallons. Employment of an octonal pricing system had the distinct disadvantage of inflexibility. The refinement prices could not respond to the gradual changes in grain prices which inevitably occurred from harvest to harvest and applied to different quality grains. Thus the miller's profit depended largely on his ability to regulate flour prices in relation to current grain prices and, to a lesser extent, his securing the lowest grain prices. Some consideration had to be given to nearby mill prices for a considerable number of his customers were within easy reach of other mills.

Obviously, it was not in his interest to raise or lower his flour prices as often as his grain prices changed. To have done so would have subjected his customers to very irregular and continual price changes. They would, no doubt, have looked elsewhere for less erratic prices. At best, the miller could check his profits at regular intervals during the year by comparing the value of sales and purchases. Apparently, he did not do this. No relationship can be detected between total income and total expenditure except, strangely, that his profit per bushel processed was generally inversely proportional to the total throughput. Reference to Fig. 5 shows that the profit had little relationship to the total throughput, e.g. in the ledger year 1758-9 the miller processed three times more of his own grain than he did in 1753-4 and yet his profit increased by only some 10 per cent. Apparently, he was quite unable to regulate flour prices to grain prices and consequently, gave himself little, indeed in many cases, no reward for the tremendous efforts during the war years. It is significant that, in 1758-9, he changed his flour prices twelve times at irregular intervals, giving ample opportunity for profit review. Yet, although his throughput was some 18 per cent. higher than the previous year his total profit was less.

Kent Archaeological Society is a registered charity number 223382

© Kent Archaeological Society