

Millstones for Medieval Manors

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Abstract

Demesne mills in medieval England obtained their millstones from many sources on the continent, in Wales, and in England. The most prized were French stones, usually fetched by cart from Southampton or ferried by river from London. Transport costs were low.

Millstone prices generally doubled between the early thirteenth century and the Black Death, and doubled again in the later fourteenth century. With milling less profitable, many mills in the fourteenth century changed from French stones to the cheaper Welsh and Peak District stones, which Thames valley manors were able to buy in a large number of Midland towns and villages. Some successful south coast mills continued to buy French stones even in the fifteenth century.

RICHARD Holt recently reminded us that mills were at the forefront of medieval technology and argued persuasively that windmills may have been invented in late twelfth-century England.¹ But whether powered by water, wind, or animals, the essential of the grain mill was its massive millstones, up to sixteen 'hands' across, and for the best stones medieval England relied on imports from the European continent. The accounts kept by manorial bailiffs and reeves record the purchase of many thousands of millstones, and in hundreds of cases the accounts name the quarry, village, town or port from which the stones were fetched.² A study of the manorial accounts provides useful information not only on the sources of millstones and the changing pattern of purchases in the fourteenth century, but also on medieval transport arrangements.

English mills obtained their stones from several sources.³ The great majority of

millstones were bought in a port or other town; demesne mills bought relatively few at quarries. The most prized stones came from France, from the Seine basin east of Paris. In later years these were built up from segments of quartzite embedded in plaster of Paris, held together with iron hoops. There is no archaeological evidence that such composite stones were imported before the seventeenth century, but the language of the manorial accounts – for example, references to pieces of millstone, hoops, and repairs with plaster of Paris – and the premium price always paid for French stones both suggest that some medieval imports may also have been of this type.⁴

The other stones imported in quantity from the continent were cut in one piece from basaltic lava in the Niedermendig district of Germany and exported from Cologne; from this city they gained their nickname of 'cullens'. Shipped down the Rhine, they went primarily to the ports of eastern England and were widely used

¹ R Holt, *The Mills of Medieval England*, Oxford, 1988.

² In this paper I use the word 'quarry' to include surface workings.

³ Part of the material for this paper was collected during sabbatical leave in 1983/4, assisted by a grant from the Social Sciences and Humanities Research Council of Canada. The remainder has been obtained from microfilm sources, and I express my gratitude to St Thomas More College, University of Saskatchewan, for assisting with the costs of purchase. The sources studied include all the Pipe Rolls of the Bishopric of Winchester, and most of the manorial accounts of Glastonbury Abbey, Merton College, Oxford, Durham Cathedral Priory, Norwich Cathedral Priory, Canterbury Cathedral Priory, Exeter Cathedral, Bury St Edmunds Abbey, Westminster Abbey, Crowland Abbey, Osney Abbey, and New College, Oxford; and some of the manorial accounts of Battle Abbey, Ramsey Abbey, St Swithin's Priory, Winchester,

and the earldom of Norfolk. These sources were supplemented with material printed in J E Thorold Rogers, *History of Agriculture and Prices*, Oxford, repr. Vaduz, 1963, II, pp 430–3, III, pp 389–92. Dr John Langdon has kindly given me several important additional references.

⁴ D Gordon Tucker, 'Millstone making in Scotland', *Proc Soc Antiq Scot*, 114, 1984, pp 540–1, states that French composite stones came only in the eighteenth century, but agrees that they were distinctively expensive and that 'Monolithic millstones of French burr ... are very rare outside France.'

in the East and the North.⁵ Their price, characteristically, was between half and two-thirds that of French stones; the higher cost of the latter is therefore a reliable guide to their origin.

Many manors bought millstones cut in British quarries, and these were cheaper still. Wales supplied most of the stones for the Somerset mills of the Bishopric of Winchester and Glastonbury Abbey, and other Welsh stones were carted across England as far as north Hampshire, Wallingford and even West Wycombe. Millstones which probably came from the Peak District provided most of those bought by Thames valley manors in the later fourteenth century. Mills in central southern England obtained stones from the pits at *La Penne*, almost certainly Penselwood.⁶ This was the most frequently-named origin of the millstones bought by Longbridge Deverill (Wilts) and Rimpton (Som), and stones from Penselwood also reached Taunton, and Downton (south-east of Salisbury). Other English quarry sources included Congleton (Cheshire), Rawdon (W Yorks), and Dartmoor, though stones from these areas seem to have moved only to local mills.⁷

The costs of transport were such that bailiffs recorded the places of purchase and the expenses of carrying millstones more frequently than those of most other commodities the manors bought. But the surviving manorial accounts are mainly for

mills in southern England, the Thames valley, Somerset, and East Anglia, and doubtless record only a small minority of the locations where millstones were purchased. Table 1 summarizes the known places of millstone purchases mentioned in these accounts, but should not be taken as representative of the country as a whole. All this information is for demesne mills only: one guesses that the many peasant mills were more likely to get their stones from cheap local sources.

I

Almost the earliest surviving manorial accounts show how diverse were the places from which mills might get their stones. In 1231/2 the bishop of Winchester's Taunton mills bought three stones for 49s including the cost of carriage: one was from overseas, one from Penselwood and one from Wales.⁸ The bishop's Hampshire manors regularly bought expensive French stones in Southampton, while in the thirteenth century his Thames valley mills bought them in London. In 1244/5, for example, Wargrave bought a stone in London for 32s, and spent 31 1/2d more on ferrying it up the Thames to the mill.⁹ In the next decade the bishop's accounts record Chichester as an alternate source of French millstones, and name Bridgwater as the regular conduit for Welsh stones bought by Taunton. Some years Taunton's French stones came from Exeter or Topsham, and the bishop was able to use customary services to carry them.¹⁰ More frequently, though, his bailiff bought them at Wareham: for example, a *mola transmarina* cost 51s 1d to buy in the Dorset town in

⁵ M Watts, *Corn Milling*, Princes Risborough, 1983, pp 19-21; W Foreman, *Oxfordshire Mills*, Chichester, 1983, p 50. A H Graham ('The Old Malthouse, Abbotsbury, Dorset: the medieval watermill of the Benedictine abbey', *Proc Dorset Nat Hist & Arch Soc*, 108, 1986, p 122) found evidence of several of these types at a single site. In correspondence with me, however, Dr Graham has confirmed that these fragments cannot be dated accurately. I must also acknowledge gratefully the advice I have received on several matters from Martin Watts, Esq; I owe to him, for example, the information that German stones formed the majority of those excavated in the medieval village of Wharham Percy, Yorks. For help on geological problems I have turned to my eminent colleague, Prof. W A S Sarjeant, and his friends. None of these scholars should be held responsible for my arguments or conclusions.

⁶ See *VCH Somerset*, I, pp 27, 365-6, and II, p 558.

⁷ PRO, DL28 4/42.

⁸ Hampshire Record Office, Winchester [hereafter HRO], Eccles. 2/159282.

⁹ HRO, Eccles. 2/159287.

¹⁰ HRO, Eccles. 2/159450A, 159311, 159312; *The medieval customs of the manors of Taunton and Bradford on Tone*, ed. T J Hunt, Somerset Rec. Soc. LXVI, Taunton, 1962, p 4.

TABLE 1
Records of millstone purchases at certain towns.*

Place	1208-1300	1300-50	1350-1400	1400-54†	TOTAL
Southampton	60	74	72	21	227
Bridgwater	7	12	48	57	124
London	32	22	7	4	65
Penselwood quarry	9	9	13	5	36
Warcham	14	13	0	0	27
Ipswich	2	10	1	5	18
Bedford	0	5	9	0	14
Portsmouth	0	3	0	7	10
Thame	0	0	9	1	10
Chichester	4	0	3	3	10
Islip	0	0	8	1	9
Tewkesbury	0	8	1	0	9
Lymington	0	6	2	0	8
Cambridge	2	3	0	2	7
Exeter/Topsham	7	0	0	0	7
Banbury	0	2	4	0	6
Oxford	0	4	1	1	6
Yarmouth (Norf.)	3	3	0	0	6
Salisbury	0	5	0	0	5
Whitchurch (Bucks.)	0	0	5	0	5
Witney	0	0	3	2	5
Weymouth	5	0	0	0	5
Brackley	1	3	0	0	4
Colchester	0	0	2	2	4
King's Lynn	0	2	2	0	4

* Figures are for transactions, not millstones.

† Each period runs from 29 September in the first-named year to 28 September in the second-named year.

1270/1, and 10s to cart it to Taunton.¹¹ In total, however, English manorial accounts have more references to millstone purchases in Southampton than in any other place, as may be seen from Table 1 and from the Appendix at the end of this article.

Thames valley manors probably had the widest choice of sources. Witney bought stones in London in 1304/5 and 1319/20, shipping them up the Thames to Henley and Wallingford before carting them on to the mill; it fetched a millstone seventy miles from Southampton in 1320/1, and carried two stones thirty miles from Tewkesbury in 1317/8.¹² Later, however, Witney bought its millstones in neighbouring towns and villages like

Kingham, Islip, Burford, and, almost certainly, in Witney itself. In such places manors were able to buy Welsh and Peak District stones taken there by traders; there is nothing to suggest that demesne mills bought millstones cut from outcrops of Cotswold or other local stone. Brightwell frequently bought stones in London for Wallingford mill, but in 1337/8 purchased one in Tewkesbury and thereafter, like Witney, went to local markets. Up to 1300 Wargrave always bought in London, but carted millstones from Southampton in 1328/9 and thereafter got them in towns like Aylesbury and Thame. Holywell, on the outskirts of Oxford, in 1330/1 bought millstones in London, in Brackley, and in Oxford itself.¹³ Cuxham bought in South-

¹¹ HRO, Eccles. 2/159450B.

¹² HRO, Eccles. 2/159334, 159332.

¹³ Merton College Muniments [hereafter MCM] 4491, 4496.

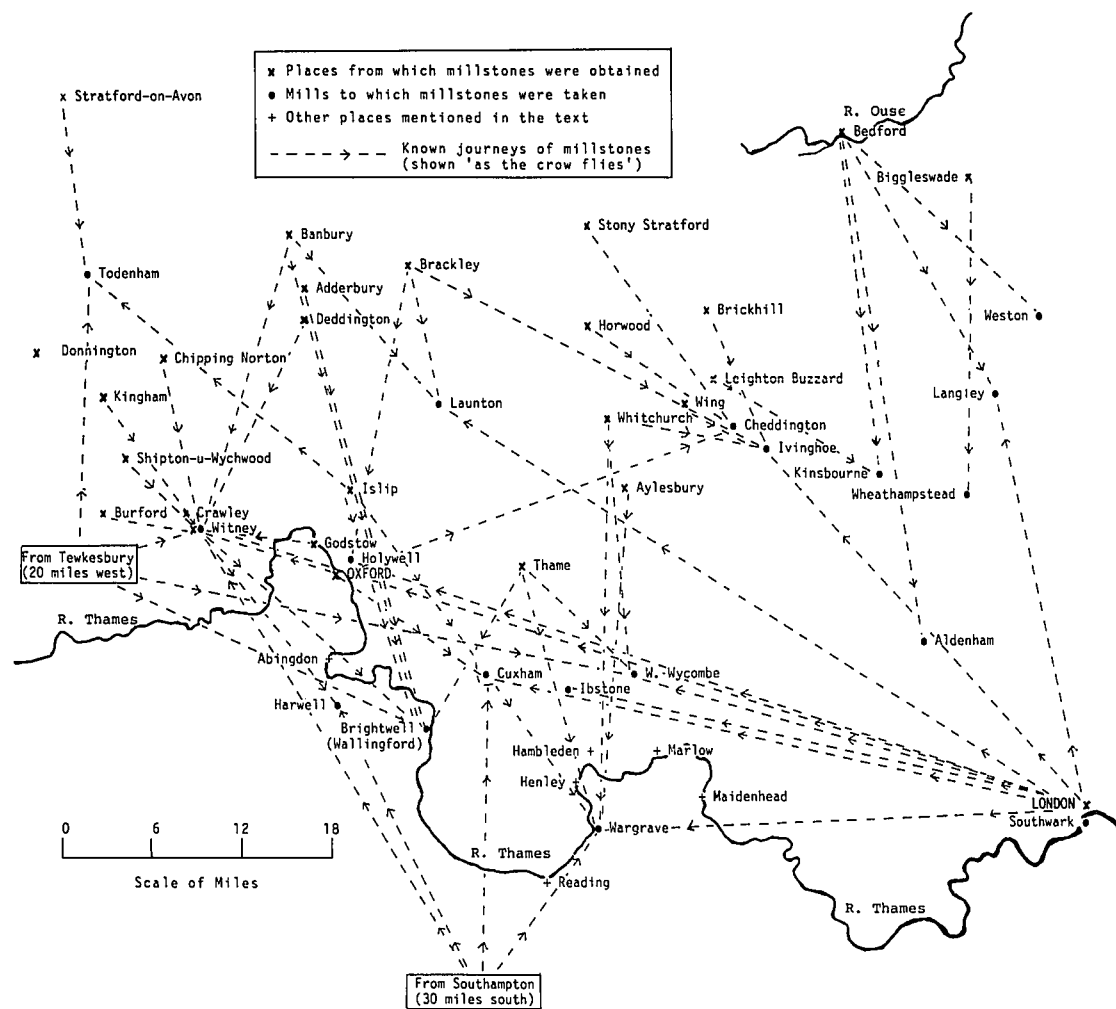


FIGURE I
Places from which millstones were fetched for south Midland mills

ampton in 1305/6, and in London in 1330/1.¹⁴ Launton in 1350/1 bought two stones for stock, and paid nothing for carriage because it purchased them in the village itself *de hominibus venientis de le Peek*; in other years it got stones in Brackley and Banbury, also – one assumes – from the Peak District.¹⁵ Figure I shows that the later journeys to fetch millstones for Thames valley manors were almost always made to towns and villages further north. This makes it much more likely

that unidentified stones came from the Peak District, rather than from Wales.

Ipswich was the source most often mentioned for millstones in eastern England. It supplied manors as far north as Hinderclay, as far west as Chesterford, and as far south as Bocking. Hinderclay also bought stones at Norwich, Lakenheath, Yarmouth and, probably, Beccles. The Essex manors of Birdbrook and Takeley purchased millstones at Colchester, and Takeley also at Maldon. Feering bought stones in London and had them shipped around the coast to Salcote or Maldon.

¹⁴ MCM 5827, 5841, 5853.

¹⁵ Westminster Abbey Muniments [hereafter WAM] 15345.

Norfolk manors most frequently record purchases at Yarmouth and King's Lynn. The few entries in manorial accounts for Kent name as sources London, Folkestone, and Sandwich. Not many of these journeys in eastern England were for more than twenty-five miles.

Cambridge was the usual place for purchasing stones for the mills in its vicinity. Further inland, Bedford furnished most of the millstones bought by Hertfordshire mills, though there are mentions of purchases in London and Leighton Buzzard as well. Buckinghamshire manors, like those of the Thames valley, chose from many sources: Ivinghoe and West Wycombe, from London before the Black Death, and from villages like Whitchurch and Thame after it. Ibstone bought in London, Cheddington at Stony Stratford and Great Horwood. Todenham, on the borders of Gloucestershire, Warwickshire, and Oxfordshire, bought millstones in Tewkesbury in 1307/8, Stratford-on-Avon in 1346/7, and Islip in 1374/5.¹⁶

In addition, there were many local sources for individual stones, as mills sold off those which were seriously worn or damaged. Even the major Winchester manors were willing at times to buy second-hand stones, especially for use as the lower or bedstone. Wargrave, for instance, bought used stones in 1265/6 and 1297/8, and in 1384/5 Farnham paid as much as 40s for one.¹⁷ Burghclere windmill bought two pieces of old millstone in 1335/6 for 3s 4d, and fixed them together with plaster of Paris for an additional 4s.¹⁸ Cheriton in 1345/6 bought two stones to make a bedstone, for 7s including repairs.¹⁹ In the calculations and observations which follow, however, these second-hand stones are ignored.

II

It can be seen from the examples above that millstones from abroad were available for sale in a limited number of major seaports, while those carted from English outcrops, pits and quarries could be bought in a multitude of towns and villages. To deliver the former required an integrated transport system: carts or sleds to carry French stones to the Seine and German stones to the Rhine, barges to move them down river, ships to ferry them across the Channel or the North Sea, perhaps more barges to take them up river from London, Yarmouth, or King's Lynn, and then more carts to deliver them to the mills.

One cannot calculate transport charges for continental stones, but payments for coastal shipping give some idea of the likely scale. Welsh stones bought in Hampshire ports in the mid-fourteenth century cost on average about 21s 6d after what were presumably journeys around Land's End, while those bought at Bridgewater in the same years averaged only 12s. One may guess that the freight cost about 10s a millstone. The charges for the French stones shipped the shorter distance from Le Havre or Rouen would probably have been less. For carrying such stones around the coast from London to Salcote in Edward I's reign, Feering paid 2s 9d, then 3s 6d, and then 4s 6d, not counting wharfage charges; in 1315/6 shipping a millstone from London to Maldon cost 6s 8d.²⁰

At each transfer point there was the difficult task of moving a stone, perhaps weighing nearly a ton, from one conveyance to the other. This is probably why most large stones were taken to ports that had cranes, or at least wharfs that facilitated unloading. In 1453/4 the Taunton mills made a bulk purchase of twelve millstones for £10, and paid in all 6s for

¹⁶ WAM 25938, 25962, 25973.

¹⁷ HRO, Eccles. 2/159297, 159316, 159391.

¹⁸ HRO, Eccles. 2/159347.

¹⁹ HRO, Eccles. 2/159355.

²⁰ WAM 25599, 25600, 25632.

'cranage' at Bridgwater and 20s for carting them from there to Taunton.²¹ Alresford paid 8d a stone in 1430/1 to the *custos* of *la Craan* at Southampton.²² When Havant bought a great millstone at Southampton in 1433/4 for £6, it paid a further 12d for taking it to the crane, 8d in cranage, 6s 8d for a barge to take it to Langstone, and then 12d for carting it to Ashwell mill.²³ By 1440/1 cranage at Southampton cost 12d a stone.²⁴

There were other charges. In 1330/1 Cuxham purchased five millstones in London for £15 16s 8d. It paid 1d in *argento dei* to seal the bargain, and spent 2s 1d, on five gallons of wine to celebrate. Loading cost 5s, with 7½d for wharf dues and 10d for murage. Shipment from London to Henley then cost 11s 2d, with 10d for murage en route at Maidenhead.²⁵ It was at Henley that stones shipped up the Thames were usually transferred to carts, though sometimes the unloading took place at Marlow or Hambleden.

The surviving accounts contain almost no explicit information on the use of rivers for transporting millstones in East Anglia. In 1370/1 Rickinghall bought a stone at King's Lynn, and then carted it from Brandon after what was almost certainly a journey up the Little Ouse, and the same river had probably carried the stones that Hinderclay purchased at Lakenheath in 1306/7.²⁶ Millstones bought at Norwich and Thorpe are likely to have been ferried up the Yare, and those at Beccles up the Waveney. Those landed at Ipswich seem always to have been moved onwards by road.

Equally, one has to infer the importance of the Severn in the west country from the dozens of purchases made at Tewkes-

bury, and a few recorded at Worcester and Berkeley. As the place where the Severn was joined by the Warwickshire Avon, Tewkesbury was better suited than Gloucester for using the waterways to forward millstones to purchasers. As in East Anglia, the final movement of the stone to the mill was usually by cart. The increased importance of horse-drawn carts in medieval transport has been too fully documented by Dr Langdon to need further comment here.²⁷

For the last stage of the journey, manors had two choices: they could use demesne carts with *famuli* and customary tenants to carry the stone from wharf to mill, or they could hire a carter on contract. Farnham in 1373/4 bought two millstones in London, and paid 9s 6d for them to be ferried up river to *Hamme* (perhaps Egham). It then hired a carter for 5s to take one stone to the mill, and allowed 2s for the expenses of six men with the manor cart fetching the other.²⁸

The most detailed list of expenses is probably for the two stones that Holywell bought in Southampton in 1335/6 for a total of £6 1s. The manor spent 10½d on the expenses of the *serviens* and miller going from Oxford to Southampton with two horses, and 14½d on their living costs there for two days. The miller stayed in Southampton for four days to drill the stones, with 4d a day for his board, 2s for the hire of tools, and 6d for the men helping to turn the stones. The *serviens* meanwhile went back to Oxford, at a cost of 8d, to collect reinforcements. With two carts, four more men, and seven cart horses, the expenses of the journey to Southampton came to 23d and those of

²¹ HRO, Eccles. 2/159444.

²² HRO, Eccles. 2/159449.

²³ HRO, Eccles. 2/159432.

²⁴ HRO, Eccles. 2/159436.

²⁵ MCM 5853.

²⁶ British Library, Add. Roll 63544; Joseph Regenstein Library, Chicago [hereafter RLC], Bacon MS 440.

²⁷ J Langdon, 'Horse-hauling: a revolution in vehicle transport in twelfth- and thirteenth-century England?', *Past & Present*, 103, 1984, pp 37-66; *Horses, Oxen and Technological Innovation*, Cambridge, 1986, pp 76, 114-5, 142-3. The prominence of road transport in moving unwieldy millstones makes me view with caution the emphasis placed on water transport in J F Edwards and B P Hindle, 'The transportation system of medieval England and Wales', *Jnl of Hist Geog.* 17, 1991, pp 123-34.

²⁸ HRO, Eccles. 2/159381.

the long haul back to Oxford 2s 8d, with 6s 4½d spent on the horses for oats, 3s 9½d for horsebread, 10½d for hay, and 7d for shoeing. The *serviens* paid 14d for loading the stones into the carts, 3½d on timber and nails to fasten them securely, and 13d in tolls. Moreover, while the demesne men and carts were away, the manor was forced to hire replacements to help with the harvest.²⁹

The Winchester Pipe Rolls are not so detailed about the costs of carrying French millstones to Taunton, but the expenses recorded in the 1290s included payments of 15s for carriage (partly by sea) from Southampton; 19s 6d and 20s from Wareham; and 22s from Weymouth. On average, between 1290 and 1325, overland transport added about 31 per cent to the price of millstones Taunton purchased at the south coast ports. After 1326/7 it bought no more there.

Such lengthy and costly journeys were exceptional. More typically, Witney paid 40s 3d for a millstone in London in 1304/5, and 13½d for taking it from the wharf to the barge; shipment to Henley cost 2s, with 9d for transferring it to the demesne cart and packing it. The expenses of two men and four horses, for the three days the cart needed for the return trip between Witney and Henley, amounted to 18d, with 4d more paid in toll at Wallingford.³⁰ The immediate transport costs (without making allowance for the costs of the cart and horses, the stipends of the *famuli*, or the sale value of customary labour) increased the millstone's purchase price by a modest 14 per cent.

When the mills in Oxfordshire and Buckinghamshire turned to local sources for their millstones, carriage added only slightly to the total cost. In 1375/6, for example, Witney paid in expenses 6d to fetch a stone eleven miles from Islip,

Wargrave 18d for one from Whitchurch twenty-five miles away, and West Wycombe 20d and Brightwell 2s for bringing stones from Thames, respectively about ten and fourteen miles away.³¹ The average immediate cost added only 5 per cent to the purchase price. As jobbing carters increased their charges sharply after the Black Death, some manors made more use of demesne carts and customary labour, and more use too of the local markets where millstones might be bought. Figure 1 (p 100 above) illustrates some of these movements in the south midlands.

This information confirms that the medieval road system, at least in central and southern England, was adequate even for carting heavy items like millstones. It may have been even more comprehensive than that outlined by Dr Hindle, as many of the journeys recorded would have been difficult if satisfactory roads had not existed in addition to those shown in his maps.³²

III

Buying a millstone was a major expense. A single French stone often cost more than the mill's multure sales yielded, or the manor obtained from its lease, in a whole year. Few tenant millers could afford such expense, so leases normally obliged the lord, not the tenant, to replace a millstone when it was worn out.³³ These costs led lords, as has been shown, to seek cheaper alternatives to French stones; and they also forced lords to be unusually cautious over buying any sort.

²⁹ HRO, Eccles. 2/159456.

³⁰ B P Hindle, *Medieval Roads*, Princes Risborough, 1982, pp 34–51.

³¹ Holt's comment (in *Mills*, p 99) that, outside the eastern counties in the thirteenth century, millstones were the lord's responsibility, is rather too sweeping. The bishops of Winchester bought no stones for Witney's mills between 1321 and 1361; for Farnham's between 1299 and 1353; or Bishop's Waltham's between 1395 and 1454. The leases of East Meon and Burle mills to William Tyre and William Whetham in the fifteenth century, and of the Wolvesey mills to John Arnold in 1406/7 (HRO, Eccles. 2/159410) clearly left it to the tenant to buy new stones.

²⁹ MCM 4496.

³⁰ HRO, Eccles. 2/159408.

As stones were usually bought singly, not in pairs, buyers had to match the new millstone carefully to its future partner. For this reason manors customarily sent both the miller and the reeve or bailiff to make the purchase, the former to select a suitable stone and the latter to negotiate the price and arrange transport.

Choosing the stone was not always easy. In 1336/7 the Downton miller and reeve could not find a satisfactory millstone in Southampton, but were able to get one in Salisbury. After more purchases in Salisbury in subsequent years, Downton transferred its business to Lymington. In 1360/1 the miller made two trips to Lymington without finding a suitable one, and had to go back to Southampton to meet his needs.³⁴ Farnham usually bought its millstones in London, but in 1356/7 had to send its officials 'to Chichester, Southampton, and elsewhere through the sea-coast' to get what it wanted.³⁵ These were war years, of course, and plague mortality among the quarry workers may have made French stones more scarce.³⁶ The Farnham bailiff in 1410/1 ran up expenses of 6s inspecting stones at King's Lynn and Sudbury before making his purchase at Ipswich.³⁷

As with other major purchases, it was common to confirm the bargain with a small payment *in argenteo dei*.³⁸ This was usually the same whatever the size of the transaction. Cuxham paid a penny in London in 1330/1 on a purchase of over £15, while in 1308/9 Longbridge Deverill paid a penny on a stone bought at Penselwood for 8s, and another penny on a stone bought in Salisbury from Robert

Knogle for 46s 8d. This last is one of the very few entries that name the vendor – in this case a prominent Wiltshire wool merchant.³⁹ Another named dealer was John Gyford of London, who sold stones to Southwark in 1251/2 and probably 1262/3.⁴⁰ There is no record at all of the purchase of millstones at any market or fair; the very irregular nature of the trade and the weight of the stones ensured that they would be sold normally by merchants from their yards or quarries, or, at least, by traders operating outside the rigid framework of formal commerce. Launton's 1350/1 purchase of millstones 'from men coming from the Peak' may show that the producers themselves were active in marketing their stones (perhaps of necessity if the Black Death had disrupted normal trade).

In earlier years the bailiff seems always to have paid cash for the millstones, but in the later fourteenth century lords sometimes preferred to settle directly with the vendor. Bury St Edmunds abbey apparently did so with stones bought for Hinderclay mill at Yarmouth in 1372/3 and at Norwich in 1377/8 and 1384/5.⁴¹ The lords' distrust of reeves was probably the reason. They also rejected inflated claims for freight costs. The Bury St. Edmunds auditor cut from 1s to 8d what the Farnham reeve claimed in 1404/5 for fetching a stone from Brandon. Westminster Abbey in 1323/4 slashed from 8s to 6s the expenses claimed for carrying one from Bedford to Aldenham.⁴²

IV

Even those accounts which record the place of purchase only rarely state whether the stone bought was for milling flour or

³⁴ HRO, Eccles. 2/159348, 159371.

³⁵ HRO, Eccles. 2/159367.

³⁶ During the Napoleonic wars, special permission was given in 1809 to import French burr stones. See J Russell, 'Millstones in wind and water mills', *Trans Newcomen Soc.*, 24, 1943–5, p 55, n 1.

³⁷ Suffolk Record Office, Bury St Edmunds [hereafter SRO], E3/15.6/2.46.

³⁸ See D L Farmer, in Edward Miller, ed, *The Agrarian History of England and Wales*, III, Cambridge, 1991, pp 422–3.

³⁹ MCM 5853; Longleat House, Glastonbury Abbey Documents [hereafter GAD], 9641.

⁴⁰ HRO, Eccles. 2/159447, 159294.

⁴¹ RLC, Bacon MSS 485, 489, 495.

⁴² SRO, E3/15.6/2.42; WAM 26072.

TABLE 2
Highest millstone prices in England, 1290-1410*

Period†	South Coast‡	London	East Anglia	Welsh§	Midland¶	Penselwood
1290-1300	42s 0d	65s 0d	52s 0d	8s 0d	—	—
1300-10	42s 0d	57s 1d	32s 6d	11s 0d	—	8s 0d
1310-20	50s 0½d	62s 0d	39s 0d	12s 0d	16s 1½d	—
1320-30	65s 10d	69s 2d	42s 1d	11s 0d	11s 4d	18s 2d
1330-40	70s 0d	—	66s 8d	12s 9d	16s 0d	18s 2d
1340-50	106s 8d	88s 8d	—	12s 6d	14s 6d	18s 4d
1350-60	116s 8d	71s 1½d	—	19s 0d	20s 0d	30s 1d
1360-70	131s 8d	—	80s 0d	31s 0¾d	—	40s 4d
1370-80	133s 4d	146s 8d	68s 8d	24s 0d	28s 8d	31s 6d
1380-90	133s 4d	—	66s 8d	28s 2d	24s 0d	—
1390-1400	80s 0d	66s 8d	—	27s 2d	33s 4d	—
1400-10	103s 4d	53s 4d	66s 8d	32s 10d	25s 0d	27s 4d

* The price is the highest recorded in each area in each decade.

† Each period runs from 29 September in the first-named year to 28 September in the second-named year.

‡ Ports between Chichester and Lyme Regis.

§ Prices for Welsh stones bought by Taunton mills, normally at Bridgwater.

¶ Stones bought in inland towns north of the Thames (mainly from the Peak District).

for grinding malt, or describe it specifically as a *mola transmarina*, a *mola de Francia*, or a *mola de Wallia*. The price differences, however, are wide enough to help in identifying the source, if not always the purpose, for which a stone was bought.

By a considerable margin, the dearest were the French stones bought in London, the south-coast ports, and East Anglia. Table 2 displays the price, over ten-year periods between 1290 and 1410, of the most expensive millstones purchased in various districts. The contrast in price between these costly stones, and those bought in the Midlands, or from Wales or Penselwood, is obvious.

Table 3 lists the average prices of millstones bought in the same places or from the same sources over twenty-year periods between 1208 and 1454. This table shows the same contrast between south coast and London prices, on the one hand, and prices in the Midlands and for stones from Wales and Penselwood on the other. But the average prices in East Anglia were much less than those on the south coast and in London, even though the prices of the dearest stones were very similar. One may reasonably conclude that the majority of

stones bought in East Anglia were those of German origin and lower price.

Table 3 also shows the long-term changes in the cost of millstones. As can be seen, their price roughly doubled – in those areas for which enough records survive – between the early thirteenth century and the Black Death. It almost doubled again by the early fifteenth century. These changes are fairly consistent for all areas, except that the post-Black Death increase in the price of stones in the Midlands seems rather less.

Some other observations may be offered. Additional transport charges probably explain why the best millstones (that is, the French stones) usually cost a little more in London than in ports like Southampton. Some mills customarily paid prices that were slightly above the average, probably because they were built to take the largest stones available. These included the mills at Southwark, Downton and, in later years, Wolvesey. On the other hand, windmills usually paid prices a little lower than the average; there were sound engineering reasons why these flimsy structures would prefer small stones.

TABLE 3
Average millstone prices in England, 1208-1454*

Period†	South Coast‡	London	East Anglia	Welsh§	Midland¶	Penselwood
1208-20	[23s 0½d]	[29s 2d]	—	[5s 9d]	—	—
1220-40	[30s 1½d]	—	—	[5s 7d]	—	—
1240-60	26s 8d	45s 0½d	—	5s 10d	—	[8s 4d]
1260-80	31s 7½d	40s 2½d	[21s 0d]	7s 1d	—	[19s 1d]
1280-1300	45s 2d	45s 9½d	31s 9½d	7s 2d	—	[13s 6d]
1300-20	47s 11¾d	53s 8½d	36s 0½d	10s 2d	[16s 1d]	[11s 3d]
1320-40	52s 4¾d	[55s 4½d]	34s 9d	11s 3d	[17s 6d]	15s 6d
1340-60	67s 11½d	[75s 0¾d]	[28s 3d]	12s 8d	[18s 1d]	17s 9d
1360-80	91s 5d	—	—	23s 5d	21s 0d	18s 10d
1380-1400	91s 5½d	[66s 8d]	—	25s 0d	22s 4d	30s 7d
1400-20	91s 6½d	—	[58s 10½d]	24s 11d	24s 2d	[23s 11d]
1420-40	117s 10¼d	—	—	[15s 7d]	[25s 0d]	[24s 0d]
1440-54	98s 4d	[53s 4d]	—	[16s 9d]	—	—

* Price is the mean of the annual average costs of a millstone (without carriage to the mill) in that area in the twenty-year period; where this mean is calculated from fewer than five averages, it is cited in brackets.

† Each period runs from 29 September in the first-named year to 28 September in the second-named year.

‡ Ports between Chichester and Lyme Regis.

§ Prices for Welsh stones bought by Taunton mills, normally at Bridgwater.

¶ Stones bought in inland towns north of the Thames (mainly from the Peak District).

Welsh stones sold in Somerset – identified by name more often than any others – cost mills less than those from other thirteenth-century sources except Penselwood. At Trelech quarry itself, millstones were bought for as little as 1s in 1308 and 1323. At nearby Tintern in the 1290s their price was only 3s or 4s⁴³; at Bridgwater the bishop's officials paid between 6s and 8s for them in that decade. In any one year there was little variety in the cost of Welsh millstones in Somerset; one may deduce that they were of consistent size and weight. Although their price doubled between the early thirteenth century and the 1340s, they were so much cheaper than imported stones that, as mentioned earlier, some Hampshire manors began to buy Welsh stones despite the added cost of transport.

The earliest specific records of Welsh stones in Hampshire are for Fareham's purchases in 1347/8 and 1348/9, at 22s 6d and 18s 0¼d respectively; but occasional low prices paid previously by Fareham's three mills – for example, in 1305/6,

1307/8, and 1338/9 – make it likely that they and other Hampshire mills had sometimes bought them before. Overton in 1339/40 paid the high price of 80s including carriage, almost certainly overland, for two stones from Berkeley in Gloucestershire, and as late as 1421/2 paid 36s 8d for a *Walissheston*, and 4s for transporting it from Wiltshire.⁴⁴

The quarries at Penselwood sold their stones at a wide range of prices. Longbridge Deverill bought a stone there in 1332/3 for 6s 6d, and another in 1333/4 for 18s 2d.⁴⁵ In 1276/7 Taunton paid 37s (including transport costs of about 8s) for a millstone from Penselwood; that year an 'overseas' stone delivered to Taunton cost 61s 10d, and a Welsh one only 8s.⁴⁶ The range of prices at Penselwood implies that it cut stones in a variety of sizes and, perhaps, qualities. While comments on costs therefore need caution, the movements observed elsewhere seem valid for

⁴³ HRO, Eccles. 2/159350, 159423. Martin Watts (*Corn Milling*, p 20) may be incorrect in stating that Welsh stones were 'more local in distribution' than Peak District stones.

⁴⁵ GAD 10602, 10603.

⁴⁶ HRO, Eccles. 2/159303.

⁴³ Rogers, *History*, II, pp 431-2.

Penselwood's prices as well: a doubling by the Black Death, and a similar rise after it.

In contrast, the prices paid in Midland markets seem relatively stable and consistent, though this is partly because there are no records of low-priced thirteenth-century purchases. In later years, these millstones cost Thames valley and nearby manors less than Somerset mills had to pay for Welsh stones, despite the long journeys from the Pennines. For example, two millstones 'del Piek' cost Wheat-hampsted 36s in 1406/7, with 10s 5d more for the cost of carriage from *Dykeleswade* (probably Biggleswade); even in the later fifteenth century a pair of stones could be bought at Yarncliff quarry in the Peak for only 7s.⁴⁷ In the Midland towns after the Black Death the price of a single stone rarely exceeded 20s, and it is not surprising that these millstones largely replaced those fetched from London, the south coast, or Wales. Largely, but not entirely: Ivinghoe in 1451/2 brought four stones from London for its rebuilt mill, and two of the carts that left Southampton in 1478 were carrying millstones to Abingdon and Reading.⁴⁸

V

French millstones, whether composite or unitary, were normally preferred for grinding wheat. One would therefore expect the mills that bought such stones to be the ones that milled the largest quantities and highest proportions of wheat. The mill accounts, which record the quantities retained as multure from what the tenants brought to the mill, seem to disprove this theory. It is possible, though, that demesne mills did some unre-

corded grinding for the lord, and that this work justified the purchase of expensive stones.

Table 4 lists the quantities and percentages of wheat kept as multure by the Bishop of Winchester's mills in two periods, at the end of the thirteenth century and the beginning of the fourteenth, before his northern manors had changed to stones bought in Midland markets and before the majority were leased out to farm. The only mills in the list which did *not* buy expensive stones – explicitly or presumably French – in those years were Bourne mill at Farnham, the South mill at Twyford, and Rimpton mill. The last of these bought cheap stones, probably from Wales or Penselwood; the others no millstones at all in this period.

Wheat formed less than nine per cent of the multure retained by mills with superior stones between 1284 and 1292. The mills at Ivinghoe and West Wycombe, and Park mill at Bishop's Waltham, seem to have ground no wheat at all, and those at Alresford, Cheriton, Twyford, and Wargrave only tiny quantities – even though most of these were communities with established markets. Those handling the highest proportions of wheat were the mills at Havant, Fareham, Farnham, and Wallingford. Close behind these was the mill at Rimpton, which had only the inferior millstones.

Some manors, like Downton and Longbridge Deverill, often recorded whether their new stones were bought for their grain mills or their malt mills. Even here there are puzzling purchases: why did Downton pay the unusually high sum of 53s 4d in Salisbury in 1334/5 for a millstone for malt, or Longbridge Deverill a mere 4s for a stone for its grain mill in 1360/1?⁴⁹ Most manors, though, paid fairly consistent prices for their stones, without discriminating between them. In

⁴⁷ WAM 8931; R Meredith, 'Millstone making at Yarncliff in the reign of Edward IV', *Derbys Arch Journal*, CI, 1981, p 102.

⁴⁸ HRO, Eccles. 2/159442; *The Brokage Books of Southampton for 1477-8 and 1527-8*, ed K F Stevens, Hants Records Series, XXVIII, Southampton, 1985, pp 80, 97.

⁴⁹ HRO, Eccles. 2/159346; GAD 10697.

TABLE 4
Average quantities and proportions of wheat in multure retained by Bishop of Winchester's demesne mills, 1284-92 and 1305-18.

Mill	1284-92		1305-18	
	Quantity	Percentage	Quantity	Percentage
Alresford: New Mill	2b	2	3b	5*
Alresford: Town Mill	1q 3b	2	4b	2*
Bishop's Waltham: East Mill	7½b	5	1q 2½b	11
Bishop's Waltham: Park Mill	½b	0	2b	1
Bitterne	5q 4b	14	2q 5b	9
Brightwell (Wallingford)	9q 6b	22	11q 4b	29
Burghclere	4b	3	1q 7b	10*
Cheriton	3b	2	*	
Downton	10q 5b	12	13q 4b	10
Droxford	3½b	2	*	
Fareham: Hoke Mill	1q 3½b	10	2½b	4*
Fareham: Sea Mill	1q	5	3½b	2*
Fareham: Walton Mill	1q 3b	17	2b	6*
Farnham: Bourne Mill†	3q 2b	9	4q 1b	19
Farnham: Medmill	3q 4b	20	*	
Havant: Ashwell Mill	4q	30	6q	37*
Havant: Brockhampton Mill	8q 3½b	31	9q 4b	15*
Ivinghoe	probably no wheat at all			
Overton: Lynch Mill	4½b	3	2q 1½b	19*
Overton: Odin's Mill	1q 2½b	9	1q 7½b	22*
Overton: Town Mill	4q 6b	12	4q 1b	12*
Rimpton†	2q 3b	18	2q ½b	16*
Twyford: North Mill	1b	2	*	
Twyford: Shalford Mill	1b	4	*	
Twyford: South Mill†	½b	3	[no mention]	
Wargrave:	1b	1	3b	5*
West Wycombe	probably no wheat at all			

* Figures are missing or incomplete because the mill was at farm for all or part of this period.

† Expensive millstones were *not* bought for these mills in these periods.

1452/3 Bishop's Waltham even exchanged the millstones between its grain mill and its malt mill.⁵⁰ One must conclude that many used good stones for grinding malt, and many others used cheap stones for grinding their wheat flour.

Where the manorial accounts record how much grain was taken in multure, they permit some calculation of a millstone's working life and cost to operate. In the first half of the fourteenth century Longbridge Deverill received on average about 27 qr 6 bu in toll grain and malt

every year; in the thirty-nine years for which accounts survive, it bought twenty-two millstones. If it levied multure at the common rate of a half-bushel from every quarter, the annual total milled would have been about 444 qr; each millstone, then, could be credited with grinding about 788 qr of grain or malt before it had to be replaced.⁵¹ On average the manor paid 16s 11d for each millstone, or about one farthing for every quarter milled. In other words, for every quarter

⁵⁰ HRO, Eccles. 2/159443.

⁵¹ These calculations and comments necessarily ignore any unrecorded milling done for the lord.

retained as multure the manor had to set aside about 4*d* towards a new stone.

Manors that always or usually bought French stones had higher costs. Bitterne between 1283 and 1293 received some £59 2*s* in multure sales (including the cash value of grain deliveries to the servants), but it spent £14 3*s* 3*d* on new stones – equivalent to 24 per cent of its income. Downton in the same period collected multure worth £188 14*s* and spent £25 12*s* 2*d* on millstones, about 13.6 per cent of its mill income. At Downton, the replacement cost of stones represented about 0.4*d* for every quarter of grain or malt milled, and at Bitterne about 0.7*d*; at Longbridge Deverill, which got most of its stones from Penselwood, it was only 0.25*d*. It seems to have been more economical for millstone purchasers to buy British.

VI

To examine in detail the financial problems of mills in the later Middle Ages is beyond the scope of this paper.⁵² On all estates, most of the demesne mills were already leased out by the early fourteenth century, and a century later the leasing policy was almost universal. In the process, much of the detailed information disappeared from manorial accounts. The only properties with records stretching into the fifteenth century were, with few exceptions, those of the Bishopric of Winchester; and so the bishop's mills must provide the concluding evidence.

By 1400 many of them had been abandoned, including those at Burghclere, Harwell, and Wallingford; the last of these reported in 1398/9 that the farmer, John Justice, had given it up and refused to hold it longer (though in 1408/9 he began a twenty-year lease of the fishing there

for 13*s* 4*d* a year).⁵³ Wargrave mill was leased with the whole manor; in 1419/20, however, the bishop reduced the rent by £2 because the mill was ruined, and it appears not to have been rebuilt. The bishop had rented out the Woodford mills at Witney for £14 3*s* 4*d* before the Black Death and for £13 6*s* 8*d* in the 1370s; but from 1396/7 until the Winchester Pipe Rolls fall silent in 1453/4 all he could get for them was £7 6*s* 8*d* a year. The bishop had replaced Ivinghoe's often-damaged windmill with a water mill in 1395–7, at the enormous cost of some £130 for the mill and its water-courses, but could get only 53*s* 4*d* in rent thereafter. In 1408/9 he reverted to an earlier technology and built a horse mill in its place; this was at first farmed for 40*s* a year, but by 1449/50 it was being rented to one Hugh Ramsey for a mere 20*s*.⁵⁴ Downton's mills, which before the Black Death had often brought the bishop over £40 a year from the sale of multure, yielded less than half that in the last quarter of the fourteenth century, and in 1411/2 were leased with the eel fishery for an annual farm of £16.

This decline, though, was largely confined to the bishop's northern mills. Those on the south coast, for example, at Havant, Fareham, and Bitterne, earned more money in an average year in the early fifteenth century than in the decades before the Black Death. Mills some way inland, such as those at Bishop's Waltham, Hambledon, and Overton, kept their incomes stable, and Alresford's actually doubled its contribution to the bishop's treasury. Such prosperity explains why these Hampshire manors continued to purchase the most expensive millstones when mills elsewhere had fallen down or, at least, had changed to the cheaper native stones. The 'golden age' of demesne milling may have ended, but, as Holt and

⁵² Dr John Langdon has recently started a major study of this subject.

⁵³ HRO, Eccles. 2/159403B, 159411.

⁵⁴ HRO, Eccles. 2/159402, 159403A, 159411, 159441.

Langdon have already noted, by concentration on larger mills able to make a profit, manorial lords sometimes stayed in the milling business and prospered from it.⁵⁵ And those sources of millstones that had developed in earlier, busier times continued to supply millowners with the essential tools of their technology.

APPENDIX

The list below summarizes the places from which millstones were obtained. Almost all of these are the places where the stones were purchased, but a few may be those where the mill took delivery of a millstone that had been purchased elsewhere. The county names given for identification are those of the pre-1974 counties.

i Ports

King's Lynn: Brancaster, East Wretham (Norf); Fornham, Rickingham (Suff).

Blakeney: Bircham (Norf).

Yarmouth: Ditchingham, Lopham, Walsham (Norf); Bungay, Hinderclay (Suff).

Beccles: Hargrave, Hinderclay, Redgrave (Suff).

Ipswich: Bocking, Claret, Monks Eleigh (Essex); Clare, Fornham, Hargrave, Hinderclay, Lawshall, Rickingham, Stonham, Wood Hall (Suff).

Colchester: Birdbrook, Takeley, Writtle (Essex).

Maldon: Takeley (Essex).

London: Wargrave (Berks); Ibstone, Ivinghoe, West Wycombe (Bucks); Feering (Essex); Child Langley (Herts); Westerham (Kent); Colham, Yeveney (Middx); Brightwell, Cuxham, Holywell, Launton, Witney (Oxon); Farnham, Lambeth, Southwark (Surrey).

Sandwich: Adisham (Kent).

Folkestone: Chartham, Appledore (Kent).

Chichester: Alresford, Bishop's Sutton, Cheriton, Hambledon, Havant (Hants).

Thorney by Chichester: Havant (Hants).

Emsworth: Havant, East Meon (Hants).

Langstone: Alresford, Havant (Hants).

Havant: Bishop's Sutton, Bishop's Waltham, Hambledon, Havant, Wolvesey (Hants).

Hayling: Bitterne (Hants).

Portsmouth: Alresford, Bishop's Waltham, Bitterne, Havant, Overton, Twyford (Hants).

Portchester: Hambledon (Hants).

Fareham: Havant (Hants).

Bitterne: Bishop's Waltham, Burghclere, Fareham, Twyford, Wolvesey (Hants).

Southampton: Wargrave (Berks); Alresford, Bishop's Waltham, Bitterne, Burghclere, Cheriton, Droxford, East Meon, Fareham, Hambledon, Havant, Odiham, Overton, Twyford, Wolvesey (Hants); Cuxham, Harwell, Holywell, Witney (Oxon); Taunton (Som); Farnham (Surrey); Downton, Marlborough (Wilts).

Lyminster: Downton (Wilts); Farcham, Wolvesey (Hants).

Poole: Downton (Wilts).

Weymouth: Taunton (Som).

Lyme Regis: Taunton (Som).

Topsham and Exeter: Taunton (Som).

Bridgwater: Rimpleton, Walton, Taunton (Som).

Bristol: Wrington (Som).

Berkeley: Overton (Hants).

Tewkesbury: West Wycombe (Bucks);

Todenham (Gloucs); Brightwell, Witney (Oxon); Pershore (Worcs).

Worcester: Pershore (Worcs).

ii Inland towns: the South

Blandford: East Knoyle (Wilts).

Chippenham: Wargrave (Berks).

Fonthill: Longbridge Deverill (Wilts).

⁵⁵ Holt, *Mills*, pp 167-8.

Penselwood (quarry): Brent, Rimpton, Taunton, Walton (Som); Downton, Longbridge Deverill (Wilts).
Salisbury: Downton, Longbridge Deverill (Wilts).
Winchester: Alresford, Bishop's Sutton, Bishop's Waltham (Hants).

iii Inland towns: the Midlands

Adderbury: Brightwell (Oxon).
Aylesbury: Wargrave (Berks).
Banbury: Brightwell, Launton, Witney (Oxon).
Brackley: Ivinghoe (Bucks); Holywell, Launton (Oxon).
Brickhill: Ivinghoe (Bucks).
Burford: Witney (Oxon).
Chipping Norton: Witney (Oxon).
Crawley (Oxon): Witney (Oxon).
Deddington: Witney (Oxon).
Donnington: Stone (Oxon).
Godstow: Witney (Oxon).
Islip: Wargrave (Berks); Todenham (Gloucs); Brightwell, Witney (Oxon).

Kingham: Witney (Oxon).
Oxford: Cheddington (Bucks); Cuxham, Holywell, Witney (Oxon).
Shipton [?-under Wychwood]: Witney (Oxon).
Stony Stratford: Cheddington (Bucks).
Stratford on Avon: Todenham (Gloucs).
Thame: Wargrave (Berks); West Wycombe (Bucks); Brightwell (Oxon).
Whitchurch: Wargrave (Berks); Ivinghoe, West Wycombe (Bucks).
Wing: Ivinghoe (Bucks).
Witney: Brightwell, Harwell, Witney (Oxon).

iv Inland towns: the East

Bedford: Aldenham, Child Langley, Kingsbourne, Weston (Herts).
Biggleswade: Wheathampstead (Herts).
Cambridge: Gamlingay (Camb); Chesterford (Essex).
Lakenheath: Hinderclay (Suff).
Norwich: Fornham, Hinderclay (Suff).

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