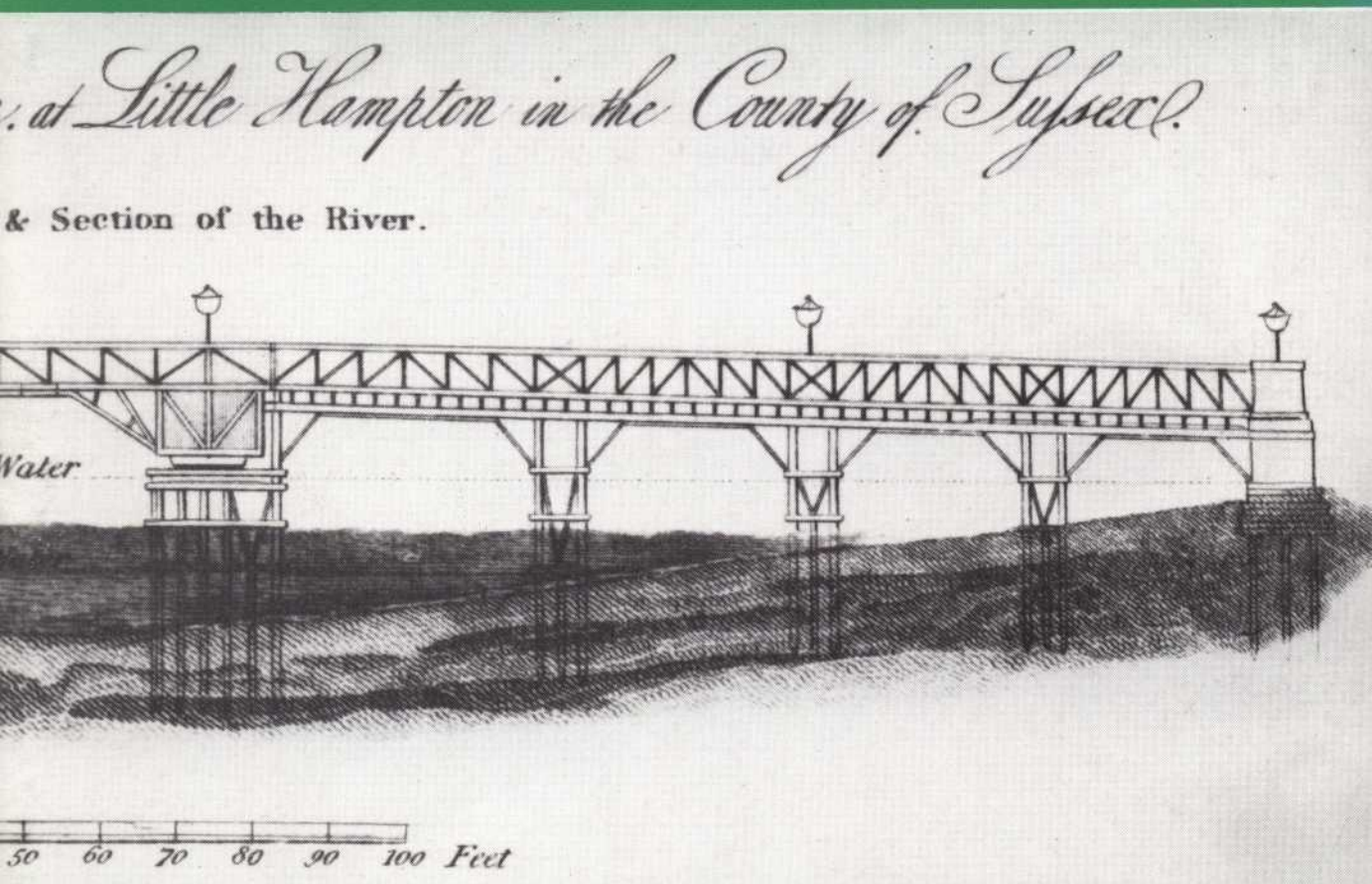
SUSSEX INDUSTRIAL HISTORY

Winter 1971/72



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SUSSEX INDUSTRIAL HISTORY

Journal of the Sussex Industrial Archaeology Study Group

THREE **WINTER 1971/72**

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JAMES P. HUZEL

Population Change in an East Sussex Town : Lewes 1660-1800

DEMOGRAPHIC STUDIES of English towns in the late 17th and 18th centuries are comparatively rare and have concentrated, for the most part, on centres affected by industrialisation or on aspects of London's population history.[1] This study seeks to shift the emphasis to a provincial centre in south east England little influenced by the dramatic economic changes associated with the indutrial revolution.

The town of Lewes, about nine miles north east of Brighton, was throughout the 18th century the most important market town in East Sussex. For the whole of the period examined Lewes remained pre-industrial in character, its occupational structure dominated by a wide variety of trades which catered not only for the inhabitants of the town but also for the surrounding countryside. As a writer in 1754 stated: 'This town chiefly subsists by supplying the neighbouring places with the conveniences of life'.[2] Statistics available on Lewes's trades structure from 1680 to 1796 indicate that about one-fifth of all trades directly supplied rural needs only.[3] Clothing and textile trades along with those related to victualling represented the next largest categories (roughly 15% each). Distributive trades accounted for about 10%. The most significant changes over the period appear to be a doubling in the proportion of service trades (from about 6.4% to 12.0%) and an even greater increase in occupations related to building (from 7.3% in the period 1680-1730 to 17.2% in 1796). As late as 1821 trading occupations by far outweighed other types of activity and accounted for 71.3% of all families.[4] The 1831 census reveals over 55% of all males aged 20 and over engaged in retail trade or handicrafts either as masters or as workmen. Only a minute proportion of these males were engaged in any type of manufacture.[5]

Another feature worth stressing is the presence of gentry in the town. Indeed one writer in 1730 viewed this aspect as central to the composition of the town and asserted that Lewes consisted 'of six Parishes which . . . are chiefly composed of Gentlemen's Seats, joyning one to another with their Gardens adjoyning'.[6] M.A. Lower referring to Lewes in the 18th century stated that 'most of the gentry had town houses in Lewes, and a great portion of the High Street was occupied by those residences . . .'.[7] Thomas Woollgar's survey of inhabitants covering about half the town in 1790 lists 14 gentry households the largest being that of Henry Shelley Esq. comprising 18 persons.[8] These households represented only 5% of Woollgar's listing, however, and one must include that the gentry although an important and influential sector of the Lewes community were not as quantitatively significant as the above observers suggest.

Finally one other group within Lewes, namely those employed in professions, such as attorneys, surgeons, and schoolmasters, must be noted. This section accounted for about 10% of the households surveyed by Woollgar and represented over 7% of males aged 20 and over in 1831. Overall the structure of the town consisted of a broad range of traditional trades at the base upon which was superimposed a fairly substantial middle class professional element in addition to a top layer of resident gentry.

A demographic study of Lewes, then, must be seen within the context of a traditional, though certainly not unchanging, pre-industrial environment. One is not

dealing with economic changes on the scale of a Birmingham or Nottingham. Yet an inquiry into Lewes' population growth can prove valuable perhaps as a focus of comparison between industrial and essentially non-industrial urban growth. J.D. Chambers in his study of Nottingham, for example, raised the following problem:

> That the upward improvement of urban population would have taken place without enclosure few would now deny; whether it would have taken place without large-scale industrialisation is a more difficult question. There is good reason for thinking that it was under way before the impact of the new mechanised industry was felt and in places where it was never felt at all.[9]

Lewes was one of those places 'where it was never felt at all'. Yet changes there were. Throughout the 17th and 18th centuries Lewes was situated on a main road to London. However, communications with Lewes generally must have been considerably hampered by the poor condition of the Sussex roads. 'Why is it', queried a traveller in 1751, 'that the oxen, the swine, the women, and all other animals are so long-legged in Sussex? May it be from the difficulty of pulling the feet out of so much mud by the strength of the ankles that the muscles get stretched, as it were, and the bones lengthened?'[10] The period 1750-1780 saw an extensive turnpiking of the East Sussex roads[11] which could have been nothing but an improvement for Lewes' communications.

Lewes, as well, was situated on the navigable river Ouse, and thus had a direct link with Newhaven and the Sussex coast. The same contemporary traveller cited above saw the river Ouse and its significance almost in aesthetic terms:

> And who would not admire the street leading down to the river. Standing on the ridge you see on the right and the left a well-peopled valley, vessels going up and down, well-watered meadows, and workshops for whatever is needed for navigation.[12]

Improvement in the navigation of the river Ouse was under way near the end of the 18th century.[13]

As will be mentioned later, there is information pointing to a housing boom in Lewes in the late 18th century. Such changes,[14] though not revolutionary, can certainly provide a context within which Lewes' population growth can be examined, especially when considering whether immigration was a crucial a factor as it was in the growth of more highly industrialised towns.

I

The method adopted for the study of Lewes population growth from 1661-1800 is that of 'aggregative analysis' as outlined by D.E.C. Eversley.[15] Research was carried out on the original baptism, burial, and marriage registers for the six parishes of All Saints, St. Michael, St. Thomas à Becket under the Cliffe, St. John the Baptist Southover, St. John sub Castro and St. Anne, the latter being formed in 1538 by combining the two ancient parishes of St. Peter and St. Mary Westout.[16]

The registers as a whole exhibited a high degree of continuity although no register showed entries for every single year from 1660 to 1800. The odd yearly gaps, or years where the number of vital events was but a fraction of the usual, were filled either by W.H. Challen's transcripts of the Bishop's transcripts for the six parishes[17] or by interpolation based on the five year periods preceding and following the missing year.[18]

The registers contain information generally available in most parishes for the 18th century, the marriage and baptism registers being particularly complete.[19] The

burial registers, however, proved least reliable. Often there were prolonged periods where no 'son of' or 'daughter of' was specified and it was thus impossible to distinguish between child and adult burials. The status of deceased women was often lacking preventing any distinction between spinsters and married women. The main impression from the raw material is that the weakness in information given by the burial registers would make a full reconstitution of families impossible.[20] The methods of aggregative analysis would seem more suitable given the nature of the registers.

II

A critical problem in all aggregative population studies and perhaps the most dominant reason for the controversy surround 18th century population history in general is that concerned with the relationship between vital events (i.e., baptisms, marriages and burials) as registered and their 'real' numerical levels. Lewes is no exception in this regard. Previous authors have applied boosts of 15% to baptisms, 10% to burials and in some cases 10% for marriages mainly for secular reasons making for under-registration.[21]

In the case of Lewes however the problem of nonconformity as a factor is under-registration looms large in addition to secular causes. Out of a total of 1130 adults given under the Compton Return in 1676,[22] 190 or roughly 17% were listed as Nonconformists (there was only 1 Papist among this group). Bishop Bower's visitation in 1724[23] gave a total of 324 families (for five parishes) of which 75 families or about 23% were Nonconformist. The John Evans survey of Nonconformity conducted between 1717 and 1727 reveals a total of 595, or, related to a base population of about 2000 in 1724 (the calculation of which will be discussed below), gives about 30% of the inhabitants as Nonconformists.[24]

The list of Non-Parochial Registers in the custody of the Registrar-General of Births, Deaths and Marriages revealed only two surviving registers for the period up to 1800, that of births for the Baptist Congregation beginning in 1785, and a register of births, marriages, and deaths for the Society of Friends beginning in 1784. Since these applied only to a late stage of the period under review, and since, in any case, no registers were available for the Independents or Presbyterians (by far the largest section of Nonconformists) it was decided to apply a uniform boost to both baptisms and burials instead of counting the above registers in the totals. For the baptisms it was obvious that, granting the almost traditional 15% boost for secular reasons, a further boost was required to account for Nonconformists neglecting to baptise in the Church of England. It was decided to inflate the baptism totals by 20%.

With the burial totals the decision was more difficult. There is good reason to believe that although Nonconformists might neglect to baptise in the Church of England they would tend to be buried in the Anglican parish churches. Lewes had only one Nonconformist burial ground, what Horsfield describes as 'a convenient burying ground' for the General Baptists Meeting and this only after 1741.[25] Whereas not one case was found in the six registers where a Nonconformist child was baptised, there were several cases where Dissenting Ministers were buried, especially in St. Michael's parish.[26] It was decided, therefore, to apply a uniform inflation of only 10% to burials.

The marriage totals involved a more concrete problem. A high proportion of marriages in Lewes registers involved partners neither of whom was of Lewes. Marriages were classified into types where both partners were of Lewes, where neither was of Lewes, and where only one partner was of Lewes.

TABLE I: LEWES MARRIAGES 1661-1800

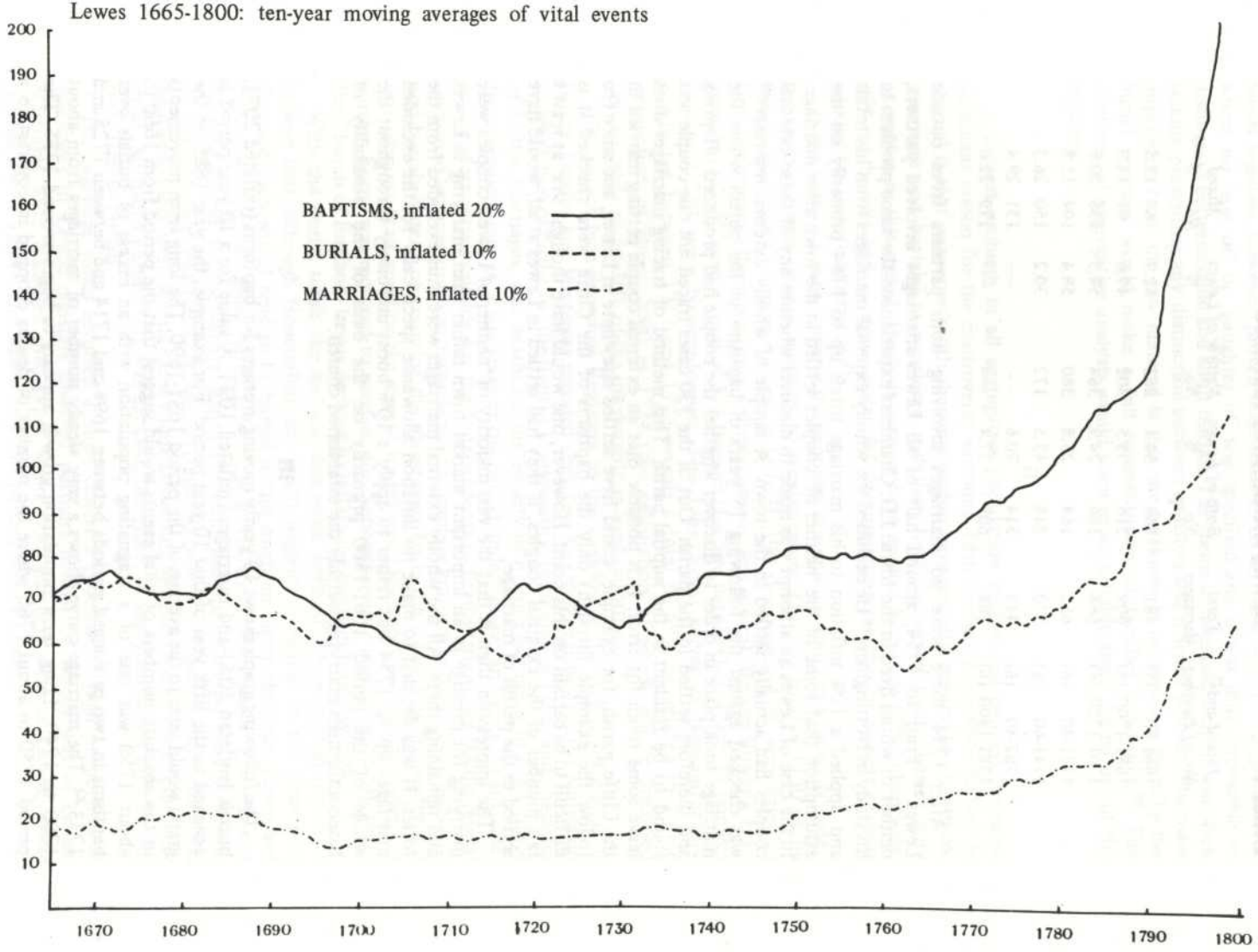
Period and No. of Parishes[27]	*Total Marriages*	*Both of Lewes*		*Neither of Lewes*		*Mixed*	
		No.	*%*	*No.*	*%*	*No.*	*%*
1661-80 (5)	481	164	34.1	252	52.7	65	13.5
1681-1700 (6)	609	216	35.5	302	49.6	91	14.9
1701-1720 (6)	668	166	24.9	364	54.5	138	20.6
1721-40 (6)	652	168	25.8	380	58.4	104	15.8
1741-60 (6)	570	248	43.5	172	30.2	150	26.3
1762-80 (6)	445	314	70.6	--	--	131	29.4
1781-1800 (6)	788	609	77.4	--	--	179	22.6

After 1754 there were no marriages involving both partners from outside Lewes.[28] Prior to 1754, around half of all Lewes marriages involved partners, neither of whom lived in the town. J.D. Chambers experienced the same problem in his study of Nottingham.[29] He excluded the wholly external marriages from his totals and applied a 10% inflation to his marriage totals up to 1754 primarily on the assumption that some of the 'neither of' couples settled in the town after marriage. In the case of Lewes an attempt was made to discover whether any of these external couples had actually settled in the town. A sample of wholly external marriages[30] was checked against the following 15 years of baptisms in the parish where the marriage took place in order to discover whether the couple had produced offspring and therefore settled in the parish. Out of the 330 cases traced not one couple was found to be resident in the nuptial parish. This method of tracing marriages does leave some room for error. It is possible that an external couple getting married in the Cliffe parish, for example, could have settled elsewhere in Lewes, and since (to follow the example through) only the baptisms of the Cliffe were checked it is difficult to be certain on this point. However, one would have thought that at least a fair number of the external couples, if they had settled in Lewes at all, would have settled in the parish of marriage.

The impression then is that the vast majority of 'neither of Lewes' couples were marrying for prestige in an important market town rather than marrying in Lewes and remaining there. All the wholly external marriages were thus excluded from the totals. It was decided to make no inflation allowance specifically for the excluded marriages up to 1754 but rather to apply a 10% boost uniformly throughout the whole of the period 1661-1800 primarily on the basis of the possibility of Nonconformists marrying outside the established church.[31]

III

The following graph shows 10-yearly moving averages for baptisms (inflated 20%), burials (inflated 10%) and marriages (inflated 10%). A value for a 10 year period is assigned to the fifth year of that 10 year period. For example, the year 1685 on the graph would refer to the average of the period 1681-1690. The long term movements in the absolute numbers of vital events would suggest that the period from 1660 to about 1750 was one of a stagnating population with an excess of burials over baptisms in two prolonged periods between 1698 and 1714 and between 1725 and 1733.[32] The marriage curve shows a very steady number of marriages from about 1700 to 1740. Long term population growth appears to begin around 1735. The period 1750 to about 1760 where the number of deaths dropped in contrast to a


Lewes 1665-1800: ten-year moving averages of vital events
BAPTISMS, inflated 20%
BURIALS, inflated 10%
MARRIAGES, inflated 10%
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800

steady number of births and the period 1790 to 1800 which saw a drastic rise in both births and marriages seem most significant.

Although the numbers of vital events revealed in the graph enable one to gain some idea of the course of Lewes population change, a more detailed examination must be based on a set of crude rates for births, deaths and marriages, in conjunction with information on fertility and on child and infant mortality.

The calculation of crude rates, however, involves four supplementary stages. First base populations must be obtained. The second stage involves a comparison of the increase or decrease as yielded from those base populations with that obtained from the parish registers. Thirdly the causes of the discrepancies, if any, between the trend revealed in the registers and those via the base populations must be ascertained. And fourthly, on the basis of information obtained from the above processes, a series of intermediate population estimates must be calculated upon which the crude rates will depend.

IV

Existing sources provide benchmarks for ascertaining Lewes population totals at three points in the period 1660-1800. The Compton Return under Archbishop Sheldon's census gives a total of 1130 adults in 1676.[33] Adult was no doubt defined as those old enough to take communion or those of about 16 years of age or over. Assuming that those in 16+ age group comprised about 60% of the total population[34] one obtains a rough population total of about 1880 best stated perhaps as in the range 1850 to 1900.

As a check on this estimate, the Hearth Tax returns for Lewes were examined. In 1670, assessments were made for the four parishes of St. Michael, St. John sub Castro, All Saints, and St. Anne, giving a total number of 232 assessments.[35] Gregory King has suggested a conversion fact of 4.09 persons per assessment or household. Lewes, however, according to the 1801 census had an average household size of over 6 persons.[36] Since, as will be shown later, fertility between 1676 and 1801 increased by up to 50%, a conversion factor of between 4.5 and 5 might well be applied to the Lewes assessments. Even using a conversion factor of 5 the population of the four parishes in 1670 would be 1160 persons. The same four parishes via the Compton Return would give a total of about 1320 persons for 1676. It is difficult, of course, to say how accurate the Hearth Tax assessments are. They do, however, seem fairly complete since they include those households exempted from the tax on account of poverty. There is certainly a sizeable discrepancy between the two estimated populations, although nothing on the scale that Sognor found in Shropshire.[37] The comparison with the Hearth Tax returns might suggest that the lower estimate of 1850 persons should be used for 1676.

Bishop Bower's Visitation for five parishes (excluding St. Thomas under the Cliffe which was a peculiar of the Archbishopric of Canterbury) gives a total of 324 families in 1724.[38]

One again has the problem of a conversion factor. One would assume that the majority of families were nuclear and that therefore the number of families given could be roughly equated with the number of households. The conversion factor, on the same reasoning as applied to the Hearth Tax assessments, would be in the range of 4.5 to 5 persons per family. Using 4.5 as a multiplier, and giving the missing parish of St. Thomas under the Cliffe the same overall percentage increase that the other five parishes experienced between 1676 and 1724, the assumed population in 1724 would be about 1929 persons. Using 5 as a multiplier the popula-

tion would be 2130. Using this range as a basis the assumed population in 1724 would be in the vicinity of 2000.

The 1801 census gives a total of 4909 persons, 2249 males and 2660 females.[39]

Employing base populations of 1850 persons in 1676, 2000 in 1724, and of 4910 in 1801, one can now compare the increase observed from the base populations with the natural increase from the parish registers. Totals from the parish registers are inflated according to the correction factors discussed above (i.e. 20% for baptisms and 10% for burials).

TABLE II: INCREASE FROM BASE POPULATIONS AND PARISH REGISTERS

Period	*Increase Via Base Population*	*Increase Via Parish Registers*	*Discrepancy*
1677-1724	+ 150	+ 123	+ 27
1725-1801	+ 2910	+ 1829	+ 1081

It must be remembered that the discrepancy revealed between 1677 and 1724 could be as high as 167 if the higher population estimate for 1724 (i.e. 2130) was used. The major discrepancy, however, occurs between 1725 and 1801 where only 63% of the total population increase is accounted for in the surplus of inflated baptisms over inflated burials from the registers.

Assuming that the inflation factors applied to baptisms and burials are sufficient to account for under-registration it appears that the discrepancies noted (i.e. the surplus over natural increase) are due to migration into Lewes especially in the period 1725-1801.

V

Although it is difficult to quantify in any precise manner the extent of immigration in particular periods there exist indirect pieces of evidence which can provide at least some clues. In the first place immigration presupposes a certain basic mobility of population. That such mobility existed can be illustrated by examining the 'mixed' marriages in the Lewes registers, i.e. cases where one partner was 'of Lewes' and the other outside. This method enables one to gain some indication of the distances travelled by non-resident spouses. All mixed marriages were tabulated in terms of the distance from Lewes of the external partner's place of origin. The mixed marriages were arbitrarily divided into two periods, 1721-1754 and 1754-1800, for purposes of comparison.

TABLE III: MOBILITY OF BRIDEGROOMS

Period	*Total Mixed Marriages*	*Bridegroom From Outside Lewes*		*Distance from Lewes (miles)*					
				Under 10m.		*10-20m.*		*Over 20m.*	
		No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
1721-54	185	171	92.4	81	47.4	45	26.3	45	26.3
1755-1800	379	330	87.0	174	52.7	58	17.6	98	29.7
1721-1800	564	501	88.8	255	50.8	103	20.6	143	28.5

TABLE IV: MOBILITY OF BRIDES

Period	*Total Mixed Marriages*	*Bride From Outside Lewes*		*Distance from Lewes (miles) Under 10m.*		*10-20m.*		*Over 20m.*	
		No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
1721-54	185	14	7.6	9	64.3	4	28.6	1	7.1
1755-1800	379	49	12.9	28	57.1	14	28.6	7	14.3
1721-1800	564	63	11.2	37	58.7	18	28.6	8	12.7

A striking aspect of the tables is the fact that the vast majority of mixed marriages involved the bridegroom originating from outside Lewes. Lewes women, in other words, had to look for spouses outside the town more often than the men.[40] It is difficult to say whether Lewes women marrying partners from outside the town would emigrate to their husband's parish after celebrating the marriage. Only a thorough check for the eventual place of residence of these couples could tell.

Overall the bridegrooms from outside Lewes tended to come from places more distant than in the case of external brides. There seems little significant change in pattern for either external bridegrooms or brides between the periods 1721-1754 and 1755-1800. There is a slight percentage increase in bridegrooms coming from over 20 miles away. The jump in the percentage of brides coming from 20 miles away is perhaps due to the small numbers involved. Almost half the external bridegrooms came from more than 10 miles away. The percentage coming from more than 20 miles away seems high in comparison with other findings on this subject for the 18th century.[41] Of the 143 bridegrooms coming from over 20 miles away, 78 came from outside the county of Sussex. Surrey, Kent and London were most frequent in these cases, but some bridegrooms came from as far as Leicester, Leeds and Birmingham. It must be remembered, however, that the great majority of bridegrooms came from under 20 miles away. The marriage registers would suggest, then, that at least within this 20 mile radius a considerable mobility of population existed.

Secondly, by comparing the rates of population increase of parishes surrounding Lewes with Lewes itself it would appear that immigration was a significant factor in the town's growth. 16 parishes in the environs of Lewes were tested for percentage increase from 1676 (when the Compton Return gave the number of adults in these parishes) and 1801.[42] One would assume that in this area, the same, or roughly the same, demographic forces making for natural increase in population applied to these parishes as did to Lewes itself. As can be seen from the following table Lewes experienced more than twice the percentage increase than did the other 16 parishes.

TABLE V: POPULATION INCREASE OF LEWES COMPARED WITH 16 SURROUNDING PARISHES 1676-1801

	Total Population 1676	*Total Population 1801*	*% Increase*
16 Parishes	2890	5004	73.2
Lewes	1850	4909	165.4

It is obvious that the widely differing percentage increase between Lewes and the 16 parishes could not be due solely to differing rates of natural increase. Clearly, immigration was a dynamic element in Lewes' population change.

Further probing would suggest that immigration was perhaps more dominant during the last decade of the 18th century. T.W. Horsfield, referring to the parish of St. John sub Castro and writing in 1824, claimed:

> The great increase that has taken place in the population of the borough during the last 30 years has been occasioned chiefly by the erection of small houses within this parish.[43]

Another local historian writing in 1795 suggests a rapid housing growth commencing in 1790

> Within the last four years the buildings in this parish [Saint John sub Castro] and in the northern part of All Saints have increased very considerably. Where it was all pasture-land in 1789 we now have many new streets erected and others planned out.[44]

These statements by contemporary observers echo statistical trends in Lewes' trades structure cited earlier where it was pointed out that the most significant development was a rise in building occupations during the 18th century.[45] It is difficult to pose a direct link between this apparent housing boom and migration into Lewes. However, given the underlying tendency of the town to attract immigrants the above changes would no doubt have acted as a catalyst in promoting population movement.

VI

Starting with the three base populations of about 1850 persons in 1676, 2000 in 1724, and 4910 in 1801, and using the natural increase figures from the inflated totals of the registers, it is possible to estimate a set of intermediate population points. The estimates were made in two stages: (i) 1676-1724 where immigration did not appear too formidable, and (ii) 1724-1801 where immigration was more significant. It was assumed for each of these periods that migration represented a constant percentage of the natural increase. For the period 1676-1724 the increase from the registers was 123, compared with 150 from the base populations, giving a discrepancy of 27. The percentage discrepancy for purposes of migration would be $\frac{27}{123} \times 100 = 22\%$ The following table gives the method of calculation. All population estimates refer to the last year mentioned in the left-hand column.

TABLE VI: POPULATION ESTIMATES 1676-1724

Years	*Natural Increase*	*+ 22% Migration*	*Total Increase*	*Population*	*Population Rounded to Nearest 10*
1676	–	–	–	–	1850
1677-1690	+ 17	+ 4	+ 21	1871	1870
1691-1700	+ 88	+18	+106	1977	1980
1701-1710	–115	–25	–140	1837	1840
1711-1720	+ 51	+11	+ 62	1899	1900
1721-1724	+ 82	+18	+100	1999	2000

For the period 1725-1801 the natural increase from the registers was 1829, compared with an increase from the base populations of 2910, giving a discrepancy of 1081. The percentage discrepancy for purposes of migration would be about 59%. The population points were calculated as follows:

TABLE VII: POPULATION ESTIMATES 1725-1801

Years	*Natural Increase*	*+ 59% Migration*	*Total Increase*	*Popul-ation*	*Population Rounded to Nearest 10*
1724	–	–	–	–	2000
1725-30	- 70	- 41	-111	1889	1890
1731-40	+119	+ 71	+190	2079	2080
1741-50	+138	+ 82	+220	2299	2300
1751-60	+158	+ 94	+252	2551	2550
1761-70	+231	+136	+367	2918	2920
1771-80	+289	+171	+460	3378	3380
1781-90	+400	+236	+636	4014	4110
1791-1801	+564	+333	+897	4911	4910

These estimates, of course, are in the nature of guesswork in that they are based on the assumption of a constant percentage migration. The rates derived from these population points are not to be taken as absolute values but rather as guides which can reveal broad trends in Lewes' population growth.

VI

The following table gives crude birth, death and marriage rates, and includes information on fertility and infant mortality. Each year listed in the left-hand column refers to the middle year of a 10-year period, the covering period being given in the next column. Rates are calculated as averages for the 10-year period based on the estimated population of the middle year. Fertility quotients are calculated on the basis of half-overlapping 20-year periods. Thus, baptisms for the period 1686-1705, for example, are divided by marriages for the period 1676-1695. The overlapping period, in this case, is 1686-1695, and the fertility quotient would be measured as against 1690. The rates and fertility quotients are based on inflated totals for baptisms, burials and marriages.[46]

The infant mortality statistics presented in the last column of Table VIII require comment. Infant mortality, strictly speaking, means infants dying at the age of 12 months and under. For the purpose of this paper, however, all child burials in the registers were checked against baptisms for the year in which the burial occurred *and* the preceding year. 'Infant' could therefore refer to children up to two years old. Where no 'son of' or 'daughter of' was given all burials which could possibly have been infants (sometimes 'the elder' or 'wife of' was given and it was not necessary to check these) were searched for in the baptism registers. This method could only lead to error if, for instance, a father died a year or two after the birth of a son with the same Christian name. Such, however, would be in very few cases indeed.

Several of the burial registers actually used the term 'infant'. In the majority of cases the term coincided with the definition used for my method. However, several 'infants' of three and even four years of age were found especially in the Cliffe parish registers. Where the term 'infant' appeared dubious these entries were checked against baptisms, and these not found were classified as children. Infant mortality in Table VIII is expressed, for the corresponding covering period, per 1000 uninflated baptisms since the infant burial totals, in any case, would have had to be inflated at least as much as the baptism totals.

TABLE VIII: CRUDE RATES FOR LEWES PARISHES INCLUDING FERTILITY AND INFANT MORTALITY

Year	*Covering Period*	*Population*	*TOTALS*			*RATES PER 1000*			*Fertility*	*Infant * Mortality Per 1000 Uninflated Baptisms*
			Baptisms + 20%	*Burials + 10%*	*Marriages + 10%*	*Birth*	*Death*	*Marriage*		
1676	1672-1681	1850	728	747	207	39.35	40.38	11.89	3.78	131.3
1690	1686-1695	1870	765	671	184	40.91	35.88	9.84	3.28	168.0
1700	1696-1705	1980	650	665	149	32.83	33.48	7.53	3.69	181.1
1710	1706-1715	1840	579	655	166	31.46	35.60	9.02	4.19	144.6
1720	1716-1725	1900	723	588	152	38.05	30.95	8.00	4.26	102.8
1724	1720-1729	2000	702	636	152	35.10	31.80	7.60	–	126.6
1730	1726-1735	1890	634	712	161	33.33	37.67	8.52	4.40	149.1
1740	1736-1745	2080	755	618	159	36.30	29.71	7.64	4.91	144.4
1750	1746-1755	2300	816	671	204	35.47	29.17	8.87	4.39	117.6
1760	1756-1765	2550	782	581	217	30.67	22.78	8.50	3.94	84.5
1770	1766-1775	2920	873	612	238	29.89	20.96	8.15	4.12	116.9
1780	1776-1785	3380	1001	671	308	29.62	19.85	9.11	4.00	119.9
1790	1786-1795	4010	1178	847	396	29.38	21.12	9.88	4.84	141.7
1800-1801	1796-1805	4910	2066	1104	629	42.07	22.48	12.81	4.16	150.4

* These figures, of course, do not refer to total population as do the crude rates but to absolute numbers of vital events. The burial registers were not sufficiently complete to yield a child death rate.

What interpretation should one assign to the period 1724-1800 in which the population increased by two and a half times? In the most obvious terms the period 1726-1735 was the last 10-year period in which the death rate exceeded the birth rate. In the period 1676-1735 as a whole, four of the 10-year periods, especially 1706-1715, and 1726-1730 had death rates higher than birth rates. This period of generally stagnating population did have a long-term gradual rise in fertility which continued up to 1745 but the marriage rate showed little tendency to rise. The peaks in the marriage rate for the periods of excessive mortality (1706-1715 and 1726-1735) are most probably a statistical reflection of the high death rates and consequent lower total populations, and possibly reflect remarriages. The dominating impression is that any long-term improvements in fertility were checked by the generally high death rates and the high level of infant mortality.

In the period 1735-1805, however, population growth was not restricted by factors operating via mortality as in earlier periods. In the period 1736-1745 the birth rate rose and the death rate dropped, making a recovery from the bad period 1726-1735. The period 1746-1796 saw an initial fall and levelling off in both birth and death rates with the latter much lower than the former. The fall in the death rate would appear to be due, in part, to the low level of infant mortality which reached its lowest point of the whole 140-year period in the years around 1760. The fall in the birth-rate seems related to the fall in the marriage rate 1756-1775 and, more particularly, to the low level of fertility between the peak quotients of 4.91 and 4.84 against the years 1740 and 1790 respectively.

The period 1796-1805, in which the greatest increase in population occurred, saw a jump in the birth and marriage rates but only a slight rise in the death rate. Fertility fell during this period.

Can the descriptive account, thus far, be set in a more dynamic and integrated framework? The fall in fertility in the 1796-1805 period would certainly not suggest a tendency for earlier age at marriage producing more births overall. Indeed, on the basis of age structure information given in the 1821 census,[47] one could argue that the predominance of females over males in the marriageable age group and the consequent difficulty of Lewes women in finding spouses in the town might have produced a tendency, if anything, to delay marriage by women. If, moreover, such an unequal sex distribution in the marriageable age group applied earlier in the 18th century it could perhaps, in part, account for the low level of fertility and the consequent low birth rate in the period 1756-1785.

Yet one would still have to explain the rise in fertility in the period 1786-1795. It is difficult to say whether the sex-ratio and age at marriage could fluctuate to the extent of producing a rise in fertility during the years 1786-1795, and a subsequent fall during the period 1796-1805. If the fall in fertility during the period 1796-1805 was due, moreover, to a significant shift to a later age at first marriage for women, one would not have expected so dramatic a rise in the marriage rate itself. Fertility, of course, is subject to so many variables that it would be untenable to stress it as an indicator strictly of later age at marriage or sex-ratio alone. What we do know is that since fertility fell in the years 1796-1805 the boom in births during this period was a product of a greater number of marriages (even with the high population total, more people per 1000, in fact, were marrying during this period than in the previous 140 years).

The rise in the marriage rate can be explained in essentially three ways. Changes in infant and child mortality could lead to a changing age structure whereby more children were surviving to marriageable age. Secondly, a rising marriage rate might be a reflection of conditions making for a greater opportunity to marry. And

thirdly, the rise in both birth and marriage rates could be a product of an influx of immigrants in the marriageable age group. Each of these factors can be related to Lewes population growth in the late 18th century.

With respect to a changing age-structure argument, it can be pointed out that the period roughly between 1746 and 1785 was characterised by relatively low infant mortality and a fall in the percentage of child deaths to all deaths.[48] The impression, then, is that the initial fall in the death rate as a whole and its low and generally falling position up to 1795 were due to a saving of child and infant lives rather than adult lives. On this basis it would seem plausible that those extra children 'saved' during the years 1746-1785 provided the potential for an extra number of marriages when they reached marriageable age, roughly in the period from 1770 onwards. The rise in the marriage rate, for example, in the period 1776-1785 after a 20-year fall, would be a reflection of the lowest point of infant mortality in the period 1756-1765.

Referring specifically, however, to the rise in the marriage rate in the period 1796-1805, one would have to consider the children born in the period 1776-1785, or depending on the age at marriage, the period 1766-1775. Both these periods had relatively low infant mortality and a low percentage of child and infant deaths to all deaths. The children born during these periods would represent bulge generations in the negative sense of fewer children dying rather than significantly greater numbers, in terms of total population, being born (the birth-rate was at its low and steady interval). Some such mechanism might in part account for the extra marriages in the period 1795-1805, although one would have to stress the degree of error to which statistics concerning infant and child mortality are liable.

The rise in the marriage rate could be related, as well, to a greater opportunity for marriage in the period 1796-1805. The expansion in the building trade in the 1790s is relevant here. The availability of new houses would certainly offer an incentive for marriage. One would have expected, perhaps, an incentive for earlier marriage. Again it is difficult to interpret the fertility quotient for this period and to argue with certainty whether any such trend towards earlier marriage was cancelled out by other variables.

One wonders, though, whether the jump in the birth and marriage rates in the period 1796-1805 may be too drastic a rise to be solely a reflection of either long-term demographic factors or even more timely internal forces operating within Lewes itself. An increasing number of immigrants of marriageable age during this period would explain the sudden upward trend. In an earlier section it was argued that immigration was a strong possibility throughout the 18th century with a more dominant role near the end. The sheer rise in the absolute numbers of births and marriages would seem to reflect this late immigration. Yet one would still have to show, however, that the influx of immigrants was of the marriageable age group. The failure of the death rate to rise significantly during this period suggests that immigration at least did not represent a predominance of older age groups. If, moreover, the vast majority of immigration had been in the form of families with very young children one would have expected an increase in fertility, since presumably these families would mean more baptisms but very few extra marriages. Such a pattern of immigration would be unlikely since fertility fell. The rise in the marriage rate, then, can be seen partly, at least, in terms of an influx of marriageable immigrants. The greater opportunity for marriage mentioned above would no doubt act in conjunction with immigration to produce the surge in marriages.

One could speculate, moreover, about the sex-ratio of the incoming immigrants and the various possible repercussions for marriage and fertility. Yet perhaps I have

already gone beyond the limits of what even more highly refined aggregative methods could offer in terms of 'explaining' conclusively the period 1796-1805. The aggregative method pinpoints this period as one of striking change and major importance for Lewes' population growth. The above discussion, however, reveals how crucial the age at marriage and fluctuations in fertility are to certain aspects of the interpretations offered. Such factors, and their complex interaction with immigration, could be clarified only by a more detailed study based on family reconstitution.

Although almost a third of the population increase came in the period 1796-1805 due mainly, it would seem, to the impetus of immigration, the increase prior to this period appears most intimately linked to the death-rate and its phenomenal drop especially from about 1756 onwards. It is difficult to say whether this fall in mortality was a product of improved public health. An account given by a local historian in 1795 was certainly not the most optimistic. Referring to the Cliffe parish he states,

> The chief part of the inhabitants, indeed, have long been reprehensible for adding to the natural disadvantage of their situation by encroaching with bulks, penthouses, projecting windows, and every new building as far as possible on a street already too narrow, and their extreme inattention to the sewers.[49]

He later comments that 'fevers of the most malignant kind have frequently broken out in the Cliffe and spread their contagion to the purer atmosphere of Lewes'. He makes no reference to Lewes itself at earlier periods.

Evidence available on public health refers to later dates. In 1806, for example, an important Town Act was passed 'For Paving, Lighting, Cleansing, Watching, Repairing and Improving the Roads, Streets, Lanes, and other public Passages and places within the Borough of Lewes and for removing and preventing Nuisances and Encroachments therein'.[50] The efficacy of this act is no doubt confirmed by Cobbett's comment on Lewes in 1822:

> The town itself is a model of solidity and neatness. The buildings all substantial to the very outskirts; the pavements good and complete, . . .[51]

It would appear, then, that any marked improvements in public health came after the period surveyed in this study.

Could the declining death-rate be a reflection of an immunity, artificial or natural, acquired by the population? In the first place, the registers themselves give no indication of large-scale smallpox epidemics in earlier periods; however, outbreaks did occur especially in the years 1710 and 1711 and in 1730. We do know that the fear of contagious disease spreading was sufficient to warrant the establishment, in 1742, of a Pesthouse in St. Anne's parish, the deed of which stated that 'when any person or persons fell sick of the small pox or any other infectious disorder within the limits of the Borough of Lewes then the said premises should be used and employed for an hospital or pest house . . .'.[52] The *Sussex Weekly Advertiser*, especially after 1770, abounds with advertisements offering innoculation against the smallpox. The charges for inpatients, however, were generally from three to five guineas. How many persons took advantage of such treatment is a moot point. No doubt the more prosperous traders, the middle class professionals and the gentry could have afforded the price. But Mr. Sutton advertised with the following postscript: 'The Poor as usual will be innoculated Gratis'.[53] It is certainly plausible, then, that such treatment played some role in reducing mortality, although to what extent in quantitative terms remains unknown.[54]

In January, 1794, moreover, smallpox made its appearance in several families, and fear of the contagion spreading led to the innoculation of some 3000

'A Bird's Eye View of Lewes Town & the Cliffe with the adjacent Country, from Baldy's Garden in the Cliffe', water-colour by S.H. Grimm, 1785.

The view is due west with, in the foreground, the church of St. Thomas à Becket at the east end of Cliffe High Street which runs up to the bridge over the Ouse (the river can be seen on the right flowing through meadows). The street then veers slightly to the left and enters the ancient Borough of Lewes, runs up School Hill to the High Street, with the castle on the right. The tower and cupola of St. John the Baptist's, Southover, is visible in the middle distance, left. Reproduced by courtesy of the Trustees of the British Museum from Add. MS. 5672, f.7.

inhabitants.[55] This mass innoculation would certainly be a factor in the failure of the death rate to rise significantly in the period 1796-1805 in comparison to the surge in the birth and marriage rates.

In general, however, in the absence of any significant public health measures prior to 1800 and any firm evidence of the effectiveness of innoculation especially in the early period of declining mortality from 1756 onwards, one can perhaps reiterate a theme outlined some years ago by K.F. Helleiner.[56] Along his line of reasoning, exogenous factors such as the decline in the virulence of disease and the disappearance of the plague led to a sharp reduction in those 'peaks' of severe mortality so frequent in the late 17th and 18th centuries. Such violent mortality fluctuations had certainly disappeared in Lewes by the mid-18th century and no doubt were a crucial factor in the lower average levels of mortality which emerged after this period.

Whatever the various theories, however, Lewes with its falling death-rate and the added stimulus of immigration, especially at the end of the 18th century had, to use J.D. Chambers' apt words about Nottingham, broken through the demographic barrier which had formerly kept its population in check. Over 60% of Lewes' population growth from 1724 to 1800 came by natural increase, and somewhat under 40% by immigration. In the case of Nottingham between 1740 and 1801 about 60% of its increase came by immigration.[57] Lewes, then, although unaffected by the burgeoning industrial forces of a Nottingham, had considerable power for attracting immigrants from the countryside. It was this immigration acting in conjunction with the momentum of natural increase which made for the population growth of this major East Sussex market town in the 18th century.

REFERENCES

1 See especially J.D. Chambers, 'Population Change in a Provincial Town: Nottingham 1700-1800' in L.S. Presnell (ed.), *Studies in the Industrial Revolution* (1960), 97-124, and also F. Beckwith, 'The Population of Leeds during the Industrial Revolution', *Thoresby Soc.*, xli (1948), 118-96 and 401. For London see D.V. Glass, 'Notes on the Demography of London at the End of the Seventeenth Century', *Daedalus*, Spring 1968, 581-92.

2 J.J. Cartwright (ed.) *The Travels through England of Dr. Richard Pococke*, ii, Camden Society (1889), 105-6 (17 September 1754).

3 This information is based on two trades structure tables presented in G.O. Cowley, 'East Sussex Market Towns 1550-1750' (unpublished M.A. thesis, University of London, 1965), 187-8. The first table covers the period 1680-1730 and the occupational proportions are based on the number of times a particular trade was mentioned in Lewes marriages by licence and in apprenticeship indentures. A second table is based on 1796 and employs the Lewes Poll Book for that year.

4 *1821 Census of Great Britain*, Parliamentary Papers 1822 (502), xv, 341.

5 *1831 Census of Great Britain*, P.P., 1833 (149), xxxvi, 663. Only 10 out of 2010 males aged 20 or over were classified as employed in manufacture.

6 T. Cox, *Magna Britiannia et Hibernia, Antiqua & Nova*, v (1730), 512.

7 M.A. Lower, *A Compendious History of Sussex* (Lewes, 1870), 19.

8 Thomas Woollgar, Spicilegia . . . Lewensis, i (c.1808), 525-44. (MS. in Sussex Archaeological Society Library). The survey is limited in a number of ways: (1) it covers only half the town, (2) the members of households are not listed by name nor is their relationship to the head of the household given, (3) for over 12% of names listed no occupation is given. The listing can however provide clues to occupational structure and would be of considerable use in tracing individual heads of households.

9 Chambers, 'Population Change in Nottingham', 100-101.

10 W.H. Blaauw, 'Extracts from the "Iter Sussexiense" of Dr. John Burton', *Sussex Archaeological Collections*, viii (1856), 257. For other comments see Daniel Defoe, *A Tour Through the Whole Island of Great Britain*, ed. G.D.H. Cole (1928), i, 129, where the author is rather astounded at seeing a lady 'of good quality' drawn to a village church near Lewes in a coach by six oxen.

11 Cowley, 'East Sussex Market Towns', 167.

12 Blaauw, 'Extracts', 262.

13 D.F. Gibbs & J.H. Farrant, 'The Upper Ouse Navigation 1790-1868', *Sussex Industrial History*, no.1 (1970), 23-9.

14 I have not pursued the problem of the extensiveness of enclosure in the Lewes areain any detail. See *Victoria History of the County of Sussex*, ii (1907), 191, and W.E. Tate, 'Sussex Inclosure Acts and Awards', *Sussex Archaeological Collections*, lxxxviii (1949), 137-44.

15 D.E.C. Eversley, 'Exploitation of Anglican Parish Registers by Aggregative Analysis' in E.A. Wrigley (ed.), *An Introduction to English Historical Demography* (1966), 44-95.

16 Four of the parishes were within the Borough of Lewes proper and two (the Cliffe and Southover) were suburbs intimately connected with it. The definition of Lewes as comprising six parishes is in conformity with the format of the early 19th century censuses from 1811 onwards. All registers are now in East Sussex Record Office.

17 The Challen transcripts are in the form of typewritten booklets in the possession of the Sussex Archaeological Society. Those used are nos. 5, 41, 61 and 62.

18 The most serious flaws occurred in the period 1661-1680 where the entire register for baptisms, burials and marriages for St. Anne's parish was missing. Southover marriages and burials were weak for the period 1661-1665. Neither of these major gaps was filled adequately from the Bishop's transcripts. For St. Anne's the four missing quinquennia in the period 1661-1680 were given the average of the quinquennia 1681-1685 and 1686-1690. The same type of extrapolation was used for Southover 1661-1665. The parish of St. John sub Castro had entries missing 1679-1685 for marriages, baptisms and burials; however, the Bishop's Transcripts proved more helpful. Such a high degree of extrapolation would make the period 1661-80 perhaps less reliable. The totals for these extrapolated years, however, were included with the other parish totals in order to obtain some idea of the population curve in the earliest years of the study.

19 For an outline of the types of information available see J.C. Cox, *The Parish Registers of England* (1910).

20 See E.A. Wrigley, 'Family Reconstitution' in *Introduction to Historical Demography*, 103, where he suggests that special attention should be paid to the quality of the burial registers in considering the possibilities for family reconstitution.

21 See D.E.C. Eversley, 'A Survey of Population in An Area of Worcestershire 1660-1850, On the Basis of Parish Records', *Population Studies*, x (1956-7), 253-79, S. Sogner, 'Aspects of the Demographic Situation in 17 Parishes in Shropshire', *Population Studies* xvii (1963-4) 126-46, and Chambers, 'Population Change in Nottingham'. Both applied boosts of 15% to baptisms, 10% to burials, and 10% to marriages. The best general discussion is J.T. Krause, 'The Changing Adequacy of English Registration 1690-1837', in D.V. Glass and D.E.C. Eversley (eds.), *Population in History* (1965), 379-93.

22 For the Compton Return for Lewes and other parishes in Sussex under Archbishop Sheldon's Census, see J.H. Cooper, 'A Religious Census in Sussex in 1676', *Sussex Archaeological Collections*, xiv (1903), 142-8.

23 West Sussex Record Office, EP 1/26/3. The breakdown is as follows: Presbyterians or Independents, 65 families; Quakers, 4 families; Anabaptists, 6 families;

24 The Evans Survey of Nonconformity, which runs alphabetically by county, is in the Dr. Williams' Library, London. For Lewes see Evans MS., p.116 of Xerox copy. The survey lists a Baptist Congregation for Lewes, but gives no figures. The overall total Non-conformists is, therefore, probably an under-estimate. For a discussion of the Evans survey and other sources of information on Nonconformity in Sussex (including Bishop Bower's Visitation cited above) see N. Caplan, 'Original Records of Nonconformity in Sussex', *Sussex Notes & Queries*, xv (1961), 217-21.

25 T.W. Horsfield, *The History and Antiquities of Lewes and its Vicinity*, i (Lewes, 1824), 305.

26 The most flamboyant of entries was in St. Michael's burial register, 1 Jan. 1796: 'William Hattrell a Gospel Preacher and a rogue'.

27 St. Anne's marriage registers were missing 1661-1680, and Southover marriages were weak in the period 1661-65.

28 The change in pattern no doubt has something to do with Lord Hardwicke's Marriage Act in 1755. Perhaps the term 'of this parish' was used after 1754 in a different sense referring not to origin but to residence. It is possible that the parties had to reside in Lewes for a certain time before celebrating the marriage, or that, as Sogner suggests, attempts to enforce the Settlement Laws led to false information being given.

29 Chambers, 'Population Change in Nottingham', 121.

30 All external marriages: Southover parish 1660-1754 (30 cases); the Cliffe parish 1723-1754 (80 cases); for every fifth year 1660-1754 (220 cases), All Saints' parish which exhibited the highest percentage of such marriages.

31 cf. Eversley's study of 12 Worcestershire parishes. The necessity of inflating marriages is less convincing than that for baptisms and burials. With a 10% boost, but no correction, the trends in the marriage rates would be slightly lower, and the fertility quotients slightly higher.

32 The effect of the famine of 1709-10 seems to be reflected primarily in the marked rise of mortality in the year 1710. Uninflated totals for the years around 1710 are as follows. Marriages listed exclude 'neither of' couples.

	1707	1708	1709	1710	1711	1712
Burials	57	62	47	123	79	51
Baptisms	40	37	55	45	44	43
Marriages	15	16	10	11	13	16

An attempt was made to compare these civil year totals with harvest year totals tabulated on sheets designed by E.A. Wrigley. No clear pattern emerged. The 1710 harvest year, however, revealed 146 deaths compared to 123 by civil year.

33 See Cooper, 'A Religious Census'.

34 See W.G. Hoskins, *Local History in England* (1959), 147. The 1821 Census of Great Britain provides an age structure breakdown by sex for the town and reveals 62.7% of the population 15 years of age or over. *1821 Census of Great Britain*, 342.

35 The fullest assessments were made on Lady Day 1670 and are in the P.R.O. (E 179/191/410), but only those for the 4 parishes in the Borough of Lewes were found. The number of assessments was: St. Michael, 97; St. John sub Castro, 29; All Saints, 78; St. Anne, 28.

36 Woollgar's listing for 1790 cited above yields a mean household size of 5.66 excluding institutions such as boarding schools and poor houses.

37 See Sognor, *op.cit.* He found a total population of 10,000 for his 17 parishes via the Compton Return in 1676, and only half as much by using Hearth Tax returns for 1672.

38 West Sussex Record Office, Ep 1/26/3.

39 *1801 Census of Great Britain*, P.P. 1801-2 (112), vii, 365

40 This feature is possibly a reflection of the preponderance of females over males in the marriageable age group. The age structure for 1821 would certainly suggest this when it lists 1108 females in the age group 15-30 as opposed to only 902 males. See *1821 Census of Great Britain*, 342.

41 Much smaller mixed samples were used by E.J. Buckatzsch, 'The Constancy of Local Populations and Migration in England before 1800', *Population Studies*, v (1951-2), 62-9. In the parish of Shap, Westmorland, for the period 1765-1780 there was a total of 134 marriages. Of the bridegrooms, 31 came from outside the parish, only 2 of whom were from over 20 miles away In Sheffield at a much earlier date, 1653-1660, only 6 of the 63 bridegrooms came from more than 20 miles away. These samples, however, are clearly too small and diverse to bear close comparison with Lewes.

42 The 16 parishes were all within a six-mile radius of Lewes. The parishes were Barcombe, Beddingham, Falmer, Iford, Isfield, Kingston near Lewes, Laughton, Plumpton, Ringmer, Ripe, Rodmell, Southease, South Malling, Stanmer, Tarring Neville and West Firle.

43 Horsfield, *History of Lewes*, i, 277.

44 P. Dunvan, *History of Lewes and Brighthelmstone Ancient and Modern* (Lewes, 1795), 345. See also *Sussex Weekly Advertiser*, 2 April 1792: 'So great is the rage for building in Lewes and neighbourhood that among all the kilns within 10 miles cannot be got a quantity of bricks sufficient to finish the Bell-tower within a limited time'.

45 See above p.3.

46 The definition here is that adopted by D.E.C. Eversley, 'A Survey of Population in Worcestershire'.

47 See above, n.40.

48 J.P. Huzel, 'Population Change in an East Sussex Market Town: Lewes 1660-1800' (unpublished MA dissertation, University of Sussex, 1966), Appendix II.

49 Dunvan, *History of Lewes and Brighthelmstone*, 320.

50 Horsfield, *History of Lewes*, i, Appendix, xliii-xlvii.

51 William Cobbett, *Rural Rides*, i (Everymans, 1957), 73.

52 Horsfield, *History of Lewes*, i, 209.

53 *Sussex Weekly Advertiser*, 28 Oct. 1782.

54 For general discussion of innoculation see P.E. Rassell, 'Population Change in Eighteenth Century England: A Re-interpretation', *Ec.H.R.*, 2nd series, xviii (1965) 312-32.

55 See Horsfield, *History of Lewes*, i, 220, for an account. Some 46 persons died under innoculation.

56 K.F. Helliener, 'The Vital Revolution Reconsidered', in D.V. Glass and D.E.C. Eversley (eds.), *Population in History* (1965), 79-86.

57 Chambers, 'Population Change in Nottingham', 110.

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ADRIAN BARRITT

Kingston Malthouse, 1844-1971

MALTING ONCE TOOK place on a fairly moderate scale in Sussex, but the industry has now left the county. Our last active malthouse closed in 1969, and was recently demolished to clear the way for a new road.[1] It stood in the parish of Kingston-by-Sea, on the north side of the A259 road and to the west of Shoreham lifeboat station. Whilst at work, the malthouse was a living example of a very ancient process, but its closure was attended with little public interest. The traditional malting method is vanishing fast and at the same time many fine malthouse buildings are being demolished without the outcry that accompanies the disappearance of more glamorous industrial monuments. Malting is an important part of the brewing industry, and it is the aim of the present article to introduce the craft generally and provide a record of the process as it took place at Kingston.

Barley must be converted into malt before the brewer can use it, and the maltster deliberately germinates barley, but controls the process very closely, so as to achieve the desired result; different malts produce different beers. The starch in malt, unlike that in barley, is soluble in water, and can be used to make a sugar solution – the basis of beer. It is the brewer's job to make this sugar solution and the maltster's to prepare suitable malt for him. Malting is a skilled craft, requiring very fine judgment, and it takes place in specially designed malthouses (also called maltings) like the one at Kingston.

The malthouse, which was built in 1844, was not particularly impressive externally. It was a long building of cement-faced brick, with three kilns, two at the west and one at the east; but unlike those of many malthouses, the kilns were not sufficiently high for their vents to be very imposing architectural features. These large square vents capped each kiln and the whole roof was slated. The building was 199 ft. long and 75 ft. wide. There was a narrow forecourt at the front, separated from the busy road by a low flint wall. The north and south walls of the building each had three rows of windows, of which most of the top row were dummies.[2] About 20 tie-plates were visible, a characteristic feature, and the maltster's cottage adjoined to the west. To the east there were more store rooms, connected to the main malthouse building by the east kiln structure, which was added at least 70 years after the building was first constructed.

There were four floors, including an attic. The interior construction was timber throughout, apart from the ground and first floors, covered with smooth concrete, and the iron uprights which supported the main 12 in. timbers bearing this concrete first floor. These uprights were regularly-spaced and continued upwards to meet the second floor. The iron window grilles were another characteristic feature; they were provided with folding wooden shutters and external grilles of wire mesh, used respectively to control the temperature (most important) and keep out rats (always a problem; the maltsters had several cats and were very adroit with flashlights and pitchforks). The windows were unglazed, except for those lighting the maltsters' room.

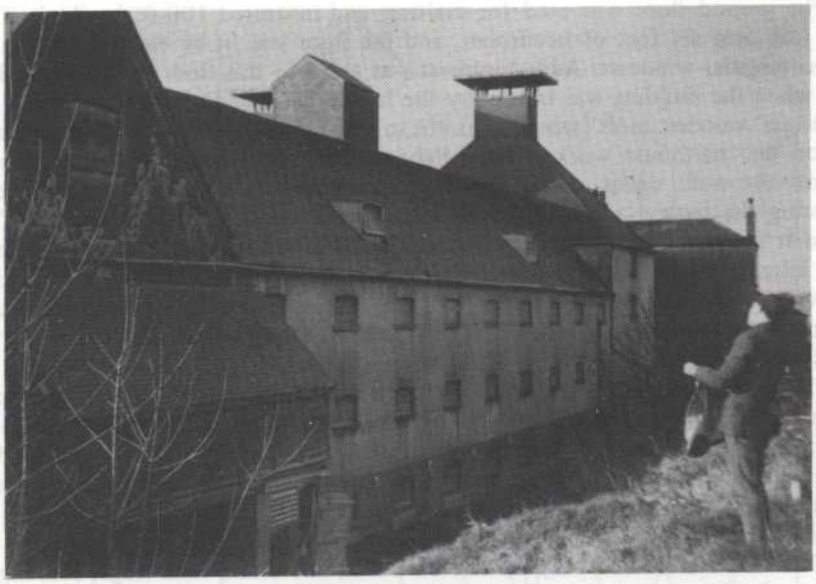
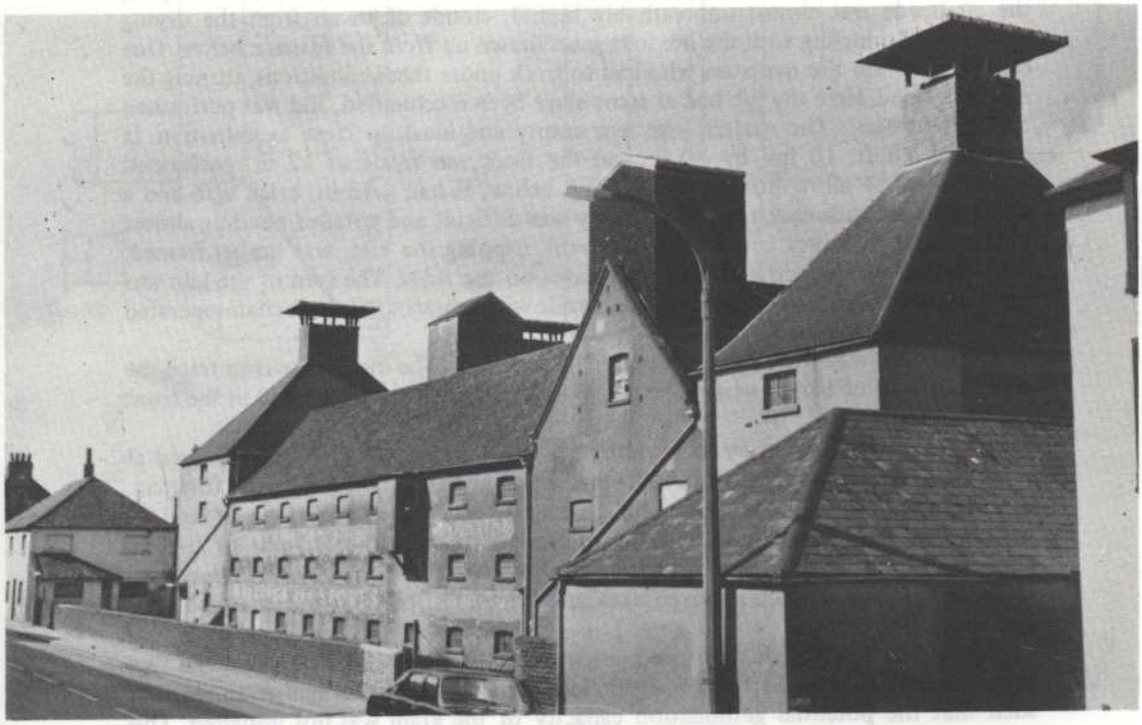


PLATE I KINGSTON MALTHOUSE

Above Rear view from north east, December 1968; the water tank is on the left, the railway out of sight on the right.

Below Front view from south east, April 1970.



The ground floor was used for malting, and measured 100 ft. by 73 ft. There was just over six feet of headroom, and the floor was lit by electric lighting and 18 rectangular windows. Added interest was given to this floor by the iron pillars, and when the building was in use, by the barley laid out in beds for malting. The maltsters' wooden tools (wood so as not to damage the barley corns; for the same reason the malthouse workers wore light canvas shoes) could be found standing against the wall: sieves, rakes, shovels, ploughs and an ingenious contrivance for watering the barley, a type of barrel with a large wooden wheel at each end. The room at the west end of this floor housed the coal-fired furnaces placed beneath the two kilns, a coal store and a maltsters' room with 'cellar' (malting is hot thirsty work!). To the east of the ground floor a door gave access to the east furnace, and by passing through this block one reached the old cart sheds, coal stores and stables.

The first floor was distinguished by the bases of the two steep tanks projecting downwards from the floor above, but otherwise it was almost identical to the ground floor. The second floor was divided into bays, fed by shutes and used for storing barley and malt. This floor was dark as only the windows by the steep tanks actually admitted any light. These steep tanks were made of iron, and each was capable of wetting 40 quarters of barley.[3]

The attic was floored only by two catwalks, one under each ridge, running the full length of the building. A conveyor belt ran right along one catwalk. The interior rainwater ducts, necessary because of the type of roof construction, were interesting, and two towers extended upwards from the roof, access being gained by vertical ladders. These towers housed apparatus for feeding the kilns, and were the highest points in the building to which one could climb.

The kilns were the heart of the malthouse. When I examined the western pair, the air inside was almost unbreathably humid, clouds of steam from the drying 'green malt' mingling with the noxious gases drawn up from the furnace below. One can only admire the maltsters who had to work under these conditions, turning the malt as it dried. Here the job had at some stage been mechanised, and was performed by 'kiln turners'. The eastern kiln was empty and ideal for close examination. It measured 18 ft. 10 ins. by 30 ft. and the floor was made of 12 in. perforated quarry tiles, to allow hot air to rise from below. It had a 13 in. brick wall and a small window with cast iron frame. Entry was difficult and entailed bending almost double through a very small door. The vent, capping the kiln, was timber-framed, lead-covered on the top and clad with slates on the sides. The roof of the kiln was again timber-framed, slate-clad and lined inside with asbestos panels. A chain-operated flap in the vent exposed a fan.

The clearest way to describe the everyday working of the malthouse is to trace the path of a load of barley which the reader must imagine to have arrived in the front yard for malting.

Malting barley arrived by lorry, although the harbour was undoubtedly used at some stage[4] and possibly the railway. Once examined and accepted by the foreman, it was passed through the dresser for grading. It was graded according to size, by passing over a perforated bed, each perforation measuring either 2.5mm. or 2.2mm. depending upon requirements. All barley above the perforation size passed over, and on to the next stage, which removed straw and stones. But the thin corn was collected and sold as screenings.

Barley was received at moisture contents ranging from 15 to 20% and the first stage was to dry it to 11 to 12%, at the same time ensuring that temperatures were such that the potential germination capacity of the grain was not impaired. This

PLATE II

KINGSTON MALTHOUSE
1968

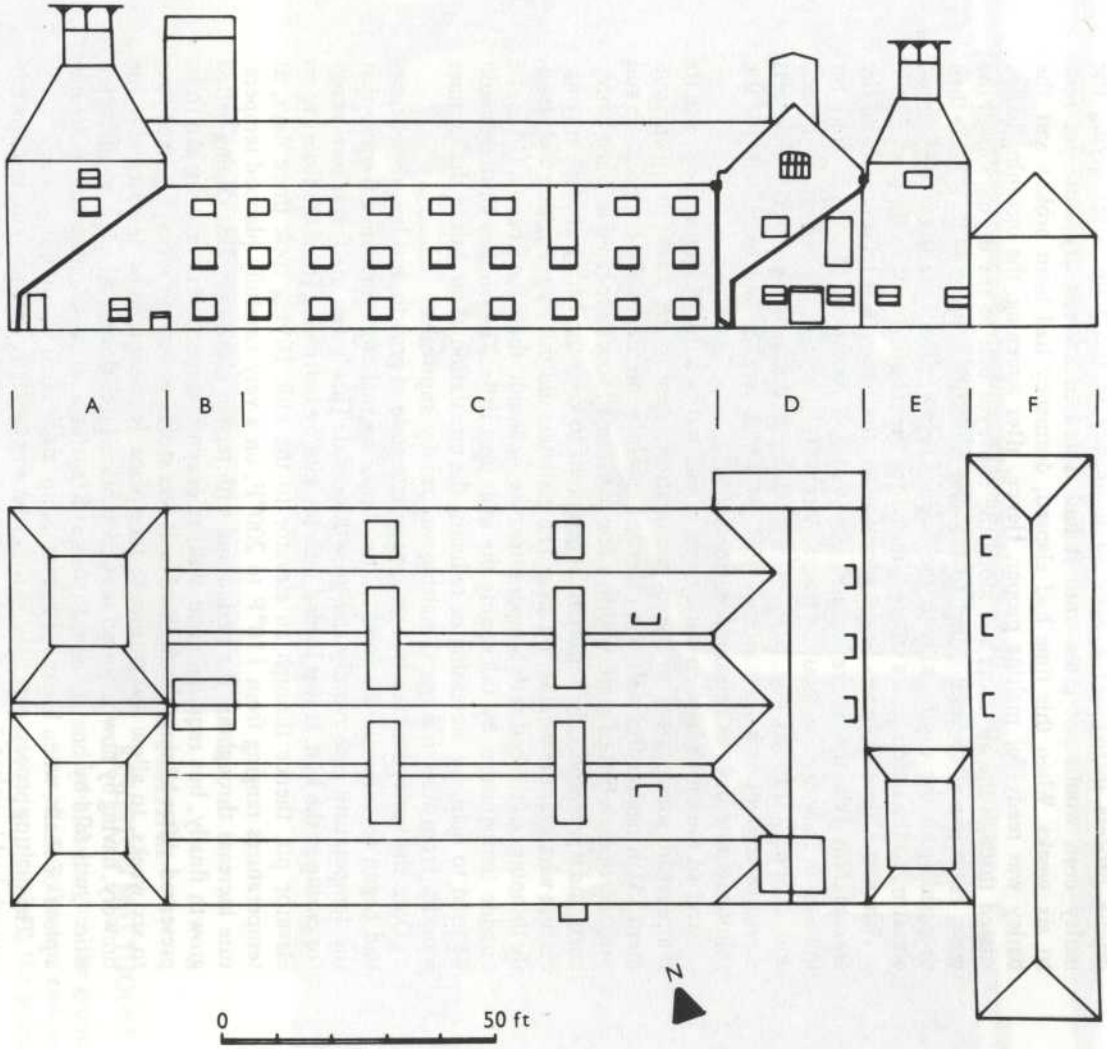
Above Front elevation

Below Roof plan

Main activities in the lettered sections:

A Kilns for curing
B Elevator to curing kilns; storage of malt
C Ground & 1st floors: malting
2nd floor: storage of dry barley, and steeping
D Delivery & dressing of barley; elevator to drying kiln
E Kiln for drying
F Store rooms

MJH & JHF del.



drying process introduced a state of dormancy in the grain; after drying the barley corn would not grow until it had rested in a clean dry store for four to six weeks. When this time had elapsed, dormancy had been broken and the barley was ready for malting proper. Hence, after screening, the incoming barley passed through the elevators and along the conveyor belt to the drying kiln at the west. Here it was sweated down to the said moisture content (11 to 12%) then dropped from the drying kiln to the hopper below, thence via the conveyor and elevators to the holding bins where it rested for the required four to six weeks.

When the time came to begin germination, the barley was recovered from the storage bins (via the conveyor and elevator) and moved to the steep tanks for immersion in water for about 54 hours. After this 'steeping', the barley was drained and dropped through the base of the tank to the growing floors below. Its moisture content was now around 43%, at which level it had to remain for the following nine days as germination proceeded.

And so the much-swollen barley was spread out in a thick layer or 'bed', and its temperature soon started to rise as germination began in the warm, damp environment. At Kingston the maltsters recorded carefully on a card the temperature and progress of each bed of malt. Within a few days, small roots appeared on each barley corn, and it was especially important at this point to keep the barley at an even temperature whatever the weather outside. The maltsters did this by ploughing and steadily thinning out the bed as its temperature rose, or should there have been a fall in the outside temperature, by thickening the malt up a little. The window shutters could be used to help, by increasing or reducing the circulation of air, but in the summer months (from May to August) malting was usually impossible.

Once the barley had reached an appropriate state of growth, but before the roots had begun to consume the food in the corns, the maltsters thickened it up so that the temperature rose rapidly and growth ceased. This 'green malt' was now ready for curing in the kiln. It was loaded into the kiln by barrowing from the floors to an elevator pit, thence through an elevator to the kiln. Drying took three days, at temperatures ranging from 110°F to 200°F, on a very carefully planned temperature increase throughout the period and with regular ploughing. This kilning halted growth finally, but required great skill, as enzymes important in brewing had to be preserved. After kilning, the finished malt was stored in bins, or sacks, for some four to six weeks, to allow a maturing to take place. It could then be despatched to the brewery, having by now acquired that crisp biscuit-like flavour which is so characteristic. I was told by one of the maltsters at Kingston that good malt would write like a piece of chalk, when broken, whereas damp 'slack' malt would not.

The malting process practised at Kingston was basically very ancient, but sensibly enough had been mechanised, through the years, within those limits imposed by the technique itself and the building available. Today, these old-style malt houses are quite impracticable for modern malting concepts, and they are entirely unsuited[5] to conversion to drum-malting methods – the main reason why so many are closing down as breweries modernise or merge. I have already mentioned the 'kiln turners', which ploughed the malt in the kilns. These mechanical ploughs stretched the full width of each kiln (they were fitted only in the two west kilns), were powered by electricity, and moved up and down the kiln, simultaneously revolving. Projecting blades kept the malt well ploughed. I have also referred casually to the conveyor belt in the attic, and the elevator. This conveyor belt fed barley to the storage bins, and also fed it after storage to the steep tanks. The elevator was in two parts, each elevator head being housed in one of the towers projecting from the roof of the building. The elevators lifted barley from the base of the drying kiln, the bases of

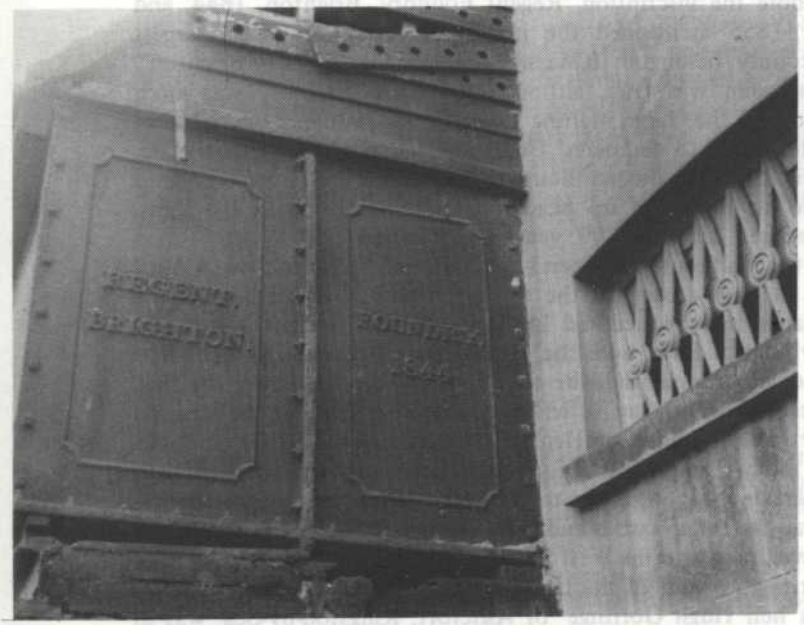


PLATE III

KINGSTON MALTHOUSE

Above Malting on the ground floor, viewed from the east end; note the rake for ploughing the germinating barley.

Left Detail of the water tank at the rear, of the building, east end; also of the characteristic window with grill and the top shutter down.

the storage bins, and the intake point on the ground floor, to feed it on to the conveyor. In fact, one elevator fed the conveyor belt and a second (the green malt elevator) carried green malt from the floors to the kilns. New steel furnaces had evidently been added to serve the two west kilns, but the east furnace was brick-built and older. The barley dresser, housed in the room immediately to the east of the ground malting floor, was quite old. The malthouse building had been altered and added to since it was built, for earliest maps with the deeds show a gap between the main block and the stables and coal stores at the east – no east kiln.

Kingston malthouse had a long and interesting history. This began in 1844, when Edmund Vallance and William Catt,[6] brewing partners from Brighton, came to an agreement with W.P. Gorringe, of Kingston-by-Sea, to build a malthouse on a plot of land beside the railway line, this land being owned by Gorringe.[7] In one form or another, the firm of Vallance & Catt were successful brewers for most of the 19th century, and both were large families. The *Sussex Weekly Advertiser* of 14 March 1807 reported that 'Woolf's patent steam engine, recently set up for Messrs. Vallance, at their brewery in this town (Brighton), from its simplicity and regularity in driving the various machinery attached to it, completely answers every purpose for which it was designed, far exceeds the expectations of the proprietors, and does great credit to the inventor'. Steam power was one of the technical improvements that spread to the brewing industry at the end of the 18th century, and it gradually surplanted mill horses from their job of pumping water and grinding malt.[8] Horses were more expensive to buy, feed and look after, and Vallance was one of the first Sussex brewers to realise this.

Vallance & Catt had a brewery in West Street, Brighton, and a malthouse in Newhaven until 1845.[9] Possibly Kingston malthouse replaced their Newhaven building, it was nearer the brewery and conveniently close to Shoreham harbour, which would have been used for import of coal and barley.[10] They had the new malthouse built at their own expense, and agreed to lease the land on which it stood from Gorringe, at an annual rent of £22, starting on 24 June 1844. A water tank at the rear of the building bore the inscription 'Regent Foundry, Brighton, 1844' and *Kelly's Directory* for 1855 mentioned the malthouse specifically: 'the largest malting houses in the county, belonging to Messrs. Vallance, Catt & Co. of Brighton'. In all likelihood this claim was true, although the 1866 directory was more cautious, referring only to the 'large malting houses'; one wonders which other large brewer or maltster wrote to complain! Under the terms of the original lease, Vallance & Catt undertook to keep the malthouse in good repair, to insure it for not exceeding £1,500 and to render it up peaceably and quietly 'with the kilns, cisterns and appurtenances' after the 99 years had expired.

But five years after the malthouse had been built, Edmund Vallance died (4 April 1849). Complications at once arose, for the two partners had owned half of the malthouse each. Vallance had bequeathed his share to his brothers James and Charles, and to Henry Catt of Firle, with the proviso that if his wife and children were in financial need, his share should be sold, and his brothers have the first option to purchase. It turned out that his widow wanted his share of the business to be sold, but neither James, Charles nor Henry Catt would buy. So after no doubt lengthy negotiations, a new company was formed, consisting of members of both families who were interested in continuing the business. This company – Vallance, Catt & Co, bought out all the other parties and went on to prosper for the rest of the century, ultimately developing into the West Street Brewery Ltd.

In 1874, W.P. Gorringe, owner of the land on which the malthouse was built, died. Before long his heir Hugh Gorringe 'of Ashcroft, Kingston-by-Sea' was in

financial difficulties. In 1878 he borrowed £18,000 from George Wilder and Charles Hore, with the malthouse as his security. By 1888, he found that he was unable to repay this, and so came to an agreement with the Scottish Equitable Life Assurance Society: the society agreed to pay off his debt, and indeed to lend him a further £16,000 with the malthouse again as security. So Gorringe agreed that the society could sell the building if he failed to repay the £34,000 on time. In fact, he borrowed another £6,000 in 1891, and in 1896 the society decided to sell the malthouse. The sale was subject to the 1844 lease agreement, and the buyer, Henry Willett,[11] agreed that the £1,050 purchase price should be paid to the society 'in part discharge of the said debt'.

Henry Willett, a well-known entrepreneur with various brewing interests, did not hold on to this particular business for very long. But he did redeem the land tax on the malthouse by making one bulk payment of £67 10s. and from the exoneration certificate we can see that the occupiers are now named as the West Street Brewery, Brighton.[12] This company was a development from Vallance & Catt.

Willett sold the malthouse to its tenants, the West Street Brewery, on 30 September 1903, for a price of £4,467 10s. Just before the Great War, this brewery was taken over by Smithers & Sons, of Brighton,[13] but it must have retained some sort of separate identity, for a deed of 1931 records the sale of Kingston malthouse for £6,000. It was sold by the directors of the West Street Brewery to William Henry Abbey, Henry Robert Burrows Abbey and John Roland Abbey, owners of Abbey's Brewery (which became the Kemp Town Brewery in 1933). They used it until 1954 (you could still see the wording 'Kemp Town Brewery – Dolphin Ales & Stout' on the front wall) when Charrington acquired the Kemp Town Brewery. The malthouse worked for Bass Charrington (as the firm later became) until 1969 when it was closed down. It stood in an area awaiting clearance for the new Shoreham relief road, and was hence sold for £30,000 to West Sussex County Council.[14] Demolition contractors began work in June 1971, but on 7 July a fire gutted the malthouse and no doubt hampered them considerably.

During the period 1845-55, there were over 50 active malthouses in Sussex, but this number declined steadily to 37 in 1895, eight in 1918 and none today.[15] Proportionately this reflects the national trend, as breweries merge and bulk drum-malting techniques outdate the traditional method and render the old-style buildings obsolete. We are fortunate that the craft survived for so long in Sussex, where malting was never an important industry.[16] There are still active malthouses in other counties, and as their number declines the need for a more widespread effort to record them becomes increasingly urgent. I hope readers will feel encouraged to take some part in this.

REFERENCES

1 Grid reference of site is TQ 233051.

2 I would welcome any observations on these windows.

3 Each tank measured 6 ft. 6 ins. by 3 ft. 8 ins. One carried the plate 'Body Ltd/Makers/ Bury St Eds' and the number AE 726.

4 'Tidal Harbours Commission. First Report', *British Parliamentary Papers*, 1845 (665), xvi, 344: Wm. Catt examined: resident at 80, West Street, Brighton, retired Sept. 1843 as an active partner in Vallance, Catt & Co.; for several years prior to c.1838, imported barley to Newhaven from Southwold, but because of a vessel getting stranded on the bar there, would only take it via Yarmouth thereafter. In the malting season, 1838-9, imported nearly 10,000 qu. of barley, mainly from Norfolk.

5 A few conversions have however taken place. Two of which I have heard, in Burton-upon-

Trent, are now producing ten times the original output of malt per year, as compared with the previous output from the same buildings; and the labour force was cut drastically.

6 This and all other historical information is extracted from the deeds, unless I make a note to the contrary. The deeds are at present in the care of the Clerk's Dept., West Sussex County Council.

7 The map with the earliest deeds shows the malthouse as a separate entity, detached from the row of buildings to the east, which are marked as stables, coal and coke stores and cart sheds. Mr. J. Upton of Brighton, who worked for the West Street Brewery before the Great War, remembers it as like this, so it seems that the east kiln must have been added after 1914. It was evident from inspecting the building that this kiln was an addition.

8 H.A. Monckton, *A history of English ale and beer* (1966). For a list of breweries with steam engines during the 18th century see P. Mathias, *The brewing industry in England, 1700-1830* (1959), 85.

9 Sussex directories in Brighton Reference Library: *Pigot's* 1823, 1832; *Kelly's* 1845-1895.

10 See note 4.

11 H.E.S. Simmons, 'The Brighton breweries' (typescript notes in Brighton Reference Library, 1969). Willett had connections with several Brighton breweries, and was the younger brother of Charles Catt (d.1885), having changed his name by Royal Letters Patent.

12 This certificate is with the deeds.

13 Mr. J. Upton (see note 7) tells me that four men worked in the malthouse at the time of this takeover, and that the old employees were unhappy at the move. The foreman was one Walter Maxim, and Mr. Kingsley Willett was in overall charge. Smithers were brewers from at least 1832 until after 1927.

14 It is interesting to compare the various prices paid for the malthouse during its lifetime. These reflect well the rise of inflation, especially since 1930.

15 These figures are calculated from directory lists and probably underestimate the total.

16 These were 40 in Wolverhampton alone, in 1835, and many large towns in malting regions had more than this.

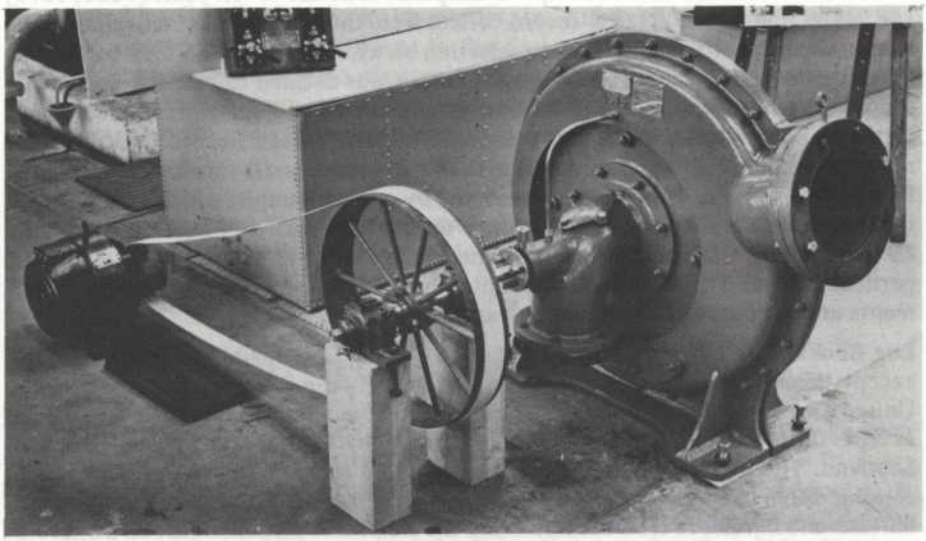
ACKNOWLEDGMENTS

I should like to thank the following people and organisations for their very valuable help: Mr. A.C. Macdonald, Director of Production Services, Bass Charrington Ltd., whose general helpfulness and advice on technical matters have been invaluable; Mr. H.E.S. Simmons, of Shoreham, who showed me the malthouse in the first place and has let me draw on his extensive knowledge of the brewing industry to fill in much of the background; Brighton Reference Library staff, for cheerful and interested help, and many photocopies, over a period of years; Messrs. Richard Battson and Dave Green, for helping me measure and record the malthouse one bitterly cold day, but when the need was urgent as it was soon to close; Mr. J. Upton, of Brighton, for his interesting personal recollections; West Sussex County Council, for allowing me access to the deeds; Mrs. M.J. Hallam, for preparing from my rough drawings the plans used with this article; the Editor for skilled and helpful advice, and permission to use some material from his notes.

Notes and News

PARK MILL, BATEMANS, BURWASH

The turbine and generator have now been completely restored at the Royal School of Military Engineering, Chatham, and the photograph shows the very fine result. The whole of the inside works of the turbine has been reconstructed, as they were in a sorry state through years of neglect. The old generator is now as new, happily capable of churning out its 100 volts of 'continuous current'.



It has not been possible to fix a date for the Royal Engineers to undertake any restoration work on the site, owing to other commitments. Brickwork and masonry need urgent attention, and about 250 tons of mud must be dredged from the mill pond. However, the work has been accepted as a future commitment, though the machines are unlikely to be running again on the site until 1972 at the earliest. Perhaps in 1973 will be heard the hum and gurgle of what would be one of the oldest functioning hydro-electric plants in the world.

RAYMOND HAWKINS

'INDUSTRIAL HISTORY IN KENT'

A residential University Extension course is being arranged by Mr. H.G. Frost at Wye College, near Ashford, Kent, from 19 to 26 August 1972. Those who join the course will examine the technological development, social background and social consequences of industries which have survived into modern times, visiting remains of old industry and modern works, including paper, fishery, mineral extraction, transport, milling, agriculture, horticulture, pilgrimage and tourism, land reclamation and drainage, food processing, etc. The inclusive fee will be about £20. Further details from: Deputy Director (Extension), University of London, Department of Extra-Mural Studies, 7 Ridgmount Street, London, W.C.1.

SUSSEX SHIPPING RECORDS

As a result of the recent disposal of certain of the 19th and early 20th century records of the Registrar-General of Shipping and Seamen, both the West and East Sussex Record Offices have acquired valuable documents relating to ships registered at Sussex ports.

The records in question are those returns which were required to be made to the Registrar-General of Shipping by masters of all vessels, in pursuance of the Merchant Shipping Acts, 1854-1906.[1] The Public Record Office has retained a random sample of the documents, which were available for the period 1863-1913, and the National Maritime Museum has taken a complete sample at intervals of ten years (1865, 1875, 1885, 1895 and 1905). Local record offices were then offered the remaining documents, being permitted to make their selection on whatever principle they considered most appropriate. In the case of West Sussex it was decided to take the documents for all ships known to have been registered at Shoreham and Arundel (later Littlehampton) during the relevant period. The East Sussex Record Office made a random sample of all the documents available in certain years for ships registered at Rye and Newhaven. This was supplemented by a select sample, which comprised all the documents available for certain ships during their period of registry at Rye and Newhaven, the vessels selected having some special feature or being representative of a particular type. The documents fall into three main categories: log books, agreements and accounts of crews and voyages.

Log Books The 1854 Act required that an Official Log should be kept in all ships, except those employed exclusively in trading between ports on the coasts of the United Kingdom, while the 1894 Act extended those requirements to cover all ships except those exclusively employed in trading between ports on the coasts of Scotland. The masters of such ships were required to make entries in the Logs concerning, *inter alia*: offences committed by crew members with their punishment; illnesses and injuries to crew members and the treatment administered; births, deaths and marriages occuring on board the vessel; collisions in which the ship was involved.

Agreements The master of every ship, except those of less than 80 tons registered tonnage exclusively employed in trading between ports on the coasts of the United Kingdom, was required to enter into an Agreement with each member of his crew which specified the nature and possible duration of the voyage, the number and description of the crew, the capacity in which each crew member was to serve, the wages each crew member was to receive and the scale of provisions to be provided.

Accounts of Crews and Voyages The master of every ship was required to make a return showing, *inter alia*: the number and date of the ship's register and her tonnage; the length and general nature of the voyage; the names, ages and birth places of all the crew, with their ratings, last ships and dates and places of joining the present ship.

The masters of 'home trade' ships (those employed in trading between the United Kingdom and the Continent between the River Elbe and Brest) were required to return the appropriate documents within 21 days of 30 June and 31 December each year, whereas the master of a 'foreign going' ship (employed in trading between the United Kingdom and any place outside the above limits) was required to return the documents within 48 hours of the arrival of his ship at her final port of destination in the United Kingdom.

It will be seen from the brief explanation above that the only document which should invariably occur for every ship is the Account of Crew and Voyages; the

existence of the other two documents is dependent on the size of the vessel and the type of trade in which she was engaged, and even the existence of a log book is no guarantee that any information will be found therein.

It should be emphasised that these records are primarily concerned with the crews and the voyages undertaken by the ships. Almost no explicit information is given about the cargoes carried, nor are there any details of ship construction and ownership, which should be sought in the shipping registers retained in the Customs House of the port in which the ship was registered. However, certain conclusions can be drawn from the information given; thus the general pattern of trade for coasting vessels would appear to be the collection of coal from a port in North-East England (Newcastle, South Shields, Hartlepool, Sunderland) or South Wales (Cardiff, Swansea, Llanelly, Pembrey), its transport to London, the South Coast or Northern France and a return voyage to the coal ports in ballast. From an examination of the information given concerning the birth places of the crews, it would appear that in almost every ship so far studied, seamen from Sussex were the largest single group, and in many cases they formed the majority of the crew.

DAVID J. BUTLER

1 Of the many Merchant Shipping Acts passed within this period, the following are probably the most important: Merchant Shipping Act, 1854 (17 and 18 Vict. c.104); Merchant Shipping Act, 1873 (36 and 37 Vict. c.85); Merchant Shipping Act, 1894 (57 and 58 Vict. c.60); Merchant Shipping Act, 1906 (6 Edw. VII, c.48).

SHEFFIELD PARK MODEL FARM

Brighton Public Libraries are to be congratulated on purchasing, and so keeping in the county, the bulk of the manuscripts auctioned at Sheffield Park on 16 June; assistance was given by the Friends of the National Libraries and the Victoria & Albert Museum's Book Purchasing Fund. The documents relate to the model farm from the date of its establishment by John Baker Holroyd, first Earl of Sheffield, in 1775, up to 1812. Eight out of the 12 volumes are detailed labour accounts, recording the tasks performed on each day by each farm worker and the wages due; the other volumes are a cash book, ledger accounts, list of tenants and rents, and records of yields. The activities of Lord Sheffield as agricultural improver find frequent mention in the Rev. Arthur Young, *General View of the Agriculture of the County of Sussex*, 2nd ed. (1813; reprinted by David & Charles, 1970).

WEY & ARUN CANAL SOCIETY

Ninety-nine years after the official closure of the canal, in 1871, the Wye & Arun Canal Society was founded. Now, a year later, it has over 100 members and, as its President, Lord Egremont whose ancestor, the third earl, played so large a part in the canal's construction between 1813 and 1816.

The canal is 18½ miles long and extends from Pallingham near Pulborough, on the Arun, to Stonebridge, between Guildford and Godalming, on the Wey. The aim of the society is to restore the canal, and a pilot scheme to assess the problems is under way. Clearance of the brambles and hawthorns has revealed Rowner lock, near Wisborough Green, which is being cleaned and repaired, while the manufacture of new lock gates is in hand.

Volunteer 'navigators' are very welcome and should contact the Secretary, J.P. Markwick, 59 Ardsheal Road, Broadwater, Worthing, Sussex (Worthing 203433). Those of more sedentary habits can read the society's newsletter, *Wey-South*, and the standard authority on the canal's history, P.A.L. Vine's *London's Lost Route to the Sea* (Newton Abbot, 1966).

MAGNUS VOLK

Conrad Volk, *Magnus Volk of Brighton*, published by Phillimore & Co. Ltd., Chichester, 1971. £2.75.

Magnus Volk is remembered today because of his electric railway, now owned and operated by Brighton Corporation and running for a mile along the edge of the beach. But for the railway, would his name be known to more than a few? Probably not.

Volk was an electrical engineer, but a contractor, a practising engineer, rather than a technologist: he was not at the frontiers of knowledge, discovering the practical applications of the findings of pure science, for he principally worked with components already on the market. In the 50 years before the Great War, there must have been many like him in the various branches of engineering, nourished by the greatly expanded availability of scientific literature, men who adapted – and perhaps thereby improved – new machines and techniques for novel purposes and local circumstances. Maybe Volk was just lucky: one of his enterprises is still operating because it is a popular holidaymaker's entertainment.

For almost all his long life – 1851 to 1937 – he lived in Brighton or nearby in Hassocks. Son of an immigrant clockmaker from Germany, with no formal scientific training, he made his first venture in electrical engineering with a toy telegraph set, which he marketed in 1871 or '72; from this he graduated, via the first public telephone in Brighton and the lighting of the Royal Pavilion, to the electric railway, an electric dog-cart, the Rottingdean off-shore railway and electric motor boats on the Thames. But none of these ventures really led anywhere, except perhaps the next venture: Volk seems to have had no plans of commercial exploitation or of long-term development of his ideas. Thus to build a prototype electric railway as a seaside attraction could have been an inspired piece of publicity, but no production of electric railways ensued; nor does Volk appear to have been motivated by the potential of the emerging holiday industry, as were the contemporary promoters of the Palace Pier and the Devil's Dyke enterprises. Thus, for all the fact that he sold two dog-carts to the Sultan of Turkey, he remained a local figure – unless the oblique references to frequent travels overseas hide something.

As a piece of historical research, his son's book falls into three chronological parts. The family background and Volk's youth are recounted from very fragmentary materials, but the author draws an evocative, if occasionally anachronistic, picture of early and mid-Victorian Brighton. The most valuable section relates to Volk's most productive period, from about 1880 to the early years of the new century: newspapers, family and Brighton Corporation papers are extensively used, though the account of the local struggles over the railway is marred by its opponents being branded as antediluvian. The final part relies on the author's own recollection and contains superfluous detail on the domestic arrangements of the household.

Nevertheless, this book is a highly readable account of a slice of Brighton's history, with a goodly gathering of photographs.

JOHN FARRANT

Printed by R. Kingshott & Co. Ltd., Aldershot, Hants.

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