

FERTILITY, INFANT MORTALITY, AND BREAST FEEDING IN THE SEVENTEENTH CENTURY ¹

by

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“Men and women have always longed for both fertility and sterility, each at its appointed time and in its chosen circumstances.”

Norman E. Himes, 1936.

SUMMARY

A positive correlation between fertility and infant mortality is generally accepted under certain conditions. The investigation of population change in two parishes in south Oxfordshire during the Stuart period was carried out as part of a Ph.D. thesis. It became apparent that there was a clear link between the death of an infant and the reduction of the subsequent intergenetic interval. It also seemed clear that lactation had an important part to play in fertility and infant mortality.

The infant feeding habits of the seventeenth century are difficult to establish. The diaries of many women do not include this evidence. A pattern was established that clearly indicated aristocratic and gentlewomen did not usually breast feed, whilst yeomen and husbandmen's wives did, when they could.

The most recent medical evidence regarding the mechanisms of puerperal lactation was sought on both sides of the Atlantic, and has indicated the effectiveness of breast feeding in the control of fertility. Although this cannot have been understood in seventeenth-century England, it appears to have been a means of limiting the size of peasant families.

Although the evidence for breast feeding is lacking, the very low infant mortality rate in the two parishes, approximately 113 per thousand live births, indicated that these compared favourably with certain aristocratic women during the seventeenth century who were placing their infants with wet nurses or weaning early on to meal pap.

A great deal more evidence is needed to establish that infant feeding methods may be responsible for massive population change leading to industrialization, but it is not outside the realm of possibility. It is of course very important in the developing nations of today.

INTRODUCTION

IN THE efforts to understand demographic transition the pendulum swings back and forth between increased fertility and decreased mortality. We are rightly advised

¹ Version of a paper read at the conference in Birmingham of the Society for the Social History of Medicine on 26 March 1977.

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not to accept monocausal explanations for the changes in the vital rates that lead to population change. It is true that, "the total environment in which men and women lived rather than the simple level of wages . . . influenced decisions to marry."² Whilst accepting the "total environment" theory, from soil to weather, field systems to tenure, migration and settlement, bugs and bacteria, soap and sanitation, civil and national conflict, the common potato,³ and the more recent variant, ". . . the psychological conditions—and above all conditions of insecurity",⁴ one surely ought not to get too far away from the simple biological laws governing plant and animal life. The most favourable environment enhances and successfully reproduces life, but the removal of every hazard to reproduction and growth is as nothing without sustenance.

"A victory of medicine over disease will lower the death-rate and increase the pace of population growth without providing sustenance, employment or the rudiments of comfort for a single person."⁵ This truism was noted by T. H. Marshall forty years ago, but it is sometimes overlooked. In addition, the use of cotton underwear and soap, the removal of jakes and other primitive lavatories, may reduce mortality but will not directly influence the feeding of one extra mouth. Those addicted to Malthus will not need reminding of the link between economy and demographic growth or decline: one cannot help but wonder whether Malthus would have regarded the psychological conditions of insecurity as a "misery" or a "vice".

LACTATION AND EARLY HISTORICAL DEMOGRAPHERS

The methods of seventeenth-century demographers like King, Graunt, Petty, and Davenant have been criticized regarding statistical standards and suspect arithmetic, but apart from a paper by Kuczynski in the *Annals of Eugenics*,⁶ also forty years ago, as far as I know, they have not received the attention they deserve. Moreover, their results have not yet been fully investigated and compared with the information obtained from the modern methods of family reconstitution. Professor Glass has of course used them in connexion with his work, especially in the London parishes. What these men wrote about fecundity, fertility, disease, birth control, marriage, divorce, promiscuity, and bastardy is worthwhile reading; even more important are the distinctions they made in calculating urban as opposed to rural, and wealthy as opposed to poor, populations. Although they appreciated the relative healthiness of the country, the degree may have escaped them. It was, in fact, very much more healthy in the country, and it is clear that the low fertility and high mortality that they observed in the towns, influenced and probably motivated their demographic endeavours. They were fairly well agreed that the fecundity of the majority of the women of their time was greater than the actual fertility; more children could have been born. The reasons given as to why this should have been so ranged from "coal-

² E. A. Wrigley, *Population and history*, London, Weidenfeld & Nicolson, 1973, p. 158.

³ W. L. Langer, 'Europe's initial population explosion', *Amer. hist. Rev.*, 1963, 69: 17.

⁴ J. D. Chambers, 'Some aspects of A. E. Wrigley's, "Population and history"', *Local Popul. Stud.*, 1969, 3: 22.

⁵ T. H. Marshall, 'The population problem in the Industrial Revolution', in E. M. Carus-Wilson (editor), *Essays in economic history*, London, Edward Arnold, 1969, vol. 1, p. 309.

⁶ R. R. Kuczynski, 'British demographers' opinions on fertility', *Annls Eugen.*, 1935, 6: 137-171,

smoke”, to “abstention on the part of the wives of seamen”, and Graunt’s “unlawful copulations”, which according to him, “beget Conceptions, but to frustrate them by procured Abortions”. Many and often are their references to the part played by the pox in contraception. Outside of marriage they were concerned with a large class unable to marry. By the 1690s Defoe was also writing about the wickedness of contraception, but did not produce, until 1727, *Conjugal lewdness or matrimonial whoredom: a treatise concerning the use and abuse of the marriage bed*. Hidden among all the naughty and nasty reasons for reduced fecundity, only William Petty wrote that, “long suckling of children” is a “hindrence to the speedier propagation of mankind.”⁷

Lactation has received scant attention from historical demographers, although the relationship between infant mortality and fertility has long been recognized and accepted by population experts. Like Dr. Thirsk’s pins, points, and ribbons,⁸ the simple female role of nourishing the human infant has been generally ignored or taken for granted. The word *milk* may come in many forms now, to bridge the gap between the placenta and solid food, but it was not ever so, and milk is still not available in many societies, other than from the human breast. Before discussing what is in the title of this article some general demographic mythology needs airing and then abandoning. First, it is incorrect to assume that most women in pre-industrial societies are or were normally confined annually through a birth or a miscarriage. Although physiologically possible, this situation was rare in south Oxfordshire in the seventeenth century, as it is, for example, in rural Thailand today.⁹ Second, it is also incorrect to assume that ghastly infant mortality pertains generally to pre-industrialized societies, either temporally or spatially. It is true that high rates of infant mortality have been recorded: examples come from Crulai by Gautier and Henry between 1688 and 1719,¹⁰ from the urban parish of St. Michael Belfrey in York from 1571 to 1586,¹¹ from the fenland parish of Wrangle in Lincolnshire from 1597 to 1642,¹² and from the British ducal families before the eighteenth century.¹³ High rates also come from certain underdeveloped countries today, especially malarial zones, which may explain the fenland rates before drainage. Dr. Hollingsworth, when discussing the lower rate of infant mortality found by Dr. Wrigley at the now famous Colyton in Devon, thought that, “At such a place and time we might expect about 300 infant deaths for 1,480 births, so that unless Colyton was exceptionally healthy, it would mean that extra infants should be added who were neither baptized nor buried, owing to an early death”.¹⁴ Although current United Nations life tables

⁷ Sir William Petty, *The Petty papers*, edited by the Marquis of Lansdowne, 2 vols., London, Constable, 1927, vol. 1, part 7, p. 194.

⁸ J. Thirsk, Ford’s lecturer in English History. Subject: ‘Economic policy, Economic Projects, Political Economy 1540–1700’, Introduction, 24 January 1975.

⁹ J. Knodel and V. Prachuabmoh, ‘Demographic aspects of fertility in Thailand’, *Popul. Stud.*, 1974, 28: 438–448.

¹⁰ E. A. Wrigley, ‘Mortality in pre-industrial England’, *Daedalus*, 1968, 97: 546–580.

¹¹ *Ibid.*

¹² *Ibid.* See also, F. West, ‘Infant mortality in the east fen parishes of Leake and Wrangle’, *Local Popul. Stud.*, 1974, 13: 41–44.

¹³ T. H. Hollingsworth, ‘A demographic study of the British ducal families’, in D. V. Glass and D. E. C. Eversley (editors), *Population in history*, London, Edward Arnold, 1974, pp. 354–378.

¹⁴ T. H. Hollingsworth, ‘The importance of the quality of the data in historical demography’ *Daedalus*, 1968, 97: 415–432, p. 424.

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give a guide to possible rates of infant mortality from the expectation of life, “expectations” seem to be a strange approach to historical research. Clearly the inference was that if the aristocracy lost between two to three hundred infants per thousand live births in the first year of life, how could Colyton peasantry and tradesmen do better? It is quite clear that in south Oxfordshire in the last quarter of the seventeenth century the peasants and tradesmen were very much more successful than the aristocracy or the gentry in rearing their babies. In fact, throughout the period 1635 to 1706, the infant mortality rates for Caversham and Mapledurham were even lower than the revised figures given for Colyton.¹⁵ Lady Anne Clifford lived from 1590 to 1676; the editor of her diary hardly knew whether the “fecundity” or the “mortality” of the family and the period was the more appalling, and rightly so, for the Cliffords. This reaction is unavoidable, and even more so to the child-bearing and -rearing experiences of Mrs. Thornton.¹⁶ This situation cannot, however, be unequivocally accepted for the motherhood pattern in *The world we have lost*.¹⁷ The view that if the aristocracy could not or did not reduce their fertility and their infant mortality, neither could the peasants, is untenable. The third and last myth, and the most important for this article, is still in circulation, namely, *that conception is not hindered by prolonged lactation*. Most readers will have heard of cases where women have conceived whilst breast feeding; nevertheless, all the clinical evidence to date points towards the post-partum amenorrhoea (that is the temporary sterile period after childbirth), being extended relative to the length of the suckling period. This is true, especially when the infant is wholly dependent on the breast and receiving no other food. Before discussing the evidence from south Oxfordshire, it is necessary to state briefly the modern clinical evidence.

CURRENT EVIDENCE ON THE RELATIONSHIP BETWEEN LACTATION AND FERTILITY

“The mechanism linking breast feeding and fertility is assumed to be a physiological one. Lactation prolongs post-partum amenorrhoea and thus in the absence

¹⁵ The revised figures for Colyton for the period 1600–1649 are 126–158 per thousand and for 1650–1699 they are 118–147 per thousand. See Wrigley, *op. cit.*, note 10 above, p. 570. The figures for Caversham, 1635–1706, are 114.7 per thousand and for Mapledurham, 1630–1706, they are 111.8 per thousand.

¹⁶ C. Jackson (editor), *The autobiography of Mrs. Alice Thornton*, London, Surtees Society, 1875 vol. 62.

¹⁷ P. Laslett, *The world we have lost*, London, Methuen, 1971, pp. 96–98. This author wrote that “Life expectancy at birth in seventeenth-century England seems to have been in the low thirties. . . . The paradox to be found in all life tables, that expectancy rises after the first and dangerous year, is seen to have been very pronounced in Breslau in the 1690s. There, children aged 10 could apparently expect to live thirteen years longer than newborn babies. This odd effect, due to high infant and child mortality, would undoubtedly have been a feature of the life table of Halley’s own country, had he been able to carry out the first such demographic exercise for England rather than for a foreign city.” N. L. Tranter wrote, “If the fertility of the average French family was slightly higher than the Bedfordshire one throughout most of the period, its much greater infant, child and juvenile mortality reduced this advantage. Mortality at all ages seems to have been very favourable when compared to that of other areas, including the Lincolnshire fenland parish of Wrangle, which resembled French models more closely. The Bedfordshire peasant had a better chance of reaching adulthood, and an equally good chance of doing so even as his social betters. . . .” ‘Demographic change in Bedfordshire, 1670–1800’, unpublished thesis, University of Nottingham, 1966, p. 212.

of contraception tends to delay conception.”¹⁸ This was discussed at length with a consultant at the Royal Berkshire Hospital at Reading.¹⁹ It is clear that the medical profession agrees with the above statement, but is not yet fully in agreement regarding the mechanism. “Inversely, the interruption of lactation allows ovulation to resume sooner, and if intercourse takes place, may lead to an early pregnancy.”²⁰ Recent clinical papers agree about the positive correlation between breast feeding and infant mortality, and the figures are impressive, as is the variety in dates, race, size of sample, and the ecological areas. These include Salford and Derbyshire, Amsterdam, Boston, Massachusetts, three German states, and the Punjab.²¹ The rates of infant mortality varied with the degree of breast feeding from, never breast fed, to partially, and fully. In the three German states the infant mortality was considerably lower where breast feeding was customary. In the German study the workers were able to show that infant mortality itself affects fertility, independent of breast feeding. This, of course tends to weaken the interrelationship argument for infant mortality, fertility, and breast feeding being put forward in this article. However, one must hasten to add that the German workers, after a tremendous statistical effort, noted that these particular results could be misleading because there was no allowance for socio-economic difference and that “the approach through correlations would be more convincing if it were based on individual fertility histories, with a record of infant deaths, birth intervals and nursing habits”.²²

It is impossible in this short article to do more than hint at the nursing habits of the south Oxfordshire population, but the information of the infant deaths and birth intervals for 107 complete families, with at least six confinements, can be given. Before leaving modern clinical work; the paper from Boston, Massachusetts, which produced a bonus, by way of a by-product, should be noted.²³ All the 2562 infants in the sample, were born in August or September, 1963. The purpose of the study was not the relationship between breast feeding, fertility, and infant mortality, but the more sinister carcinoma of the breast, known to women in the early modern period as the “Wolf”.²⁴ The Boston workers were concerned with the striking international

¹⁸ J. Knodel and E. van de Walle, ‘Breast feeding, fertility and infant mortality: an analysis of some early German data’, *Popul. Stud.*, 1967, 21: 109–131. See also M. F. el-Minawi and M. S. Foda, ‘Postpartum lactation amenorrhoea: endometrial pattern and reproductive ability’, *Am. J. Obstet. Gynecol.*, 1971, 111(1): 17–21. These authors conclude with the words, “The physiologic infertility associated with postpartum lactation amenorrhoea is a fact and should receive more attention” (p. 21). Prof. Thomas McKeown, well known for his work on population change in the eighteenth century, wrote almost twenty-five years ago that “fertility is undoubtedly reduced during lactation”, although he did not think at that time that suckling was as “effective in preventing conception as it was once thought to be”. Thomas McKeown and J. R. Gibson, ‘A note on menstruation and conception during lactation’, *J. Obstet. Gynaecol. Br. Empire*, 1954, 61: 824–826.

¹⁹ Personal communication from Edmund Holt, F.R.C.S., M.R.C.O.G., Royal Berkshire Hospital Reading, Berks.

²⁰ Knodel and van de Walle, *op. cit.*, note 18 above, p. 110.

²¹ *Ibid.*; and see also, R. G. Potter, M. L. New, J. B. Wyon and J. E. Gordon in M. C. Sheps and J. C. Ridley editors, *Public health and population change*, Pittsburgh, University of Pittsburgh Press, 1965, pp. 377–399. See also E. J. Salber, M. Feinleib and B. Macmahon, ‘The duration of postpartum amenorrhoea’, *Am. J. Epidem.*, 1965, 82: 347–358; and Anthony Smith, *The body*, Harmondsworth, Middx., Penguin Books, 1970, pp. 208–209.

²² Knodel and van de Walle, *op. cit.*, note 18 above, p. 129.

²³ Salber *et al.*, *op. cit.*, note 21 above, p. 357.

²⁴ E. J. Burford, *Queen of the bawds*, London, Spearman, 1973, p. 102.

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variations in the rates of carcinoma of the breast. Variants other than lactation were taken into account; for example, age and social class. The overall mean duration of the post-partum amenorrhoea was sixty-eight days, the lowest ever recorded, only ten days higher than the mean for women who never lactated, and this results from the low percentage of Boston women who did lactate for any appreciable time, if at all. The paper compares the results with the Punjab villages,²⁵ where the mean infertile period was eleven months. The association of the length of the infertile period and lactation is clear from all the studies, but the Boston study points out a factor that an economic historian cannot ignore. The duration of the infertile period in relation to breast feeding may not be the whole story. In Boston and elsewhere menstruation returned sooner in women who combined breast feeding with other food; but in the Punjab and in Britain in 1943,²⁶ a decrease in the infertile period was found to have positive correlation with an increase in per capita income, and was attributed to better nourishment. The Boston workers were careful about their socio-economic variants, and concluded that all their mothers were above the nutritional level that would reduce ovarian function. The positive association of the infertile period length with malnutrition is now well recognized clinically. This gives the lie to yet another myth that has been suspect for a long time, namely that the poor breed like rabbits, nature's way of redressing the balance. Thomas Doubleday wrote in 1853, "Going further down the scale we find an imperfect supply of nutriment immediately followed and always accompanied by an increase of fecundity".²⁷ Adrian B. Appleby pointed out in 1973 that in the years between 1580 and 1640, conceptions fell after famine years.²⁸ He did, however, ignore the fact that typhus was present, with its known sterilizing effect on the male.²⁹ But, even if the typhus variant is ignored, any suggestion that human fertility rises with undernourishment rests upon no evidence whatsoever.

Hunger may or may not reduce the chance of conception; it certainly reduces the chance of the survival of the foetus. The results of the Boston study, especially important for this article, were the conclusions that the length of the postpartum amenorrhoea increased with the age of the mother. This had given concern in the south Oxfordshire parishes. It is clear from Table 1 and Graph 1 that the difference in what Louis Henry calls the natural birth interval when a child lived beyond infancy, and the interval when the first of two children died, was slight between the first-born and second-born child for these south Oxfordshire families. However, the Boston workers, summarizing all the work in the field, said that the "Duration of the postpartum amenorrhoea increased significantly with increasing age".³⁰ This statement brought relief and renewed faith in statistical analysis, and in the south Oxfordshire women of the seventeenth century to run true to form. Even though one had not had expectations, it would have been disappointing to have found no positive

²⁵ Salber *et al.*, *op. cit.*, note 21 above, p. 355.

²⁶ *Ibid.*

²⁷ Thomas Doubleday, *The true law of population*, London, Smith, Elder, 1853, p. 186.

²⁸ A. B. Appleby, 'Disease or famine? Mortality in Cumberland and Westmorland, 1580-1640', *Econ. Hist. Rev.*, 1973, 11: 26: 403-432.

²⁹ A. C. Guyton, *Basic human physiology*, Philadelphia, Saunders, 1971, p. 665.

³⁰ Salber *et al.*, *op. cit.*, note 21 above, p. 357.

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TABLE 1

Completed families with six or more confinements. Caversham 1635–1706. Mapledurham 1628–1715. Number of families in the sample 107. Mapledurham–39; Caversham: yeomen and gentry 25; husbandmen and cottagers 31; trade, 12.

Intervals in months

	1–2	2–3	3–4	4–5	(n–1)–n	
Caversham: yeomen and gentry	23.76	28.9	27.35	31.27	39.04	} <i>Between baptisms</i> If the first of the two children attained two years of age.
Husbandmen and cottagers	23.75	34.05	26.32	32.9	35.68	
Tradesmen and watermen	26.58	24.6	31.35	27.4	34.27	
Mapledurham all families	23.35	27.36	28.15	31.7	38.24	
Mean of the four groups	24.36	28.73	28.29	30.82	36.81	
Number of observations	(86)	(93)	(93)	(95)	(93)=(460)*	
Caversham and Mapledurham	23.39	17.69	21.5	27.81	28.48	} If the first of the two children did not attain two years of age.
Number of observations	(17)	(12)	(13)	(12)	(13)=(67)*	
Colyton, Devon, 1647–1719 ¹	29.1	32.6	32.1		50.7	Birth intervals.†
Charlton-on-Otmoor, Oxon., 1601–1950 ²	26.00	28.75	30.00	31.00	33.00	Relationship between birth interval and birth order.
Glostrup 1677–1790 ³	25.1	27.1	30.4	31.9	37.0	Interval between baptisms if first of two children attained one year of age.
Glostrup 1677–1790	19.6	15.5	19.9	16.9	27.7	If the first of two children did not attain one year of age.

¹ E. A. Wrigley, 'Family limitation in pre-industrial England', *Econ. Hist. Rev.*, 1966, 19.

² C. F. Kuchemann *et. al.*, A demographic and genetic study of a group of Oxfordshire villages', *Human Biology*, 1967, 39.

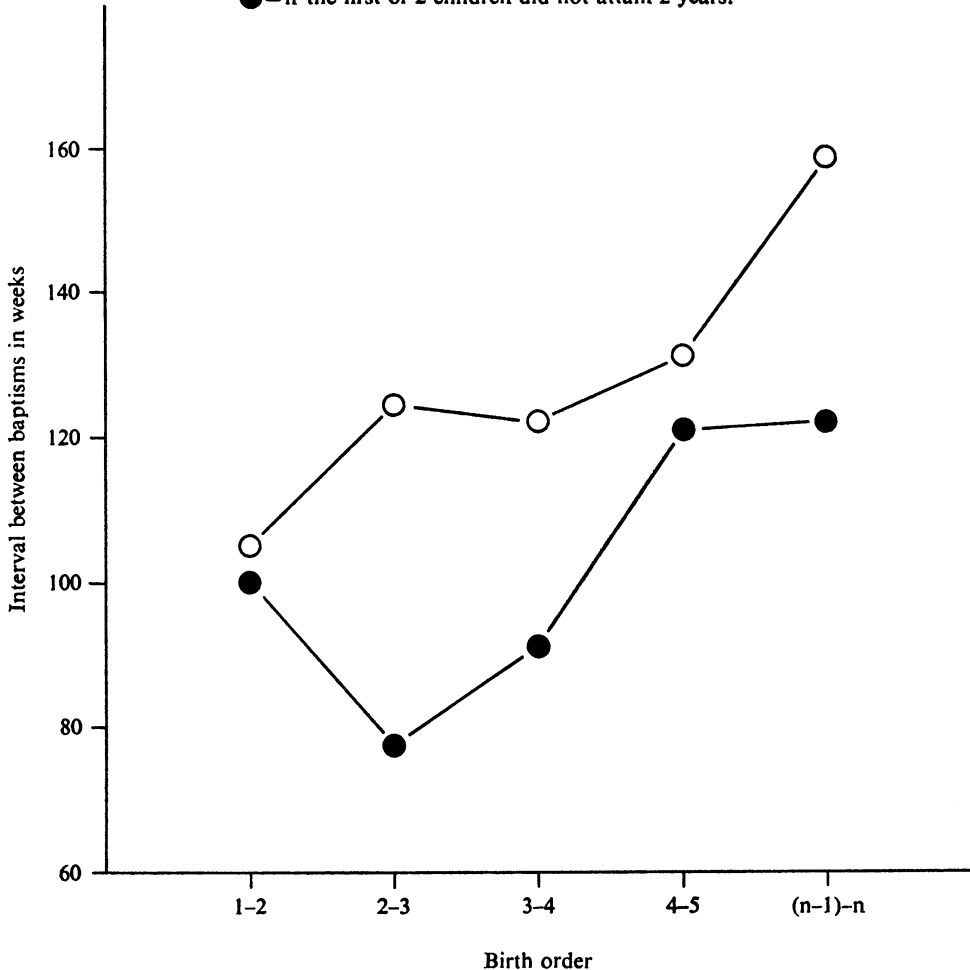
³ Poul Thestrup, 'A family reconstruction study', *Scand. Econ. Hist. Rev.*, 1972, 20: 1: 1–26.

*The total observations do not total 535 intervals (107 families with six confinements) because in eight cases the month of the baptism was questionable due to wear and tear on the register, although in every other respect the family was suitable.

†Caversham, Mapledurham, Colyton, and Glostrup: last observation is between penultimate and ultimate; Charlton is between fifth and sixth.

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GRAPH I
Caversham 1635-1706 + Mapledurham 1628-1715
○ = if the first of 2 children attained 2 years of age
● = if the first of 2 children did not attain 2 years.



correlation between probable breast feeding, infant mortality, and fertility. The word “probable” is deliberately used, because there is, as yet, barely a shred of independent proof that the peasant women in the sample were breast feeding.

SOME GENERAL EVIDENCE FOR LACTATION IN PRE-INDUSTRIAL SOCIETIES

It was thought that women, other than those who could afford wet nurses, universally suckled their babies until cows' milk, and later formulae, became readily available. Regional variations have, however, been noted. “In the fifteenth century it was common in southern Bavaria to feed infants meal pap instead of breast milk”,³¹

³¹ Knodel and van de Walle, op. cit., note 18 above, p. 119.

and in an example from Oberbayern, "A woman who came from northern Germany and wanted according to the custom of her homeland to nurse her infant herself was openly called swinish and filthy by the local women. Her husband threatened he would no longer eat anything she prepared, if she did not give up the disgusting habit."³² The sudden rise in marital fertility of the Genevan bourgeois after 1600 was accompanied by a parallel fall in the average interval between births.³³ Louis Henry believes that, "it may have been due to the practise of putting babies out to wet nurse which became normal at about this time. This would eliminate the period of low fecundity associated with suckling and bring down the mean interval between births abruptly".³⁴ Between the first half and the second half of the seventeenth century the mean birth intervals in the Genevan bourgeois was reduced except between the third and fourth birth.³⁵ The writers suggest that this may have been due to family limitation; it is equally possible that there was a reaction to wet nursing. Case historians alone can show whether a long interval was consistent whether or not the parents had raised a family successfully. Mrs. Alice Thornton³⁶ prolonged the suckling of Robert, her seventh child. We shall never know if she was making a conscious move to limit her family; the subject is at least debatable in view of the fact that four children were already dead. Alice may simply have thought her only son had a better chance of survival if she breast fed him. The next intergeneric interval was over three years.

Dr. Wrigley has said that "family size shrank steadily from the mid-seventeenth century onwards".³⁷ but with an improved infant mortality rate, this would not cause population to stagnate. This question was firmly taken up by Prof. Chambers in view of, "the upward movement of the economy and above all of agricultural output and improvement of transport."³⁸ He said that workers had expressed astonishment at the evidence for population growth in the late seventeenth and early eighteenth centuries. He was quoting H. C. Pentland of Manitoba who was speaking at the Third International Conference of Economic History held at Munich in 1965.³⁹ Drs. Eversley and Tucker and Prof. Youngson have also argued for raising population estimates for this period, and Prof. Chambers noted that, "In the light of these

³² Ibid.

³³ Wrigley, *op. cit.*, note 2 above, p. 120.

³⁴ Ibid. ³⁵ Ibid., p. 121.

³⁶ Family of Mrs. William Thornton (née Alice Wandesford), reconstituted from Jackson, *op. cit.*, note 16 above. Mr. and Mrs. Thornton were married at Hipswell on 15 December 1651. Children:

1. Female child [not baptised], born 27 August 1652, died same day.

2. Alice, baptised 3 January 1654, died 22 January 1721.

3. Elizabeth, baptised 14 February 1655, died 5 September 1656.

4. Katherine, baptised 12 June 1656, died 16 December 1726.

5. Male child (not baptised), born 10 December 1657, died same day.

6. William, baptised 17 April 1660, died 29 April 1660.

7. Robert, baptised 19 September 1662, died 6 June 1692.

8. Joyce, baptised 23 September 1665, died 24 January 1666.

9. Christopher, baptised 11 November 1667, died 1 December 1667. All children except Robert were wet nursed.

³⁷ Wrigley, *op. cit.*, note 2 above, p. 121.

³⁸ Chambers, *op. cit.*, note 4 above, p. 26.

³⁹ H. C. Pentland, 'Population and labour growth in Britain in the eighteenth century', *Third international conference of economic history, Munich, 1965*. The Hague, Mouton, 1968, pp. 157-189.

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deviations from the Colyton model, I feel Dr. Wrigley's assumption of a general stagnation between 1650 and 1750 is open to question and the national pattern may have taken a very different course."⁴⁰

The evidence from south Oxfordshire is that the completed family size among the peasants was growing, not shrinking, because the marriages were less often terminated in the early years and more children survived infancy. However common wet nursing was among the Genevan bourgeois, the direct evidence of its possible employment in Caversham and Mapledurham is restricted to a minute number of families. As far as the great majority of the rural women of these two parishes are concerned, one has to feel with conviction that they were breast feeding their babies. If one did not, there would be little point in presenting the evidence for its relationship with fertility and infant mortality. The strongest evidence for thinking that breast feeding was commonplace, apart from the indirect evidence on Table 1, is the extremely low rate of infant mortality. There is no evidence at all for a type of mortality that occurs from early weaning on to pap, beer, or unclean milk. When one looks for direct evidence to support this supposition for rural England generally, the outlook to date is bleak, but the subject of lactation in history is itself in its infancy. The ghastly mortality of nurse-children in France in the eighteenth century is well documented;⁴¹ this is the result of industrialization in transition and may have occurred at an earlier date in England. Infants at nurse, dying in parishes where they were not baptised, indicates the futility of aggregate methods in small areas, and the necessity of family reconstitution. Suckling houses did exist in the sixteenth century, and not only the aristocracy used them,⁴² as well as wet nurses in the home. It is not possible here to give all the qualitative evidence for nursing. The evidence comes mainly from the diaries of aristocratic and gentle-women. By the last quarter of the seventeenth century the alternatives to breast feeding were frowned on. Archbishop Tillotson made no secret of his opinions regarding women who ought to be at home feeding their infants instead of being at the plays or other pleasures, "The neglect of this duty . . . is little better than the laying of a Child in the Streets, and leaving it to the care and compassion of the Parish. . . . I have heard a very sad Observation made by those who have had the opportunity to know it, that in several of the Towns and Villages about London, where this trade of nursing Children is chiefly driven,

⁴⁰ Chambers, *op. cit.*, note 4 above, p. 27.

⁴¹ Antionette Chamoux, 'Town and child in eighteenth century Rheims', *Local popul. Stud.*, 1974, 13: 45-46.

⁴² Levin L. Schucking, *The Puritan family*, London, Routledge, 1969, p. 67. This writer states that Richard Hunne, a merchant taylor, who was buried in 1514 had a child at wet nurse. The diary of Bulstrode Whitelocke, unpublished, in possession of Lord Bute, under the opening year 1605-1606, describes the birth of his son Bulstrode, of gentry family. ". . . he was christened Bulstrode, and in convenient time he was sent to be nursed at Woburn in Bucks., near friends of his mother . . . 1606-1607 The child at nurse was not well dieted, nor carefully looked unto; but began thus early to endure hardship, which, being found out by his vigilant mother, she soon after removed him to her own house, and weaned him." In 1631-1632 when Bulstrode's son was born, he was also nursed at Woburn and grandfather Bulstrode went to see the baby there and sang songs in the nurse's house. In 1632-1633, the mother was found to be content to be living at Fawley Court (near Henley-on-Thames, Oxfordshire), being near her child at nurse at Woburn. I am indebted to Dr. Joan Thirsk for bringing the Bulstrode Whitelocke information to my attention, and for her constant encouragement regarding my work on infant nursing in history.

hardly one in five of these Children lives out the year".⁴³

Earlier in the century Elizabeth Knolles, sister to the notorious Frances Howard, employed a Caversham yeoman's wife as a nurse. The services of Jane Ogden would no doubt have gone unnoticed, had not the case of adulterine bastardy regarding Elizabeth Knolles' two boys gone on for centuries after the participants had died.⁴⁴ Elizabeth Knolles was past forty years old, and William Knolles, Earl of Banbury, cannot have been less than eighty years old when the boys were born. William did not mention them in his will. They were said to be the sons of Edward, Lord Vaux, whom Elizabeth married hastily after Knolles died. Elizabeth moved about a lot with Vaux and could not have been breast feeding the boys. Mary Ogden and another Caversham nurse, wife of a Roman Catholic gentleman, Delavall, testified that the boys were Knolles' sons. It may not be insignificant that the Caversham parish register for baptisms is torn out at this time, negating the possibility of family reconstruction through the missing years, 1631–1635.

The great fecundity and infant mortality of the Clifford family that so shocked Victoria Sackville West, was mentioned earlier. Anne reared two daughters, but buried five sons in infancy. The Sackville daughter of the first marriage, the Lady Margaret, was born in 1614, and was bundled about like a parcel. It is solely because of inheritance quarrels that we know much about this child. She was often ill with ague, measles, and suspected smallpox. Margaret Clifford was barely two years old when the doctor was called because of an extreme fit of ague and gave her a "salt powder to put in her beer".⁴⁵ Margaret recovered after being shut up three weeks from the light, and two months later was out, "riding the piebald nag".⁴⁶ A few days later Anne wrote, "The fourteenth, the Child came to lie with me, which was the first time that ever she lay all night in a bed with me since she was born."⁴⁷ In October 1619, Anne was pregnant and did not leave her chamber for six months, she wrote that she was often ill, and the child, Thomas, died an infant. On 13 December she wrote, "my Lord gave me three shirts to make clouts of",⁴⁸ but nothing is recorded of the birth or death of Thomas Sackville in her diary. Two more sons died in infancy between 1619 and 1622, when Isabella Sackville was born. Three sons were born and buried in three years; the Clifford fecundity and infant mortality truly was appalling.

Alice Thornton's first child was born on 27 August 1652, her ninth child in November 1667. She was often so ill that she may have miscarried in addition to the nine full-term pregnancies. Three children survived infancy. The writing of her childbearing experiences may seem a trifle hyperbolic; the facts remain. Some of the births were difficult, the fifth child, "staid in the birth, and came crosse with his feet first . . .

⁴³ Archbishop John Tillotson, *Sermons*, vol. 3: 'Concerning the education of children', first written 1694, unknown publisher 1720, pp. 523–524.

⁴⁴ Dorothy McLaren, 'Stuart Caversham: a Thames-side community in Oxfordshire during the seventeenth century', unpublished Ph.D. thesis, University of Reading, 1975. See chapters 5 and 8 on population and demographic trends. See also H. N. Nicolas, *A treatise on the law of adulterine bastardy*, London, Pickering, 1836, pp. 291–435.

⁴⁵ V. Sackville-West (editor), *The diary of Lady Anne Clifford 1616–1619*, London, Heinemann, 1923, p. 55. See also for similar treatment, 'An Elizabethan gentlewoman: the journal of Lady Mildmay, 1570–1617', *Quart. Rev.*, 1891, 215: 119–138.

⁴⁶ Sackville-West, *op. cit.*, note 45 above, p. 66.

⁴⁷ *Ibid.*, p. 67.

⁴⁸ *Ibid.*, p. 108.

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almost strangled in the birth, only living about halfe an houre".⁴⁹ When the infants died soon after birth, she was often ill for months. When they lived she put them to the breast, but not for long at the beginning of her marriage. Her second and third children were wet nursed and four children were born in less than four years. She was expecting her fourth child, Katherine, when the third child Elizabeth, "died, gotten at first by an ague, and much gone in the ricketts, which I conceived was caused by ill milke at two nurses."⁵⁰ Two more boys died soon after birth, but her seventh child Robert, is the most interesting. After a trying delivery, Alice Thornton haemorrhaged badly, took powders and potions, and by the "divine providence", that Alice knew delivered her and her infants, and took them away almost as fast as they came, she recovered her milk again. Not only did the Lord God give her, "health and strength to be able to give sucke," but, "by His blessing, I did until Robin was above two years old, he continueing very healthful and strong."⁵¹ The birth interval between Robert and Joyce, the eighth child, was over three years. The eighth child, Joyce, lived but four months, and although it is normal for the birth interval to increase at the end of the childbearing period, within twenty months the last of Alice Thornton's nine children was baptised and buried.

Although religious, Lady Willoughby was not as obsessed as Alice Thornton. Her mother came whilst she was confined with her first son, and she writes that her mother, "much commends my nursing him; and would not for my own sake I should lose so greate a satisfaction."⁵² Nurse him at the breast she did, but in November when he was about six months old she wrote, "Baby has cut a tooth, discovered this morning by the spoon knocking against it."⁵³ He was, presumably, by then, at least partially weaned. By 6 June, just a year after his birth, he was walking a few steps alone. Alas, restless, feverish and in great pain, he died aged fifteen months. The diary, not surprisingly, is silent for weeks, and then she wrote, "I am childless, yett doe I seem as one not awaken'd from a frightful dream".⁵⁴ Diana was baptised seven months later and that summer, mixed with concern regarding Hampden and Saye refusing the ship money demands and her husband's hasty departure to London, Lady Willoughby wrote, "August 3, Thursday, 1637, Baby well; have some thoughts on weaning her, my own strength failing; but put it off day after day, it is hard to dismiss her from the food and warmth which have been hers by right so long, and break this first Bond of Companionship and Mutual Dependence".⁵⁵ Two more daughters were born and survived infancy, but although concerned with their education and discipline, little is said of their physical welfare and feeding: perhaps this had become second nature to Lady Willoughby, who in any case was very concerned with her husband's war activities by this time. Two seventeenth-century men blamed their adult problems on to their wet nurses. Sir Christopher Guises, born in 1618, said, "she was antient and of a dry hott complexion and not very plentifully stored

⁴⁹ Jackson (editor), op. cit., note 16 above, p. 95. See also note 36 above.

⁵⁰ Ibid., p. 94.

⁵¹ Ibid., p. 142.

⁵² Elizabeth Willoughby, Baroness Willoughby of Parham, *So much of the diary of Lady Willoughby as relates to her domestic history*, London, Longman, 1844, p. 7.

⁵³ Ibid., p. 11.

⁵⁴ Ibid., p. 12.

⁵⁵ Ibid., p. 42.

with riches.”⁵⁶ Robert Burton wrote that, “melancholy like other diseases was engrafted, as it were, and imprinted into the temperature of the infant by the nurses milk”.⁵⁷ Richard Steele was born in 1672, he described his arrival into the world and his first days; if they were anything like reality, it is by sheer chance that he survived. Briefly, “You are to understand that I was hitherto bred up by hand, and anybody that stood next to me gave me pap if I did but open my lips; insomuch, that I was grown so cunning as to pretend myself asleep when I was not, to prevent my being crammed. But my grandmother began a loud lecture upon the idleness of this age who for fear of their shapes, forbear suckling their own offspring; and ten nurses were immediately sent for, one was whispered to have a wanton eye, and would soon spoil her milk, another was in consumption; the third had an ill voice and would frighten me instead of lulling me to sleep. Such exceptions were made against all but one country milch-wench, to whom I was committed and put to the breast. This careless jade was perpetually romping with the footmen, and downright starved me”.⁵⁸ Finally, on seventeenth-century infant feeding habits, the fecundity, and infant mortality of Queen Anne are well known, as are the extraordinary slap-happy methods of trying to nourish those of her infants who survived the birth trauma. Queen Anne’s health has been researched and hints have been given ranging from congenital syphilis to porphyria. It is possible that a simple explanation like incompatible rhesus factor may be involved; but, had Anne herself, or a healthy husbandman’s wife fed the infants that were born alive, England’s Georgian Period may have warranted a different title.

EVIDENCE FROM THE FAMILY RECONSTITUTION OF CAVERSHAM AND MAPLEDURHAM IN SOUTH OXFORDSHIRE IN THE STUART PERIOD

What of the common people? there are few gentry in the sample of families from south Oxfordshire, and no great lords. The Blounts of Mapledurham were Roman Catholics; they had their own chapel, and are therefore unreliable for demographic purposes, as they do not appear in parish registers. Lord Craven, who purchased the Caversham manor from Elizabeth Vaux, was seldom in Caversham. The house and grounds were used intermittently for parliamentary and royalist headquarters. After the Restoration, a nephew of Lord Craven settled in the manor house and his family is part of the sample. Before discussing the families, a brief note may be helpful about the two parishes. Both had their stretch of waterway on their southern boundaries and both an elongated stretch of land reaching up into the Chiltern beechwoods. Caversham had a vehicular bridge and a clapper footbridge. Mapledurham has never had a bridge, in spite of the picture painted by Galsworthy in the *Forsyte saga*. Both parishes had ferries. The two Mapledurham ferries were probably for village folk and their produce, to cross to and from Reading and its Berkshire environs. Mapledurham was, and is, not close to a highway, except of course the Thames Highway. Caversham straddled the main road from Reading to Oxford in the seventeenth century, and covered more than 4,000 acres. Mapledurham covered a

⁵⁶ Paul Delany, *British autobiographies in the seventeenth century*, London, Routledge, 1969, p. 144.

⁵⁷ *Ibid.*

⁵⁸ Richard Steele, *The Tatler*, 14 May 1709, p. 15.

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little less than 3,000 acres. The domesday manor of Caversham was opposite to where the Abbey of Reading was to rise in the eleventh and twelfth centuries. By the seventeenth century Caversham had four more settlements; the tythings of Westhorpe, Esthorpe, and Bovetown speak for themselves. The fourth, Kidmore End, was up in the hills; it became a separate parish in the nineteenth century. Mapledurham had two domesday manors, both on the Thames, Mapledurham Chazey was bought by Blount, the owner of Mapledurham Gurney in the sixteenth century. The Chazey demesne was let to a hybrid gentleman, sometimes called yeoman, whose family is in the sample. The Chazey manor house has changed little, the chapel attached to the house was used for cattle and horses in the seventeenth century, as it still is today. Chazey lost its identity as a separate manor by any definition. The parish church was at Mapledurham Gurney; here too there was expansion into the hills, the secondary settlement of Newny Green also speaks for itself.

The population of Caversham parish by 1676 was approximately 800, that of Mapledurham about half that number. These figures are arrived at from the Compton Census plus a family reconstitution of both parishes. There was an urban, proto-industrial situation in the original Caversham settlement that did not exist in Mapledurham. The Caversham tythings were also quite rural during the seventeenth century. It was possible to divide the Caversham families in the sample into rough socio-economic groups because there were sufficient families in the sample and because the background of the families had been thoroughly researched apart from parochial documents: namely, wills, deeds, hearth taxes, inventories, and surveys. The Mapledurham sample was just over half the size of the Caversham sample, their backgrounds are still vague and it seemed sensible to keep them in a group and point out any anomaly in the sample. The method is straightforward, the criteria for family selection being a complete family with more than six confinements. This generally means knowledge of a seventh confinement or the death of one or both of the parents. Knowledge of the date of the marriage of some of the unions is unknown because the men did not marry in the parishes. They are included in the sample when their background is known and it is reasonably certain that the first baptism is in fact the first child of the union. Baptism is used throughout; this followed closely after birth in all recorded instances and was a common practice during the seventeenth century. The aim was to discover the intergeneric intervals and the possible relationship of infant mortality upon the length of those intervals. The evidence for the aim was not sought and had no tendentious motive, it presented itself whilst indications were being sought regarding mean age at first marriage, mean number of children born in completed families, decadal infant mortality, and other demographic indices. Sixty-eight families for Caversham and thirty-nine for Mapledurham passed all the tests for inclusion in the sample. It is important to note here the degree of stability of these families that enabled them to qualify. Others must judge whether these families were typical of rural England in the seventeenth century, when more knowledge comes to light. We shall, however, never be able to measure those who got away.

The calculation of the intergeneric intervals of the 107 families cannot indicate absolute fertility because the age of most of the mothers is not known. Table 1,

however, does indicate a clear pattern of the intervals between baptisms. The Caversham yeomen and gentry in the sample were twenty-five in number; the husbandmen and cottagers, thirty-one families; tradesmen and watermen, twelve; Mapledurham, all families, numbered, thirty-nine. The mean of the means of the four groups, when the first of two children survived, showed a very similar pattern to the figures from Glostrup,⁵⁹ the only similar study that I know of, for the seventeenth century. Similarly, the interval was reduced in every case when the first of two children did not survive. Caversham and Mapledurham figures were based on the survival of the first of two children until the age of two, the time when it was considered that breast feeding would normally have ceased. From the overall picture of Caversham and Mapledurham there was no significant difference whether the first child survived or died, although this was significant from Glostrup. There was a significant difference in Caversham and Mapledurham with the second observation. Namely if the second child died the gap between the second and third child was reduced from 28.73 to 17.69 months, a big difference relative to the gap between the first and second child. The interval between the third and the fourth confinement was strangely often shorter than that between the second and third. There was often a large interval between penultimate and ultimate confinements, but nothing like as large as that found in Colyton. One has to consider whether the observations could be erroneous due to sampling error. It is unlikely, because the pattern remained similar in the individual groups. The strange anomaly is that the interval was not greatly widened between the fourth and fifth child when the fourth child died. This is probably due to the weighting of figures. The Nichols family of Mapledurham recorded a huge gap. Had this family been removed from the sample the figure of 27.81 would have been greatly reduced. Clearly one cannot remove a family because they do not fit the pattern.⁶⁰ Nichols may have left the village and returned, we cannot say. According to the parish register although his fourth son died in infancy, the fifth child was not baptised until five years later. The picture then, from a quantitative point of view, is that the normal birth interval in Caversham and Mapledurham for the five observations of each family was incredibly similar to Glostrup, and the interval was always shortened if the first of two children died in infancy.

If we take a qualitative look at the families that we know well in Caversham and Mapledurham, it is possible to say that many of the husbandmen and some of the yeomen and tradesmen families show a pattern of fecundity and infant mortality so controlled, so respectable, that any antonym of "appalling" is not good enough to describe them. Henry Iremonger, Mapledurham husbandman, married Joane Smith of Caversham in the Caversham parish on 17 November 1659. This was during the period of civil registration, and there was no Justice of the Peace at Henry's parish of Mapledurham.⁶¹ Six confinements took place in fifteen years, and all the children were baptised at Mapledurham, where the couple lived. There was approximately three to four years between each baptism, and all seven children survived infancy.

⁵⁹ Poul Thestrup, 'A family reconstruction study', *Scand. econ. Hist. Rev.*, 1972, 20: 1: 1-26.

⁶⁰ Adrian Wilson, research fellow, Clare Hall, Cambridge, has kindly pointed out to me that the use of the median would reduce the effect caused by the Nichols family.

⁶¹ Dorothy McLaren, 'The marriage act of 1653: its influence on the parish registers', *Popul. Stud.*, 1974, 28: 319-327.

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The last confinement brought twins, Anne and Cicely. Two children married locally. Anne, unfortunately, was killed when she was seventeen, by a “prong running into her breast in coming off from a corn mow in Robert Butler’s barn, whom she wrought with.”⁶² Henry and Joane Iremonger both died within weeks of each other in 1712, possibly from smallpox which hit both Caversham and Mapledurham at that time. There were many families like the Iremongers in the second half of the seventeenth century in Mapledurham and Caversham. There were very few families like Walter Kirsell and his wife Susan; they are the hybrid yeomen/gentlemen family who farmed the Chazey demesne and, after Blount, Kirsell was the highest ratepayer.⁶³ Walter inherited all his father’s extensive goods and chattels, plenty of rooms and plenty of furniture and linen.⁶⁴ Susan bore six children in less than six years. Three died in infancy. I do not think that she was breast feeding, for although the fourth and fifth children survived, the intergenetic interval was still twelve months. Susan Kirsell died very soon after the birth of her sixth child. Richard Castle of Caversham inherited from his father, a woollen draper of Reading. He married a Caversham girl and lived in the parish.⁶⁵ Richard became a captain in the parliamentary army and later a Justice of the Peace. Nine children were baptised in twenty-one and a half years, and the intergenetic intervals were a steady two to three years, increasing slightly with the age of Mary Castle. Mary is a model for our breast feeding, fertility, infant mortality argument. I suspect that she fed her babies, and because of this they survived and she prolonged her post-partum amenorrhoea. One baby, Samuel, died when he was thirteen months old. He was the sixth child but does not figure in our quantitative analysis because Richard and Mary had nine children and we have used the penultimate and ultimate confinements as our last observation, not the intervals between the fifth and the sixth children, although they are, of course, sometimes, one and the same. The intervals between baptisms of the first six Castle children had been, in weeks, 104, 106, 115, 148 and 182. When Samuel, the sixth child, died, the interval was cut back to 101 weeks, the shortest ever for Mary Castle. Jeremiah was baptised less than eleven months after Samuel died. The interval between Jeremiah the seventh child and Mary the eighth child was 175 weeks, and the penultimate and ultimate interval was 235 weeks. The only time the interval was reduced was when Samuel did not survive infancy. This of course indicates the relationship between infant mortality and fertility, but not necessarily on present evidence, with breast feeding, for which there is no proof, other than the very important fact of rearing eight healthy babies in a period before sterile milk⁶⁶ or formulae.

The sample does not contain simply gentry who lost their numerous babies, and

⁶² Bodleian Library, MS D. D. Par. Mapledurham.

⁶³ Ibid.

⁶⁴ MSS Wills Oxon., 138/2/5.

⁶⁵ The Berkshire Record Office, Caversham D/P., 162.

⁶⁶ Even by 1695 Houghton wrote of the prejudices against milk, “a great many complain tis Phlegmatic and Stopping, and not so wholesome for Men to eat”. Milk was then thickened with oatmeal, French barley, rice, pease, eggs, and sago. See John Houghton, *A collection for improvement of husbandry and trade*, London, Farnborough, 1969, vol. 2 originally vol. 7, no. 147 (24 May 1695). Town dairies had appeared in the seventeenth century; stock-keeping was good, but little “. . . is known of the hygiene of these enterprises”, see M. W. Beaver, ‘Population, infant mortality and milk’, *Popul. Stud.*, 1973, 27: 246.

peasants who reared their less numerous babies. Mary Castle was of yeoman stock, but Richard Castle was hardly a peasant. Roger Paine, a Caversham carpenter, was receiving parish relief before he died in 1684. His wife, Jane, had seven confinements in just over eight years and buried five of the babies soon after they were born. Again this indicates very clearly the fertility/infant mortality relationship: was Jane unable to feed them or did she try to wean them too soon? We shall never know. Of course not all the bonny peasant babies became adults; a mortality crisis could wipe them out, as typhus did with whole families in the Caversham parish in 1643. Three of the children of husbandman Kent and his wife died in the spring of 1655, although they had all been successfully weaned. Only a small percentage of the children could settle in Caversham and Mapledurham. How long they lived in Reading, Oxford, London, New England, or Barbados is another story. What is clear is that their homes, perhaps lacking soap, and certainly sanitation as we understand it, were not, generally, unhealthy hovels.

To return to the point left earlier, regarding the insignificant difference in interval between the first and second children in the south Oxfordshire families, whether the first did or did not survive. The clinical evidence was, that the infertile period lengthened with the age of the mother, and of course generally these mothers were the youngest in the sample. It is perhaps possible that immunity to conception during the post-partum amenorrhoea is not absolute with all women, especially to the age variant. One cannot yet comment on this. What one can do is to offer a social explanation. It is not an automatic nor an easy matter for all women to breast feed a first child, and many have greater success with subsequent children. Second, it may have been socially and economically prudent to wean a first and only child early and leave it with a neighbour or relative. When a number of tiny feet were pattering about there may have been more pressure to stay at home, then clearly it was more economic to breast feed.

It may be fanciful to consider the economics of breast feeding, wet nursing or pap meal in the seventeenth century, but it is surely relevant to the situation in Africa today. Why do Nigerian women for example, buy expensive western dried milk formula? This allows them to leave a child, and now, with western contraceptive methods, taking the baby off the breast need not increase fertility. Except at harvest time, women in rural south Oxfordshire may not have had to go far from home, and it would not be difficult to breast feed in field, barn, brewhouse or malthouse, and the rural tythings were enclosed long before the seventeenth century. Whatever they did, little, if anything is written about it, perhaps from distaste, perhaps from contempt for the commonplace.

It is surprising that modern writers postulating family limitation from their records are more concerned with primitive contraceptive methods than with the infertility due to prolonged lactation. This outlook is perhaps influenced by the masculinity of most of the writers. If Lady Stenton⁶⁷ were alive today, I think she would agree that some seventeenth-century peasant women, ignorant though they must have been of the mechanism; did not fail to notice that when they prolonged lactation they

⁶⁷ D. M. Stenton, *The English woman in history*, London, Allen & Unwin, 1957, especially chapter 4, 'The country woman after 1600'.

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did not conceive; but if lactation was terminated by the death of the infant or failed to commence through a still birth, a pregnancy followed swiftly. They must have talked, and they became wet nurses, a fairly safe way of avoiding a pregnancy for a time, and of earning some extra money; commonsense, not witchcraft. Their industry outside the household was not in as great demand as that of poor women in the coming centuries, in mines and mills, and there is no reason to believe that they were ever informed that prolonged lactation was bad for them.⁶⁸ This was the opinion continually voiced in the nineteenth century, and is perhaps one of the reasons for the appalling fecundity and infant mortality of the Victorian era, although only one of the reasons. The appalling fecundity and infant mortality is notably lacking from the post-Restoration period in Caversham and Mapledurham, among the peasantry. It seems that the more blue the blood, the greater the travail. The aristocratic women who wrote, seemed to accept their frailty and fragility, but did not analyse it very often. It is little wonder they thought this a miserable world and would be glad to escape to the next. When the object of Lady Halkett's romantic love married another, her sister's hysterical curse was, "Give her Oh Lord, dry breasts and a miscarrying womb".⁶⁹ Presumably, she could not think of a worse fate to wish upon the rival. William Petty had written that, "long suckling hindered propagation": noble and gentlewomen, to a far greater degree than peasants were probably caught in a cultural trap of an unfashionable experience and the need to produce an heir, preferably a male heir.

The nursing experiences of urban poor women in the early stages of industrialization lacks the historicity of diaries and awaits greater exploitation of urban parish registers.⁷⁰ We cannot doubt that there was pressure on urban poor women towards early weaning. Some of them may have suspected that long suckling hindered propagation, but their immediate needs may have over-ruled their caution. Industrial transition that compels mothers to work outside the home would seem inevitably to increase the birth rate before efficient contraceptive methods were available. This is surely a clue towards understanding the complexities of demographic transition and economic growth.

The mechanism of puerperal lactation is still not fully understood. Clearly, the last words on this should come from physicians rather than from a historian. In January 1977, John Tyson wrote, "It should now be apparent that with industrialization, urbanization, and better nutrition, we are wasting a vital economic resource—breast milk. Inasmuch as reproduction is a natural process, it would seem imperative to assign high priority to lactation, not only as a means of transferring stored energy but as a means of providing temporary protection against conception until a more

⁶⁸ Norman E. Himes, *The medical history of contraception*, New York, Schocken, 1970, p. 276. By the end of the eighteenth century, "suckling was the fashion amongst radicals", Claire Tomalin, *The life and death of Mary Wollstonecraft*, London Weidenfeld & Nicolson, 1974, p. 107. It may not be incorrect to assume from Mary Wollstonecraft's experiences that suckling was not fashionable for all women at this period.

⁶⁹ 'The autobiography of Ann, Lady Halkett', *Camden Society*, new series, 1876, vol. 13, p. 18.

⁷⁰ Further work on the relationship between breast feeding, fertility, and infant mortality is being carried on by a family reconstitution of what was a fairly large port in the seventeenth century. I am indebted to the British Academy for an award and to the Social Sciences Research Council for a grant to continue this work in west Somerset.

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appropriate means of child spacing can be chosen by the parents.”⁷¹

In December 1977, in a discussion of “Breast feeding and population growth”, John Knodel wrote, of the “magnitude of the potential demographic impact of the changing infant feeding practices that are apparently under way in the Third World. . . . The fact that any fertility increases resulting from a widespread abandonment of breast-feeding among the poorer strata are likely to be substantially muted by lower survival chances for the artificially fed infants is no reason, however, to view the situation with any less alarm. Increasing infant deaths is a very costly way indeed, from a humane point of view, to prevent population growth rates from rising.”⁷²

⁷¹ John E. Tyson, ‘Mechanisms of puerperal lactation’, *Med. Clinics. N. Amer.*, 1977, 61: 153–163.

⁷² I am indebted to Prof. R. R. Dils, Department of Physiology and Biochemistry, University of Reading, Berks, for bringing the article by John Knodel, ‘Breast-feeding and population growth’, *Science*, 1977, 198: 1111–1115, to my notice.