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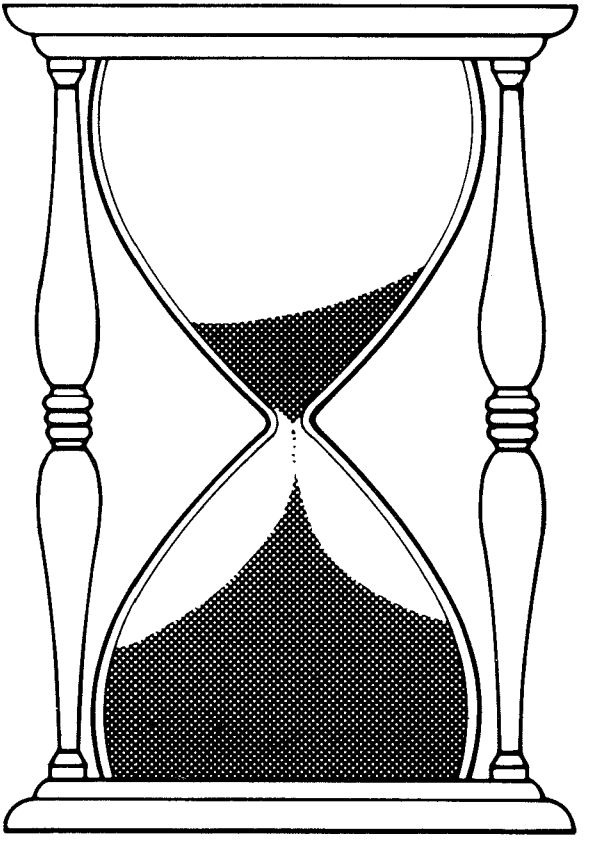
Parish Registers. An Introduction

Roger Finlay



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HISTORICAL GEOGRAPHY RESEARCH SERIES

No. 7

PARISH REGISTERS : AN INTRODUCTION

by

Roger Finlay

(University of Manchester)

CONTENTS

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TABLES

FIGURES

INTRODUCTION

Parish registers are essentially simple documents which list nearly all the christenings, weddings and burials that occurred in about 11,000 English parishes. The earliest registers being in 1538 and remain an important source until the commencement of civil registration in 1837. They may be used with success at all levels of historical enquiry from beginners in local studies to advanced demographic work. This booklet briefly describes parish registers and indicates the wide range of information that can be obtained from them. It also draws attention to some of the more important techniques of analysis. The emphasis throughout will be on illustrating these methods with examples from recent research.

Few sources are more valuable for an understanding of English society between the mid-sixteenth century and the mid-nineteenth than parish registers because the majority of Englishmen and women living between these dates are listed within their covers. They contain a record of the lives of ordinary people, not just the rich, the powerful and the well-born, and many individuals who are not visible in other local sources. Householders are included in many local records, but women and particularly children who died young are often included only in the registers. Because of their exceptionally wide spatial and temporal coverage, and since they contain exact, nominally ordered information, parish registers provide the main source material from which the historical demography of England may be traced. Much of this booklet therefore shows how registers are of great benefit for population studies but it must be emphasized that they are also of wider value in social and economic studies. After some introductory comments, the discussion divides into two main sections concerned with population and with other studies. The imbalance in length reflects the fact that almost all registers are of some use in demographic work yet many fewer are of value for social studies, but much of the point of the second section is to show that registers should be more widely used in economic and social research. Of course, parish registers are only one of a number of sources in which many of the topics introduced here may be studied, but no attempt is made to discuss these here.

Until the past fifteen years, parish registers were not widely used except by genealogists and by local historians interested in particular communities. Much of the problem was that they were inaccessible since they were frequently in the care of local incumbents which made it difficult to consult more than a few registers. Most County Record Offices now have large collections of parish registers which are listed in *Original Parish Registers* (1974-). The most important single collection of register copies is held by the Society of Genealogists (Steel 1968-). Many registers have been printed and the major series are listed in Wrigley (1966b: 263). There is also a very extensive index to registers on microfiche prepared by the Genealogical Society of Utah which may be consulted in Britain.

It contains about 23 million entries from original parish registers and Bishops' Transcripts. These are arranged alphabetically by counties which means that families can be traced across parish boundaries so this could become a very important source for parish register studies (Shearer 1979).

Another reason for the comparative neglect of parish registers was a lack of context for their use in research. The growth of studies on social and economic change was accompanied by the use of local sources of which registers are particularly important, but they are still underutilized in research of this kind. A more significant reason for interest in registers has been the growing realization of the importance of the family as a central theme within the network of social activity and institutions. Whilst the family possessed more roles in the past than at the present time, being the centre of economic activities, social welfare, education and the socialization of children, it also represented the framework within which population changes occurred because almost everyone was a member of a family at some time during the life course. Study of the family is one of the ways population changes may be related to social and economic changes.

A further reason why parish registers have not been more extensively studied is that they usually require statistical analysis. Register entries always refer to individuals yet information is frequently required for groups, parishes, areas or regions. In some ways this is an advantage because information can be aggregated upwards to whatever scale is required and large areas can be studied by sampling particular parishes. However, this also means that techniques of data processing are usually required before information can be obtained from registers. This booklet draws attention to many of the techniques that have been used but it must be emphasized that it is not a manual of parish register analysis. The most useful guides for comparative beginners are by Bradley (1978) and Drake (1974) and a valuable manual was edited by Wrigley (1966b). The following pages indicate some of the advances that have taken place during the past fifteen years although there is insufficient space to give detailed guidance on how these techniques may be applied. Readers are referred to the works listed in the bibliography for further information.

This booklet is a guide to Church of England parish registers only. Registers for other denominations are discussed in detail by Steel (1968-) and they could be far more widely used both in conjunction with Anglican registers and also by themselves for studies of particular topics in areas where nonconformity was strong. For example, Levine (1977: 157-8) has shown how the register of births kept by the Shepshed Particular Baptist Congregation between 1754 and 1837 may be used to supplement the Anglican parish registers. The temptation has been resisted to discuss in depth the results of parish register studies in other countries although the same techniques have often been used and the results enable comparisons between societies to be made.

HISTORY OF PARISH REGISTERS

The most important theme in the history of parish registers was the progressive attempt by the authorities to tighten the regulations for parochial registration, whilst the gradual growth of nonconformity was likely to lead to registration deficiencies, although many dissenting families continued to use the Anglican parish church for registration purposes. In many ways, therefore, the history of parish registers reflects the ecclesiastical history of England, and marginal comments are often contained in registers which show how national events impinged upon local circumstances. For example, Tyacke (1979) has shown how baptismal naming customs in East Sussex and the Kentish Weald indicate the extent of puritanism towards the end of the sixteenth century. The time-chart in table 1 indicates the main changes in the regulations concerning parish registration although Cox (1910) has a more detailed discussion. A central point to bear in mind is that national changes in the regulations were not necessarily reflected by local practice. As is hardly surprising when one source persisted over a long period of time, there are wide variations between parishes in the usefulness of registers. Therefore, apart from the requirements of 1753 and 1812 to register on printed forms, the national history of registers is hardly reflected in some parishes, whilst in others, abrupt changes were due to a change in the parish clerk rather than to legislation.

Parish registers were instituted by Thomas Cromwell in 1538 amidst widespread rumours (which proved unfounded) that they were to be used for fiscal purposes, and the registration injunctions were repeated at the beginning of each new reign. Fewer than 500 registers date back to the 1530s and many of these lapsed between 1555 and 1558 during Queen Mary's reign. A substantial number of surviving registers begin when Elizabeth I became Queen in 1558. Most original sixteenth-century registers have not survived because of measures dating from 1597 which required all registers to be kept on parchment and all previous entries to be transcribed. In many cases, this transcription was only done back till 1558. The parchment transcripts often give only a minimum amount of information and where sixteenth-century paper registers have occasionally survived they have been found to be very detailed, sometimes giving occupations, causes of death and age at burial (Forbes 1971). Parish registration had commenced in the majority of parishes by the beginning of the seventeenth century.

Many registers were defective during the Civil War and Interregnum although recent research indicates that neither the replacement of the Anglican Prayer Book by a Directory for Public Worship in 1644 nor the commencement of the civil registration experiment by Barebone's Parliament in 1653 necessarily affected registration practice (Finlay 1981a). The provisions of the Directory to register births and deaths as well as baptisms and burials were not widely followed, probably because the legality of such a measure was unacceptable before the regicides had done

Table 1. Time chart showing the history of parish registers

1538	Institution of parish registers by Thomas Cromwell
1546	Registration injunctions repeated by Edward VI
1555-8	Reign of Queen Mary, many registers lapsed
1558	Registration injunctions issued under Henry VIII and Edward VI repeated
1563	Bill to send transcripts of registers to each diocesan centre and for parchment copies to registers, but not passed
1597	Provincial Constitution of Canterbury ordered registers to be kept on parchment and all earlier registers to be transcribed. All entries for the previous week to be read out in the Sunday service. Annual transcripts to be sent to the diocese, subsequently known as the Bishops' Transcripts
1603	These instructions repeated except for weekly reading of the register
1644	Directory of Public Worship replaced the Prayer Book. Dates of birth and death to be recorded as well as baptisms and burials
1653	Commencement of Civil Registration by laymen. Many parish registers defective during 1650s
1660	Ecclesiastical registration recommenced at Restoration
1694	Marriage Duty Act (6 & 7 Wm. & M. c. 6) required registration of births, marriages and deaths, but unsuccessful
1753	Hardwicke's Marriage Act (22 Geo. II c. 33) to prevent clandestine marriage required registration of marriages on printed forms
1783	Stamp Act (23 Geo. III c. 71) imposed a duty of 3d. on every entry
1812	Rose's Act (52 Geo. III c. 146) required registration of baptisms and burials on printed forms
1836	Commencement of civil registration (6 & 7 Wm. IV c. 86 and 6 & 7 Wm. IV c. 85)

Sources: Cox (1910), Tate (1969) and Steel (1968-)

Table 2. Extracts from the Cartmel parish register

	Christenings A.D. 1728.	
March 27	Margaret	Ashburner d. of Thomas of Flookburgh
April 11	Isabel	Cowperthwait d. of Thomas of Buck-Cragg.
18.	Margaret	Bigland d. of Edward late of Beckside.
23.	Jane	Holme d. of William of Blackholme
28	Stephen	Simpson s of Jeofray of Beckside.
28	Mabel	Taylor d. of James of the High.
29	Margaret	Rowlandson d. of James of Foxfield.
May 12	John	Robinson s. of William of Cart-Lane.
12	John	Thompson s, of William of Field-Broughton
19	Elisabeth	Stones d. of Thomas of Low-wood.
22	Isabel	Muckelt d. of John of Alithwait.
June 1	Thomas	Taylor s. of William of Holker.
16	Anne	Harrison d. of Rowland of Lindel.
25	Susanna	Walker d. of Thomas of Certmelfell
26	Thomas	Ashburner s. of George of Churchtown
July 3	Ellen	Atkinson d. of James of Hoo-barrow
16	Agnes	Pepper d. of Alan of Nether Cark
17	James	Greenwood s. of John of Walton.
24	Sarah	Barrow d. of William of Holker.
31	Ellen	Taylor d. of John of Birkby.

	Marriages. 1728.	
April 28	James Bigland & Judith Heysham of Cartmelfell	L
30	James Danson & Elisabeth Birket of Lindel	L
May 25	Joseph Wilson & Margaret Burns of Churchtown	L
June 8	Edmund Shaw & Dorothy Wawn of Borobank	P

	8	George Drinkelt of Seatle, & Agnes Holmes of Aiside P
	11	John Hartley & Anne Baldwin of Ellel. L
	11	William Wane of Holker, and Anne Bond of Flookburgh P
	15	John Atkinson and Jane Newby of Cartmelfel P
July	1	Laurence Crewdson & Anne Taylor of Slack. P
	2	Richard Archer & Mary Taylor of Lindel. P

Burials. 1728.

March	27	John	Atkinson s. of John of Fair-rigg.
	30	Robert	Muckelt of Newton.
April	3	Anne	Barrow d. of John of Bankside.
	5	Thomas	Atkinson s. of Thomas of Cark.
	15	Mary	Anderson d. of William of Staveley.
	15	William	Billips s. of John of Cartmelfel a Stranger.
	25	Agnes	Stones w. of John of Headhouse.
	28	Thomas	Hewitson s. of John of Cark.
May	12	Richard	Burscough of Templand.
	22	Edward	Turner of y^{e}. Apprintices.
	22	Isabel	Crakelt of Cartmelfell
	27	(Mrs) Susanna Briggs of Swallow-mire.	
June	9	Christopher Britton of Kit-cragg.	
	27	Dorothy	Brathwait d. of James of Lindel.
July	10	Christopher Burne jun^{r}. of Beckside.	
	14	George	Rigg of Birkby.
	14	Richard	Walker of Alithwait drown^{d} on Ulverston Sands.
	26	Nicolas	Brockbank of Lindel.
Aug	1	Alice	Barrow w. of John of Staveley.
	19	Mary	Cosin of Templand, widow.

Additional information given in the Bishops' Transcripts is shown in brackets.

their work. The re-establishment of the parochial registration system along non-sectarian lines by the Nominated Parliament which required births and deaths to be recorded by civil registrars was far less successful and registers are most likely to be defective during the 1650s.

Ecclesiastical registration recommenced after the Restoration and there were no further changes until the Marriage Duty Act of 1694. This measure imposed duties on births, marriages and burials and a tax on bachelors over 25 years old and childless widowers, payable on a sliding scale according to social status to raise money to pay for the war with France. The collection of these duties required a separate registration system of births, marriages and deaths, but the act proved unsuccessful and returns made under its provisions have not generally survived, apart from important listings of inhabitants in London, Bristol, Southampton and a few other places. A further attempt to tighten the registration system was not made until 1753 when Hardwicke's Act to prevent clandestine marriage required marriages to be registered on printed forms, a provision extended to baptisms and burials by Rose's Act of 1812. No further major changes occurred before the Acts instituting civil registration were passed in 1836.

Table 2 provides an extract from the registers of Cartmel in Cumbria. The registers give the date the event occurred, and the name and surname of the people baptized, buried or married. The baptisms and burials also give the relationship of the person to the head of the family in which he lived and his forename. Where no relationship is given in the burial series, it may be assumed that the family head himself had died. The Cartmel register is unusual in giving places of residence within the parish but Cartmel had a dispersed settlement pattern and its area and population were both very much larger than average. Where the residence of husbands is not given in the marriage register, it is not safe to assume that both the husband and wife came from the same place although this is the most probable inference. The letters L and P after each marriage entry refer to whether a marriage took place after a licence had been issued by the ecclesiastical authorities or following the publication of banns. This is all the information which may be consistently expected in a good parish register, but other kinds of information may also be given from time to time, for example occupations and dates of birth as well as baptism. Although most register entries adhere to the same formula, there were minor variations and asides which can provide valuable additional information about a local community. The range of entries is indicated by Cox (1910) and Steel (1968-).

There are two major sets of copies and abstracts of registers which can prove useful in historical studies. The 1597 constitution also required annual transcripts to be sent to each diocesan centre and these have become known as the Bishops' Transcripts. These varied in quality as much as the original registers. Although it is often suggested that the Bishops' Transcripts are

unreliable, they can be very useful especially for comparative purposes when the original registers have been poorly preserved or are inaccessible. The extract from the Cartmel registers reveals no differences of substance and only one very minor discrepancy between the registers and the transcripts.

Secondly, when John Rickman took charge of directing the first census of 1801, he also attempted to collect the material from which the population of England and Wales in the eighteenth century could be studied. He required the clergy to count the baptisms and burials every tenth year between 1700 and 1780 and every year from 1781 to 1800 and marriages every year from 1754. He later extended the material back into the sixteenth century and forwards until it overlapped the beginning of civil registration in 1838. In aggregated form, this material was published with each of the censuses between 1801 and 1841 and is known as the *Parish Register Abstract*. Rickman himself was aware of the defects of his enquiry. Although he obtained returns from over 95 per cent of registering units, the results were only published for hundreds meaning that even one missing parish could have a serious effect on their reliability. It is difficult to check the accuracy of the information because the original returns were destroyed in 1904 and all the studies of English population in the eighteenth century using the *Parish Register Abstracts* have proved inconclusive. Recent research by Wrigley (1976) has suggested that this assessment may be unrealistic, but it will be some time before the strengths and weaknesses of Rickman's material may be more fully evaluated.

POPULATION STUDIES

Population has always figured prominently in both geography and history but it has usually been examined in a superficial rather than an analytical way by discussions of total numbers, their distribution, and migration between places at particular points in time. It is often more important to examine the reasons for changes in population size and this requires the measurement of fertility, mortality and nuptiality which can be done from parish registers. The importance of the demographic variable has been demonstrated by Wrigley (1969) and Grigg (1980), whilst the best survey of English population history is by Smith (1978). The publication of a major study by Wrigley and Schofield (1981) will outline national trends more fully. This discussion will complement Smith's review by outlining new techniques of analysis.

There are two main techniques of parish register demography. First, aggregative analysis is a relatively simple technique but it can reveal only general population trends. Secondly, the calculation of demographic rates requires more sophisticated analysis because registers only contain information about baptisms, burials and marriages and not the population at risk. There is very little census-type information before 1801. More complex analytic techniques and family reconstitution are the

chief ways demographic rates may be calculated which show the extent to which population changes were due to movements in fertility, nuptiality or mortality. However, both sorts of parish register analysis work best once the reliability of the registers has been assessed.

COMPLETENESS

One of the reasons that parish registers have not been used extensively for population studies until relatively recently is that they have frequently been considered inaccurate; that is the number of christenings, weddings and burials recorded were fewer than the actual totals of births, marriages and deaths that occurred, to an indeterminate extent. The conventional viewpoint has been stated by Krause who argued 'that parochial registration was relatively accurate in the early eighteenth century, became somewhat less so in the 1780s, virtually collapsed between roughly 1795 and 1820, and then improved somewhat between 1821 and 1837' (1965: 393). Recent research has shown that this conclusion may be in need of some revision.

Where parish registers appear to have been generally well-kept, the major cause of deficiency will be the length of the customary interval between birth and baptism because some children may have died before they would have been christened. It is difficult to calculate the birth-baptism interval directly from the parish registers because few also contain the dates of birth.

The most detailed study of this question is by Berry and Schofield (1971) who argued that birth followed baptism very quickly in the sixteenth century, but even by the end of the century there was a clear trend towards later baptism, which became especially marked towards the end of the eighteenth century. Before 1700, the data suggest that the average interval was relatively short and that registration deficiency would be quite small in many parishes.

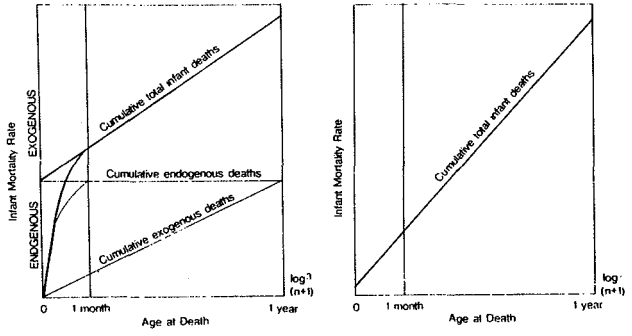

Figure 1. Biometric analysis of infant mortality (Source: Finlay 1980: 28)

Because of the problems involved in calculating the birth/baptism interval, it is necessary to find another way of measuring the extent to which there were more births occurring than baptisms actually recorded. Infants are at greatest risk of dying immediately after birth and this risk declines with increasing age. In many pre-industrial communities infant mortality rates were high and half the deaths would generally occur within the first month of life. If the interval between birth and baptism were a month, this could have the effect of reducing the infant mortality rate by half as a percentage of the births would not have been recorded as baptisms. Infant mortality rates are frequently divided into two components: endogenous infant deaths are associated with the circumstances of the birth, whilst exogenous deaths result from diseases and accidents picked up after birth. Since all endogenous deaths occur within the first month of life, very low endogenous infant mortality rates are indicative of birth under-registration (Wrigley 1977a). Endogenous and exogenous components of infant mortality rates may be calculated by a graphical method utilizing a biometric analysis of the data. If the cumulative infant mortality rate is plotted against the age at death represented on a scale $\log^3(\underline{n} + 1)$ where $\underline{n}$ is age in days since birth, the graph after the first month results in a straight line as in Fig. 1a. If this plot is extended back to the intercept on the x - axis of the graph, a good estimate of the endogenous and exogenous components of the infant mortality rate is provided. This method has been shown to work using data from English and continental populations in the past and also from modern world populations. If the endogenous component of the infant mortality rate is very small, as in Fig. 1b, with the plot of the cumulative total infant deaths cutting the x - axis of the graph close to the origin, or even the y - axis, births must have been under-registered because an insufficient proportion of them resulted in endogenous infant deaths. Although it is not known how low the endogenous infant mortality rate could be whilst remaining consistent with effective registration of births, a rate of little more than zero as in Fig. 1b clearly indicates poor registration.

The easiest way of obtaining the infant mortality rate from parish registers is to calculate the number of deaths occurring within a year from birth per thousand live births. This underestimates the true rate because it does not take account of the deaths of those infants who migrated from the parish of birth with their parents during the first year of life although it is unlikely that this problem will affect the results to any marked extent. It is normally assumed that infants recorded in the burial register without having been named had been born in the parish but had probably died before they could have been taken to church for christening. The proportion of the unnamed infants, or 'dummy' births provides an estimate of the underbaptism rate, the extent of the shortfall of baptisms. A biometric analysis of infant mortality in three large Cumbrian parishes, Cartmel, Hawkshead and Ulverston between 1690 and 1709 is shown in Fig. 2. This demonstrates how endogenous and exogenous components of infant mortality may be estimated. The total infant mortality

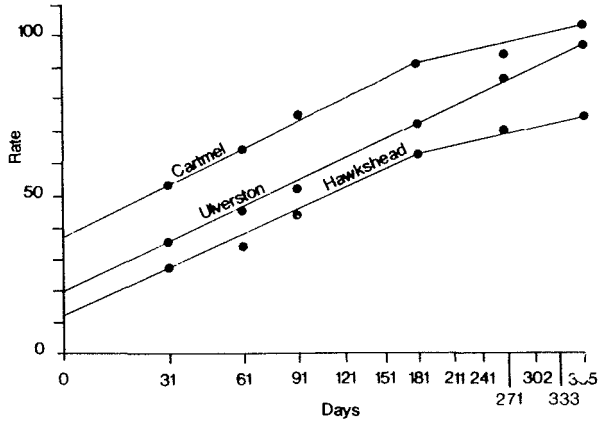

Figure 2. Cumulative infant mortality rates per thousand live births in Cumbrian parishes, 1690-1709 (Source: Finlay 1980: 30)

rate at Hawkshead after the first year was 74 per thousand live births, and 27 after the first month, whilst the endogenous rate was only 12. This is represented by the point where the line joining the various observations intercepts the vertical axis of the graph. Infant mortality rates were clearly low in this area. At Hawkshead, the total rate is suspiciously low and the endogenous rates at both Hawkshead and Ulverston strongly suggest that births were not being adequately registered. Birth registration was apparently better at Cartmel where the infant mortality rate was 103 and the endogenous rate was 37, although even at Cartmel there was some under-registration because there were insufficient dummy births to account for those deaths that must have occurred during the period between birth and baptism (Finlay 1980: 31-2). Fig. 2 also illustrates other problems involved with biometric methods concerning the way the points should be joined because the slope of the line has an important bearing on estimating the exact level of endogenous and exogenous mortality. These graphs demonstrate a downward kink which is sometimes attributed to excess mortality early in life associated with lung and chest infections marked by a winter peak whereas an upward kink is associated with diseases of the digestive system characterized by a summer peak (Wrigley 1977a: 287-9). Another factor influencing the shape of the graphs is the age at weaning for early weaning would also produce an increase in mortality and an upward kink (Finlay 1981a: 105-6).

Wrigley's work demonstrates some of the difficulties of estimating the birth-baptism shortfall, and although he emphasized that his sample parishes could not approximate to a national sample, Wrigley has used this method to estimate the extent of

deficiencies in English baptism registers. He writes: 'In round figures, my estimates suggest that in the five successive half-centuries from 1550-99 to 1750-99 the number of baptisms registered should be increased by 2, 3½, 4, 5 and 7½ per cent respectively to offset the combined effect of the increasing delay before baptizing a child and the impact of infant mortality' (1977a: 310). Finlay (1981a) has also used this technique to show that the London parish registers, for long considered suspect by historical demographers, merit serious study.

The second principal way of assessing the accuracy of the baptism registers is to compare them with the nineteenth-century census enumerators' books. The 1851 census is the first where the actual place of birth was included so it should be possible to trace individuals who claimed to be born in the same parish as they were living in 1851 in the baptism register of that parish. For example, only 79.1 per cent of inhabitants living in Colyton, Devon, in 1851, and who also claimed to be born there, could be traced in the baptism registers. When Wrigley (1975) examined other registers in the Colyton area, he found a further 6.3 per cent of individuals in Colyton nonconformist registers and another 7.5 per cent in the Anglican registers of neighbouring parishes. Only 7.2 per cent left no trace of their birth, and a few of these might be found in nonconformist registers of neighbouring parishes. These results suggest that used with care and with other sources, the Anglican parish registers retain their value during the period of the industrial revolution, at least in some places.

At Bottesford, an almost entirely agricultural village in Leicestershire, Levine (1977: 168) was unable to trace only 5.5 per cent of all natives in 1851 who claimed they had been born in the parish. These studies indicate that the interpretation that parish registers deteriorated so much after 1750 that they become useless for demographic studies requires revision. There were many local and regional variations in the usefulness of parish registers.

A major disadvantage of census enumerators' books is that they cannot be used to link to baptism registers before about 1780. Two alternative sets of documents may also be considered. The first are listings of inhabitants which include the names of children, but these are scarce. Secondly, wills are very valuable where families have been reconstituted. Testators made wills close to death, and provided it can be established that they made bequests to all their living children, children named on a will should also appear on the appropriate family reconstitution form (FRF), where the family had been present in the parish since its formation at the marriage of the parents until their own burials. In a sample of 40 Cartmel FRFs, there was complete agreement with wills in 26 cases or 65 per cent on the assumption that children leave observation at their fifteenth birthday and could have migrated outside the parish and possibly have been buried elsewhere. A major disadvantage with wills is that they do not give ages of children. Wills enable all aspects of registration to be

checked, not just the baptisms. Comparison between registers and wills helps ensure that correct FRFs will be compiled.

Under-registration of marriages is generally a problem only when couples married clandestinely. Before Hardwicke's Act of 1753, a couple only had to affirm before witnesses for a marriage to be legal, although for most of the time almost everyone actually married in church. Defective marriage registers are only a serious problem during the second half of the seventeenth century and may be detected by exceptionally high baptism/marriage ratios. During the period 1660-99, the ratio at Colyton, Devon, increased to 8.83 baptisms per marriage which is hardly credible compared with 4.37 baptisms per marriage in 1600-39 and suggests that some marriages were being clandestinely celebrated (Wrigley 1978: 434). Another way of estimating whether there was a leakage of marriages from the registers is to examine whether marriage licences actually led to a marriage subsequently being celebrated, in cases where the licence itself was valid for particular named churches.

Compared with baptisms there were few problems with defective burial registration. Perhaps because of the difficulties of disposing of a decomposing body, most people were buried in parish churchyards quite soon after death. For example, in St. Thomas the Apostle, London, 1646-53 and Hawkshead, Cumbria, 1800-49, where information on death-burial intervals is available, almost everyone had been buried within four days of dying (Finlay 1981a: 22n.; Wrigley 1977a: 281-2n.). In the absence of independent checks on the presence or absence of individuals, it is difficult to verify the accuracy of the burial registers, and these techniques usually require a reconstitution to have been completed. One of the more satisfactory methods is to assume that two children would not have been given the same forename unless the first had died when the second was baptized. Therefore, comparison between the number of living children possessing the same forename as a younger brother or sister with the number of dead children having the same name provides an estimate of the extent of deficiencies in the burial register (Finlay 1981a: 95-100). This technique should be used with care to provide a range of estimates of the underburial rate because the extent to which two living children may have been given the same name is uncertain, and inconsistencies in spelling and interchangeable names may provide difficulties in identifying name differences. A further problem is that estimates are made from a very small number of families where two children were given the same name and applied to all families. Despite these reservations, the method is capable of providing valuable results.

AGGREGATIVE ANALYSIS

Aggregative techniques are the simplest and consist of making monthly or annual tabulations of the frequency of baptism, marriage and burial entries. Eversley (1966) and Drake (1974: 84-6) provide helpful guidance. A series of pioneering studies were undertaken by Chambers (1957), Drake (1962), Eversley (1965),

Krause (1967) and Sogner (1963) on registers in different parts of the country. Fig. 3 shows a completed aggregative tabulation of the Cartmel burial register between 1721 and 1740. Note how the total burials fluctuated widely each year from a minimum of 35 in 1723 to a maximum of 125 in 1729 when there was a mortality crisis during the spring months. The tabulations by harvest years may reveal a connection between food supply and mortality trends. Similar analysis sheets are used for baptisms and marriages. The monthly tabulations are useful because they enable short gaps in registration to be detected without difficulty - there were no major deficiencies during this period. Demographic events were very subject to seasonal fluctuations at this time and changes in the seasonality of events may reveal variations in the structure of fertility and mortality. For example, it is well known that pre-industrial urban populations often recovered very quickly from plague epidemics and this is usually thought to have been due to migration from the countryside. A recent study by Perrenoud (1978) has demonstrated that plague mortality in Geneva in the 1630s was accompanied by an increased number of conceptions compared with the normal seasonal pattern and that increased fertility was an important mechanism for replacing numbers lost in a mortality crisis. This example shows that seasonality merits further study. The sex ratio can be measured from the burial registers and may itself be an important factor in demographic changes especially where communities were small. For example, Finlay (1981a: 140-2) showed that there was a marked shortage of women in London during the first half of the seventeenth century and this contributed to early marriage and increased fertility. Tabutin (1978) has reminded historical demographers that there were important variations in the mortality experience of men and women in the past, that they might be susceptible to diseases to different degrees, and more generally, that it is often helpful to consider the sexes separately. Differential mortality can make a significant contribution to the shape of the age-sex pyramid.

Fig. 4 shows some of the results of the Cartmel aggregative study, baptisms and burials having been plotted as nine-year moving averages which help smooth fluctuations resulting from small numbers. Declining baptism totals towards the end of the seventeenth century suggest that the population had fallen from a peak in the first half of the century and it did not rise significantly until the mid-eighteenth century. There were several mortality crises, particularly in the 1620s, the 1670s and the 1720s. The number of baptisms was not noticeably greater than the number of burials until after 1750 when there is little doubt that the population grew rapidly. An aggregative study reveals a good deal about the general course of population change, but nothing about the demographic factors which influenced these changes. For example, it is not clear whether the apparently stationary population trends at the end of the seventeenth century were due to high mortality or low fertility, or to both, nor are the direction of changes in fertility and mortality and the levels which prevailed readily apparent.

PARISH: CARTMEL

BURIALS

County: Lancashire

YEARS: 1721-40

YEAR	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Civil Year (totals)	Jan.-July	Aug.-Dec.	Harvest Year (totals)	Wanderers	Comments
1721	3	4	4	2	7	3	2	1	3	4	1	4	38	25	13	58		
1722	2	3	1	2	11	11	15	10	3	4	4	3	69	45	24	40		
1723	3	1	1	3	6	2	0	3	5	1	4	6	35	16	19	53		
1724	4	13	3	1	6	4	3	2	2	3	4	7	52	34	18	44		
1725	6	1	4	4	2	3	6	2	2	7	6	9	52	26	26	66		
1726	2	6	4	6	9	1	12	4	3	2	1	3	53	40	13	37		
1727	1	2	4	7	4	5	1	8	12	5	4	3	56	24	32	68		
1728	9	6	5	6	4	2	4	3	8	13	6	10	76	36	40	126		
1729	6	11	12	17	18	17	5	8	5	8	9	9	125	86	39	81		
1730	5	6	5	11	6	6	3	8	4	4	5	9	72	42	30	69		
1731	8	6	7	2	5	9	2	5	8	7	2	2	63	39	24	53		
1732	6	4	5	2	6	2	4	9	10	1	3	4	56	29	27	72		
1733	5	9	7	6	7	5	6	20	6	5	4	8	88	45	43	70		
1734	9	1	5	3	0	6	3	7	5	11	5	2	57	27	30	67		
1735	8	8	6	6	4	2	3	6	8	1	7	5	64	37	27	60		
1736	4	6	7	3	7	4	2	1	6	0	4	0	44	33	11	39		
1737	9	3	3	3	6	1	3	3	2	7	4	3	47	28	19	56		
1738	7	6	6	6	4	3	5	1	9	2	4	8	61	37	24	59		
1739	7	2	7	5	6	5	3	3	3	5	7	2	55	35	20	48		
1740	4	4	7	5	3	2	3	3	5	0	5	2	43	28	15	43		
TOTAL	108	102	103	100	121	93	85	107	109	90	89	99	1206	712	494	1206		

Figure 3. Aggregative analysis form for Cartmel burials, 1721-40

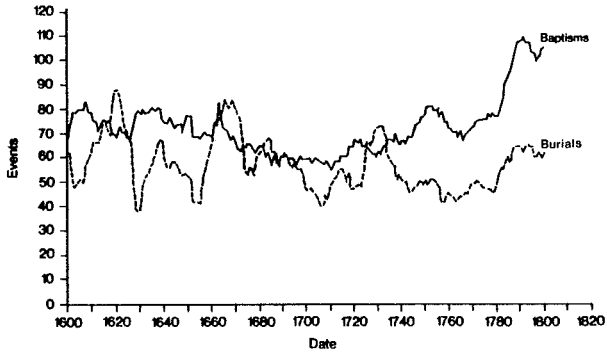

Figure 4. Nine-year moving averages of baptisms and burials at Cartmel, 1600-1800

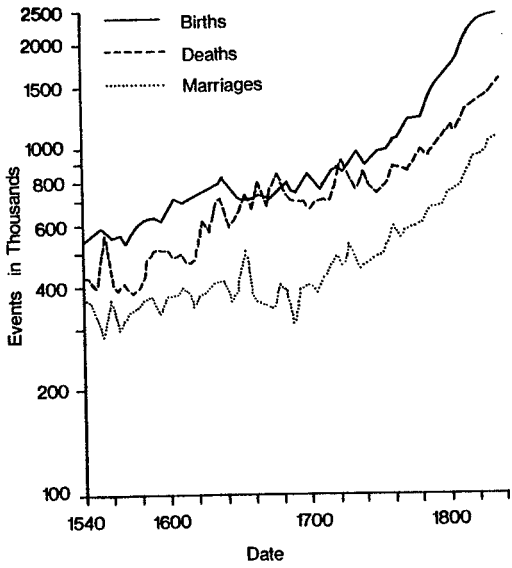

Figure 5. Five year totals of births, marriages and deaths in England (based on aggregative analysis of 404 English parish registers) (Source: Smith 1978: 205)

Aggregative analysis is relatively quick, especially compared with reconstitution which means that large areas may be covered and comparisons can be made between different parishes and regions. Insufficient regional analysis of aggregative population trends has been attempted although Chambers (1957) clearly showed how the experience of agricultural and industrial villages of Nottinghamshire diverged during the course of the eighteenth century. Fig. 5 demonstrates how national trends have been measured from aggregative analyses of a sample of 404 parish registers, but these figures have been corrected to take account of the various causes of under-registration in parish registers already outlined. The numbers of births, marriages and deaths increased throughout the period from 1541 until 1841 which indicates a rising population. The surplus of baptisms over burials was greatest before about 1650 and after about 1750 which suggests that these were the periods when numbers were increasing most rapidly. An excess of burials in some years during the intervening period indicates a much reduced rate of growth. The directions of the trends in the national sample and in Cartmel were similar, but the exact timing and the intensity of upswings and downswings at Cartmel differed from the national average.

Urban studies, which have been comparatively neglected by historical demographers, are conveniently undertaken by aggregative methods although alternative techniques can also be applied with success. Many early modern towns contained a large number of small parishes which enable contrasts to be drawn between different areas within cities. This is important as the internal structure of the larger cities was very complex. A further reason for the importance of aggregative techniques in urban studies is that city populations were unable to replace themselves as the death rate exceeded the birth rate, meaning that towns had to rely on migrants both to maintain their numbers and also to account for any urban growth that occurred (Finlay 1981 b). Langton and Laxton (1978) have clearly demonstrated these points in an especially interesting study of Liverpool towards the end of the eighteenth century which investigates both the growth of the city and the geographical distribution of baptisms and burials by street; together with aspects of the economic structure of the city as the registers also give occupations.

Mortality crises are also especially well studied using aggregative analyses because their intense, but short duration makes nominative work difficult, though not impossible. A crisis is said to occur when the number of burials in a particular year exceeds the average number of burials in a series of years preceding the crisis year by a particular proportion. Crises were sharper the more local the area studied so it is difficult to make comparisons between places, and this means that the definition of a crisis has to be adapted to particular situations. There have been few studies of regional variations in mortality although important work has been published by Appleby (1978), Flinn (1974), Palliser (1974), and Slack (1977, 1979). A general theme in historical demography is the gradually declining

importance of crises, and their total contribution to mortality experience in the long term may be small because most deaths occurred outside crisis periods. It has been demonstrated that there was a relationship between mortality rates and settlement size (Finlay 1981c), and that larger settlements had higher mortality rates. A high density of population meant that diseases could be more easily spread and this is why many crises were mainly restricted to the towns. Because of the dramatic nature of its occurrence, in that about a fifth of a city's population could be killed in any annual epidemic, plague has attracted the greatest research effort. Even a cursory reading of the literature will show, however, that plague is still not well understood and that fuller knowledge of its epidemiology, how it is spread, its differential impact between social areas and groups, and the reasons for its disappearance from England in the 1660s must await further detailed study. As an example of what has been accomplished from parish register studies, Slack (1977) has demonstrated how in Bristol during the sixteenth and seventeenth centuries, plague was most severe in the poorest parishes and had least impact in the wealthiest parishes. His figures also suggest that plague was declining in intensity between successive epidemics and that it declined first in the wealthiest parishes and hardly at all in the poorest parishes. Slack has also shown that even the individual parish was too large an area for study. Especially in 1603, households along main streets were not very badly affected, but plague was concentrated in courts and back alleys which were particularly inhabited by the poor.

Although the majority of crises were probably due to epidemics, recent research by Appleby (1978) and Rogers (1975) has shown that famine remained a cause of crisis mortality in the sixteenth and seventeenth centuries, especially in more marginal areas of England, such as the North-West where there were severe crises in 1587, 1597 and 1623. Appleby (1978: 116-8) suggested a method for identifying famine in parish registers which requires: (i) a dramatic increase in mortality in several neighbouring parishes at the same time, (ii) epidemic diseases should be eliminated as causes of death, (iii) prices should be correlated with mortality, (iv) contemporary accounts should refer to dearth, (v) a high proportion of infants and children should be buried, (vi) a decline in conceptions, because a very severe food shortage can affect fecundity and, (vii) an absence of negative evidence. Although food shortages caused increased mortality in other regions, they did not lead to actual crises.

Even though a full range of demographic rates cannot be calculated directly from aggregative analyses of parish registers, elementary methods of record linkage can be undertaken without many of the labours required by family reconstitution. It has already been demonstrated how infant mortality rates can be obtained (Wrigley 1977a). Ages at death are sometimes given in parish registers and the Hollingsworths (1971) have shown that they can be used to construct life tables which measure the probability of dying in particular age-groups. Life tables are

a good measure of mortality experience because they eliminate the effect of age structure which can affect cruder measures of mortality, and they also enable the expectation of life to be calculated. However, this can only be done from ages at death if assumptions are made about the age-distributions of migrants. The Hollingsworths compared plague mortality rates in one London parish in 1603 with the normal level and showed that plague mortality rates declined with increasing age. Other measures which may be calculated relatively simply by checking backwards or forwards in parish registers for relatively short periods include bridal pregnancy (Hair 1966, 1970), maternal mortality, birth intervals which provide a useful measure of fertility, and age at marriage. It is sometimes helpful when undertaking studies of this kind to use printed registers which are indexed, although the indexes should be used with care to take account of variations in spelling. Because it takes so long to complete reconstitutions, there is much more scope for quick and simple methods of record linkage. Another variation on these methods is to match register entries to other sources. It has been shown how census enumerators' books can provide a check on the compilation of registers (Wrigley 1975), but the same technique has also provided valuable information on the age at leaving home. Wall (1978) has demonstrated how leaving home was a gradual process in the past and that children generally left home rather later than is often thought.

RECENT ADVANCES IN ANALYTIC TECHNIQUES

The main problem with parish register demography is that there is no satisfactory census-type information which enables demographic rates to be calculated. One of the most important developments within the past five years has been the application of analytical techniques which include time-series analysis to estimate measures of fertility, mortality and nuptiality just from aggregative totals of births, marriages and deaths. Many of the techniques are complicated, and require specialist statistical knowledge, so references are given here to more detailed discussions. It must be stressed that the methods work best with aggregate series for very long periods that have been corrected for under-registration in the ways already described, and also on large samples of several parishes to help remove the effects of local migration and of random fluctuations associated with small numbers. The most successful results have been obtained using register data for sample parishes aggregated upwards to a regional or national scale. Small area data are best analysed by reconstitution methods, especially when it is intended to relate population trends to other local social and economic indicators. There is clearly further scope for work of this kind, especially when demographic trends are correlated with other regional and national series of real wages, prices or climatic indicators. These analytical techniques should be regarded as complementary to reconstitutions; both methods have their advantages and drawbacks and are best used to solve different kinds of problems.

Relatively simple methods of obtaining demographic measures from series of births, marriages and deaths have been developed by Livi Bacci (1977), many of which are based on a standard schedule of first marriage frequencies which assumes that the majority of a cohort will marry around the modal age. If the modal age at marriage for females is 24 years, the largest part of the female cohort will marry when aged between 20 and 29 years. It has been shown how the modal age at marriage may be estimated using smoothing processes which eliminate random fluctuations in the data as a very small or a very large birth cohort will cause an equivalent fluctuation in the marriage series with a lag close to the modal age at marriage of females. For example, mortality was very severe in Sweden in 1772-3 and there was a sharp fall in the number of marriages in 1799-1801 which suggests that the modal age at marriage was 27 years. The proportion of the population remaining single can also be estimated on the assumption that most people in the same birth cohort who marry do so within a period of about ten years and that the proportion remaining single may be estimated by examining those births that do not subsequently result in marriages after having made allowances for the depletion of the birth cohort by mortality. These are robust methods which, unlike others to be described below, do not consider the age-structure of the population, but they have the advantage of indicating whether marriage was early or late and whether a high or a low percentage of the population remained single. These estimates can then be used to examine the level of mortality before marriage and the number of children per marriage when births are recorded by duration of marriage.

More complicated techniques of time-series analysis have been used to obtain measures of fertility and mortality from aggregate series with greater precision. The pioneering work was undertaken by Lee (1974) who developed a method known as 'inverse projection'. Whereas series of vital rates are often used to project births, deaths and age distributions, Lee used an age distribution and series of births and deaths to project population size and its age structure, and measures of fertility and mortality. He tested this model on the population of the parish of Colyton, Devon between 1545 and 1834 and obtained very similar results to those found by family reconstitution methods (Wrigley 1966, 1972). The advantages of this method are that demographic measures can be obtained every five years and that good estimates can also be made of the total population and its age structure. The effectiveness of the results is demonstrated in Fig. 6 as reconstitution can usually measure only long-term trends rather than short-term fluctuations. These graphs show:(i) changes in the total population of Colyton, (ii) the gross reproduction rate, the number of female children born to a cohort of women which is a measure of fertility, and (iii) the expectation of life at birth, which is a measure of mortality experience. Population sizes and age-structures cannot be obtained from reconstitutions. Lee also applied the same method to the problem of population movements in eighteenth-century England - whether the increased numbers resulted from a rising birth rate or a falling death rate - and showed that the problem can be solved providing an accurate series of births and deaths is found.

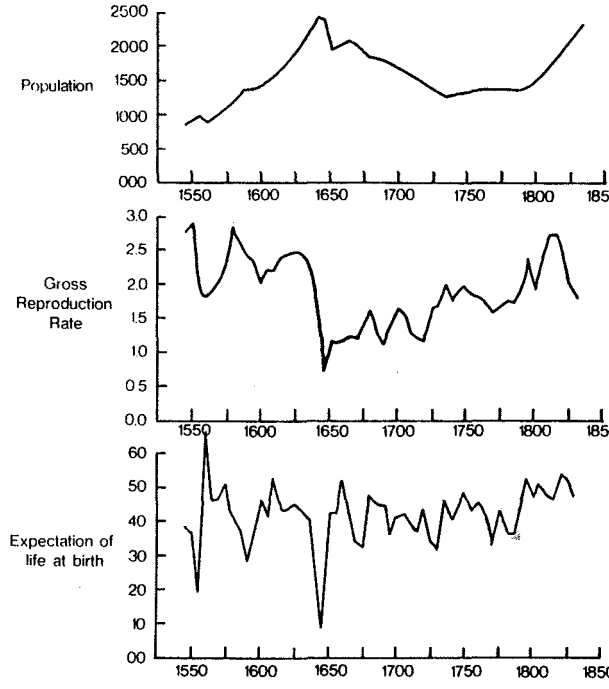

Figure 6. Estimated population, gross reproduction rate, and life expectancy in Colyton, 1545-1834 (Source: Lee 1974: 501)

Inverse projection is clearly interesting, but there are two major problems with the technique. The first is that apparently successful results were obtained for Colyton because an initial age distribution was selected which was consistent with the expected results that were already partly known from the reconstitution. The age distribution in 1545 is not known for most places in England, but from 1841 the census provides accurate age structures. A major source of inaccuracy could therefore be overcome if the population could be projected backwards from the mid-nineteenth century, rather than forwards from the mid-sixteenth. Secondly, a single parish is too small a unit for analyses of this kind because of problems of migration and under-registration which Lee (1974: 509) considered balanced each other. The results for Colyton would have been less satisfactory had he used a corrected series of births and deaths rather than the actual recorded totals of baptisms and burials because it would be unreasonable to assume that the number of in-migrants equalled the number of out-migrants. Projection methods are therefore most effective if regional and national series of births and deaths can be obtained.

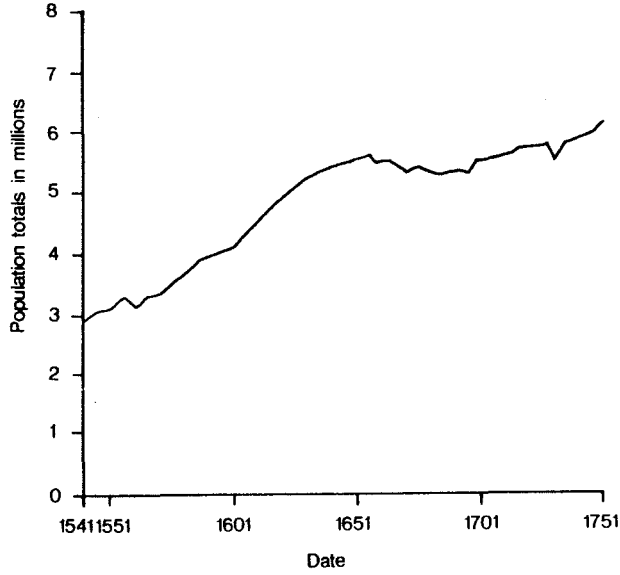

Figure 7. Population of England (excluding Monmouth), 1541-1751 (Source: Smith 1978: 207)

Backward projection has been developed at the SSRC Cambridge Group for the History of Population and Social Structure by E.A. Wrigley and J. Oeppen to derive population trends for England using a corrected series of births and deaths from a sample of 404 parishes which overcomes many of the problems associated with Lee's work. Preliminary results have been published by Smith (1978) and full details will appear in Wrigley and Schofield (1981). This method has produced 'censuses' every five years from 1871 to 1541, the overlap with the census between 1871 and 1801 being used as a check, and part of the course of population change in England is shown in Fig. 7. The system also attempts to derive estimates of net migration. As an example, there were 21.5 million inhabitants in England in 1871 and 2.5 million were aged 5 to 9 years. Between 1866 and 1871 there were 2.3 million deaths and a model life table fitted to the data shows that 0.3 million would die between age-groups 0-4 and 5-9. An estimate of the population aged 0-4 in 1866 is obtained by adding these 0.3 million to the 2.5 million who had survived, but it ignores the effect of net migration. Applying this procedure across all ages produces a new 'census' five years earlier with the youngest age-group disappearing as births. The oldest group in 1866, aged 90-94, is manufactured by correcting the total aged 90-94 in the 1871 census for the difference

between the size of the former and latter's birth cohorts in 1772-6 and 1777-81 respectively. Allowance is made for the differences in mortality history of these two cohorts by 'back-projecting' current mortality for ninety years, using the deaths series as an indicator of mortality change. This procedure gives a population total for 1866 equal to that of the 1871 census minus the births plus the deaths occurring between the two dates and incorporating an estimate of net migration during the intervening period. The method by which net migration is calculated is too complex to be described here. Back projection produces a series of quinquennial 'censuses' which include a detailed age structure, and this information when used in conjunction with age-specific fertility schedules and a 'family' of life tables enables a knowledge of the quinquennial totals of births and deaths to be converted into estimates of fertility and mortality (gross reproduction rates and expectation of life at birth).

It is difficult to test the accuracy of a model of this kind because there are no independent checks on population trends back to the sixteenth century, but it has been shown to work using Scandinavian data where population sizes and age distributions are known from the mid-eighteenth century. A major defect of backward projection is that it does not consider marriage series. The age at marriage must be found from reconstitutions and the proportion of the population ever marrying by techniques outlined by Livi Bacci (1977). The Cambridge Group hopes to develop backward projection to obtain demographic rates for individual parishes.

FAMILY RECONSTITUTION

The chief aim of family reconstitution is identical to projection models, namely to calculate vital rates from parish registers where the population size and structure at different points in time are not known from other sources. Reconstitution is an essentially simple technique consisting of grouping together all the demographic events occurring to a specific family on to a piece of paper known as a family reconstitution form (FRF). Calculations of vital rates can then be made from FRFs because the recorded sequence of events enables the population at risk, or in observation, to be determined independently from the demographic measure being analysed. Reconstitution therefore allows precise demographic rates to be measured for small areas, but it is a very time consuming process often taking several months to complete so the data should be carefully scrutinized before commencing work. It can also be expensive because it is advisable to have a copy of the register, and the cost of printing forms can be high. There is a very detailed and comprehensive guide to reconstitution by Wrigley (1966c).

There are several requirements in a parish register for reconstitution to be successful. First, and most important, there must be no serious gaps in registration over a long period of time. It is often helpful to undertake some preliminary checks on the completeness of registration. Secondly, there is little

point in reconstituting the registers of a small parish even if this saves time because the resulting calculations will be based on small sample sizes. The most suitable parishes have a population of approximately 1,000 with about 30 baptisms and burials recorded each year. It is difficult to obtain meaningful results from parishes which are very much smaller than this, while conversely, exceptionally large parishes can lead to problems with handling the data. The third major requirement of a parish register is that each individual can be identified exactly. It is absolutely essential that the baptism and burial registers give the name of the father of the child being baptized or buried. The burial register is more likely to be defective in this respect, but it is particularly important that sufficient information is available to ensure that correct links are made. For example, to know that James Woods was buried is not very helpful if there was more than one person with the same name living in the parish. Registers containing names alone are useless for reconstitution. But if James Woods, son of James was buried, it is probably clear exactly who had died. Other information is sometimes recorded in the registers such as places of residence, occupations and very occasionally ages at death, and this facilitates accurate matching. No parish register contains all the characteristics which are especially useful for reconstitution over a very long period, but registers selected for analysis in this way should come close to these requirements. It is not essential for any parish to be isolated for successful reconstitution. Hardly any English parishes were completely closed and nominative methods can be applied to both rural and urban parishes, although the reconstitution procedure has to be modified in studies of urban areas to take account of high rates of migration. A certain amount of migration is helpful to reconstitution because it introduces new names to a parish so there will not be large numbers of branches of the same family living in a parish which can make the identification of individuals difficult.

The process of family reconstitution first requires the transfer of the complete parish register to printed slips, one slip per vital event. Two slips are required for each marriage to take account of the wife's change of name. These slips are then sorted into surname sets and numbered. At this stage a parallel marriage recall slip is filled out and given the same number as the duplicate marriage slip. Information from the slips is then transferred to the FRFs beginning with the marriages and then the baptisms. All baptism slips must be used, so if there is no appropriate FRF a new FRF is made out without the date of the marriage recorded. Illegitimate children are listed separately. The next stage is to match the burials to the FRFs. Not all the burial slips need to be linked, for example there will be no appropriate FRF where a family migrated into a parish after its children had been born and baptized elsewhere, but it is important to make as many matches as possible or mortality rates will be under-estimated. Fig. 8 shows a typical FRF completed to this stage and the kind of information it reveals. Thomas Harrison married a second time in 1702 to An Preston and their

MARRIAGE

no.	place	date	date of end	date of next
M / 1102	/ Carlmel	/26-11-1702	/ 3-1-1740	

LITERACY

	husband	wife
L		

HUSBAND

	surname	name(s)	date of baptism(birth)	date of burial (death)	order of marr.	earlier FRF no.	later FRF no.	residence at baptism
H	/ HARRISON	/ Thomas		/ 3-1-1740	/ 2+	/ 1101		

residence (occupation) at marriage	residence (occupation) at burial	date	residence (occupation)	date	residence (occupation)
/ Flookburgh	/ Flookburgh	/1703	/ Flookburgh		

Husband's father

	surname	name(s)	residence (occupation)	FRF no
HF				

Husband's mother

	surname	name(s)
HM		

WIFE

	surname	name(s)	date of baptism(birth)	date of burial (death)	order of marr.	earlier FRF no.	later FRF no.	residence at baptism
W	/ PRESTON	/ Ann		/ 6-1-1748				

residence (occupation) at marriage	residence (occupation) at burial	date	residence (occupation)	date	residence (occupation)
	/ Flookburgh				

Wife's father

	surname	name(s)	residence (occupation)	FRF no.
WF				

Wife's mother

	surname	name(s)
WM		

CHILDREN

	sex	date of baptism(birth)	date of burial (death)	status	name(s)	date of marriage	FRF no. of first marr	surname of spouse	age at bur.	age at marr.	birth interval	age of mother
1	C	/M/ 26-9-1703			/ Willm						10	
2	C	/F / 26-4-1703			/ Jennet)							
3	C	/M / 30-9-1705	/ 31-3-1711		/ Thomas				5		24	
4	C	/M / 9-1-1709			/ James						39	
5	C	/F / 25-12-1712	/ 31-8-1714		/ Anne				1		47	
6	C	/M/ 22-1-1716			/ Thomas						36	
7	C	/ /			/							
8	C	/ /			/							
9	C	/ /			/							
10	C	/ /			/							
11	C	/ /			/							
12	C	/ /			/							
13	C	/ /			/							
14	C	/ /			/							
15	C	/ /			/							
16	C	/ /			/							

COMMENTS

	Husband	Wife
Age at marriage		
Age at end of marriage		
Age at burial		
Length of widowhood(mths)		96
Length of marriage (years)	37	

	total	sons	daughters
Number of births	6	4	2

Age group	Years marr.	No. of births
15 - 19		
20 - 24		
25 - 29		
30 - 34		
35 - 39		
40 - 44		
45 - 49		

FRF iv 67

Figure 8. A specimen family reconstitution form (FRF)

marriage lasted 37 years. During the first fifteen years of marriage they had six children beginning with twins. The relatively long intervals between baptisms suggest that fertility was quite low, whilst two of the children died in adulthood. The FRFs may then be completed by coupling baptisms to subsequent marriages to yield information about the age at marriage, itself an important parameter and essential for the calculation of age-specific fertility rates and adult life tables. At this stage the actual reconstitution process is complete. Calculations in the boxes on the right-hand side of the FRFs may be either done by hand or by computer, the latter methods being discussed below.

Family reconstitutions enable demographic rates to be established for long time periods, often fifty years, and FRFs are usually cohorted by the date of marriage or first birth. There is no special reason why reconstitutions must cover the whole time span from 1538 till 1837, for particular studies the analysis of several registers over a shorter period may be more useful. Nor is there a particular reason why all the procedures advocated in Wrigley (1966c) need to be followed although fewer measures can be calculated if less analysis is completed. Even the extraction slips alone can be used to provide important information about infant mortality and birth intervals. The key point is that there is a continuum between the elementary record linkage described in the section on aggregative analyses and full reconstitutions discussed here and that all nominative methods can give more precise results than simple aggregative techniques. The decision as to how far to extend linkage will depend on the object and scope of the enquiry and the time and funding available.

The main disadvantage of reconstitution is that it is both tedious and time consuming. For example, to reconstitute the Cartmel registers between 1600 and 1750 involved the use of 22,500 extraction slips and 4,100 FRFs. The Cambridge Group have devised techniques by which completed FRFs can be punched on to computer tape and calculations made from the FRFs by computer. This is important because it ensures accuracy and comparability of the results which is evident from the research reported by Levine (1977) and Smith (1978). However, it has not yet proved possible to computerize the actual compilation of the FRFs from English parish registers yet this is the process which takes the great bulk of the time. There are two main problems in computerizing reconstitution. The first is that name spelling was very inconsistent and a code has not yet been found to standardize spellings which is equivalent to the Henry code devised to cope with French language names. Secondly, there is very little additional information contained in many English registers which can help to verify a match. Because the registers are not detailed, record linkage is particularly important, but it is also difficult because registers include very few supplementary details.

There is no simple answer to the question of what proportion of families in a parish can be reconstituted and the extent to which the results are representative. The main reason for this

is that the number of families in observation depends on the demographic measure being calculated from the FRFs. For example, most FRFs are of some use in the construction of child life tables, yet only FRFs where the date of marriage is known can be used in most cases for the calculation of birth intervals, and both the date of baptism of the wife as well as the date of marriage are essential to measure age-specific marital fertility. Thirdly, it is important to be careful when interpreting the results of reconstitution studies to take account of the fact that the various demographic measures are based on different population sizes. It should also be mentioned that the same demographic rate calculated for different time periods depends on different proportions of the total population. In some cases, it can be helpful to calculate a range of measures; for example, there is no reason why infant mortality rates should not be calculated for the same population as age-specific marital fertility rates, and then compare the results with those calculated from a larger sample. Families cannot be completely reconstituted because populations were very mobile and reconstitution does not capture a complete cross-section of a parish population because migration is usually a selective rather than a random process.

It is also important to bear in mind the scale problem when evaluating the results of reconstitutions. This is that demographic constrasts will be sharper the smaller the area considered. Population trends in most parts of early modern England conformed to the patterns outlined in Figs. 5 and 7 but to a different degree in various parts of the country. For example, although the total population did not increase in the country as a whole during the second half of the seventeenth century, it grew in some areas and declined in others. Reconstitutions therefore demonstrate the range between which demographic rates fluctuated.

Table 3. The changing demography of Colyton

	Age in years at first marriage		Completed family size of women marrying under 30		Expectation of life at birth in years (sexes combined)
	M	F			
1560-1646	27	27	6.4	1538-1624	43
1647-1719	28	30	4.2	1625-99	37
1720-69	26	27	4.4	1700-74	42
1770-1837	27	25	5.9		

Source: Wrigley (1969: 87)

Three important pieces of research have been conducted on English parish registers using reconstitution methods. The pioneering study, which showed that the method was applicable, was by Wrigley (1966, 1972) of the Devonshire parish of Colyton. Table 3 summarizes some of the results which shows how Colyton's

demographic fortunes changed during the period between 1647 and 1719 compared with earlier and later periods. The age at marriage increased, fertility fell and mortality was more severe. Women were marrying for the first time especially late so much of their reproductive period passed before marriage. The causes of the changes in Colyton's demographic experience have never been satisfactorily explained. A closer inspection of the results of the reconstitution provides good evidence for family limitation within marriage but there is little supplementary information about social and economic conditions within the area which might shed light on the course of demographic changes. The Cambridge Group have now completed reconstitutions of about sixteen parishes; some preliminary results have been published by Smith (1978).

Table 4. Demographic changes in Shepshed and Bottesford

	Age in years at first marriage		Gross reproduction rate	Net reproduction rate	Estimated expectation of life at birth in years (sexes combined)
	M	F			
	Shepshed				
1600-99	29	28	4.38	1.10	49
1700-49	29	27	4.54	1.12	44
1750-1824	24	24	5.86	1.74	44
1825-49	24	23	6.16	1.57	37
	Bottesford				
1600-49	29	26	5.36	1.37	44
1650-99	28	26	5.08	1.21	44
1700-49	29	28	5.66	1.25	43
1750-99	29	27	4.44	1.25	46
1800-49	26	25	6.37	2.04	52

Source: Levine (1977: 58-102)

If the causes of demographic changes at Colyton are uncertain, the demographic implications of proto-industrialization are clearly demonstrated by Levine's (1977) study of Shepshed summarized in table 4. Shepshed was a centre for framework knitting which became the most heavily industrialized parish in Leicestershire by the end of the eighteenth century. Levine argued that the link between local demand for labour and the real wage was snapped in proto-industrial communities because labour demand was determined exogenously by distant markets. Framework knitting was associated with younger marriage for both men and women and high fertility whereas, at Bottesford, an almost entirely agricultural Leicestershire village, demographic

experience hardly changed throughout the seventeenth and eighteenth centuries.

Table 5. Aspects of the demography of London, 1580-1650

Parish	Proportion of substantial households, 1638	Mean birth intervals 1-6 (months)	Sex ratio at burial (males per 100 females)	Child mortality rate, 1-14 ($1{,}000_{14}q_1$)	Estimated expectation of life at birth in years (sexes combined)
St Peter Cornhill	60%	23.0	117	248	36
St Michael Cornhill	35%	22.7	127	260	34
St Mary Somerset	8%	26.7	113	406	21
St Botolph Bishopsgate	1%	26.8	119	336	26

Source: Finlay (1981a)

Finlay (1981a) used partial reconstitution techniques to study four London parishes between 1580 and 1650, two each drawn from wealthy and poor areas of the city. He confirmed that mortality was high meaning that the city population was unable to replace itself and depended on migrants from outside. Fertility was also high with exceptionally short birth intervals in the wealthier parishes of about 23 months due to the employment of wet-nurses in the countryside. Women can conceive more quickly after a birth in the absence of breast feeding their own children because of a reduced period of post-partum amenorrhoea. In the poorer parishes, fertility was reasonably high with 27 month birth intervals associated with high infant mortality. Another interesting feature of the demography of London at this time was a shortage of women which depressed marriage ages, although migration itself delayed marriage. By the end of the seventeenth century, there was a transformation in the sex ratio from a shortage of women to a shortage of men caused by a decline in the importance of apprenticeship and an increase in the employment of female domestic servants. There were also striking variations in mortality experience between wealthier and poorer London parishes. The expectation of life at birth was about 35 years in the wealthier parishes, but ten years less in the poorer parishes. Along the riverside, mortality was particularly severe in St Mary Somerset which suggests that water supply may have influenced death rates.

It is usually considered that family reconstitution methods are best for calculating demographic rates prevailing over long periods, often of fifty years duration. However, FRFs are of some use in studying shorter term fluctuations. In a remarkable

piece of work, Schofield (1977) calculated mortality rates occurring during the 1645-6 plague mortality crisis at Colyton, and in doing so made an important contribution to understanding the level of plague mortality and its age-incidence in a seventeenth-century epidemic. Schofield demonstrated that young people and especially infants were at greatest risk to plague, and also older people who in Colyton would not have gained immunity from having survived previous exposure to the disease. In this study, many uses were found for the FRFs apart from the calculation of life tables; for example to show that deaths were clustered in particular households but there was no connection between the level of mortality and household size, or that infants were much more likely to die if one or both of their parents also failed to survive. From the household incidence of disease, Schofield argued that the rat flea was the important vector in Colyton rather than human parasites, therefore demonstrating how important such detailed studies are to obtaining an adequate understanding of plague mortality.

MIGRATION

Geographical migration occurs across space whereas births and deaths take place at particular localities, so it is much easier to study fertility and mortality from individual parish registers than migration, especially as the registers infrequently state the origins of migrants. For these reasons, the analysis of internal migration in early modern England is not straightforward and it depends on the use of a variety of sources. There is no equivalent of the Swedish registers which record migratory movements. Other sources for the study of migration include apprenticeship and freemen registers, listings of inhabitants, settlement certificates and removal orders, and church court depositions (Clark 1979). Both aggregative, and reconstitution techniques can be used to study migration, but a combination of methods is probably of greatest value. It is because the study of migration relies on a number of techniques that this discussion has been left to last, for internal mobility made an important contribution to overall demographic trends.

Few people now believe that parishes in the past were essentially closed communities and the study of migration is therefore an important aspect of the analysis of social and economic changes in pre-industrial England. The growth of towns, and especially London, depended entirely on migration from the countryside as urban populations were unable to replace themselves due to high mortality. The number of urban inhabitants would have fallen but for migration which also accounted for all the urban growth that occurred (Finlay 1981 b). In both town and countryside the small family household and late marriage were important features of English social structure. Apprenticeship and domestic service were very common for young adults between the time they had grown up and marriage and this almost always entailed leaving home and living in the household of another family that required economic assistance. Although underemployment was very common, matching labour supply and labour

demand often involved migration, especially as rural communities were often small and there were wide variations in annual mortality levels. When conditions were very poor, as in the North-West in the first half of the seventeenth century, there were increases in vagrancy and when people went on the tramp they often moved long distances and, from the point of view of the authorities, caused problems of public order and food supply in towns. Migration was also important because it enabled new ideas and attitudes to be diffused throughout the country, especially those orginating from London, and it helped tie together town and countryside reinforcing regional identities as well as contributing to the economic life of the country.

The simplest way of studying migration from parish registers is by aggregative analysis of marriage registers, some of which give places of residence of partners at the time they married and all registers do so after Hardwicke's Act of 1753. Studies of this kind, for example by Maltby (1971) of West Riding registers and by Dobson (1973) in Northumberland, all show that marriage distances were very short. In Wharfedale, Yorkshire, in the eighteenth century, over 90 per cent of people moved less than ten miles at marriage. Marriage registers have disadvantages for studies of migration as marriage horizons may have differed from migration fields. Few marriage registers recorded places of residence before 1754, and they only give places of residence at the time the marriage was celebrated rather than places of origin or birth. This could therefore obscure the geographical distances moved by migrants. For example, some marriage registers for London parishes during the first half of the seventeenth century record places of residence which show that the great majority of partners came from within the London area itself. This cannot be a realistic indication of the amount of migration that actually occurred because most marriage partners must have migrated to London from outside the capital as Londoners were unable to replace themselves. The evidence about migration from the London marriage registers actually shows that most people travelled to the capital when they were still single, and then moved again within the capital on marriage. In this case, the registers reveal only one aspect of intra-urban migration and other sources, for example apprecticeship registers, are required to study migration to London.

Very occasionally, the parish registers provide other information which is relevant to migration studies. Sometimes, the place of residence of parents or grandparents is given as for example in the registers of the Vale of York towards the end of the eighteenth century. Holderness (1970) found that although mobility rates were very high, labourers were more migratory than farmers, and that women were more likely to have come from outside their immediate place of residence than men.

Reconstitution provides interesting information about the rate of persistence and turnover in a community, but nothing about the geographical distance moved unless the marriage registers give places of residence. In reconstitution work, an FRF is made

out for each couple. All FRFs where the date of marriage was not known are for couples who were migrants. Where the date of marriage was known, the couples were migrants if the date of baptism is not known. In both Shepshed and Bottesford, Leicestershire, the majority of adults had been migrants; between 1600 and 1679, as few as 6.3 per cent of all marriages at Shepshed were between partners of whom both were native to the parish, and at least one partner was native in only 27.1 per cent of marriages. However, the growth of framework knitting ensured that the amount of turnover of population decreased as more people were able to earn a living in the parish. In Bottesford, there were fewer changes in the extent of population turnover during the period, although the transition from arable to pastoral farming increased migration slightly, but this was reduced again by the adoption of fully commercialized farming after 1790 (Levine 1977).

These methods of analysing population turnover have been expanded to a fuller study of population turnover in all sixteen parishes reconstituted in association with the Cambridge Group by Souden (forthcoming). He has also included information about the date of burial to classify all FRFs according to whether: (i) neither baptism nor burial registered, (ii) burial only registered, (iii) baptism only registered, and (iv) both baptism and burial registered. These are very gross indices about whether a person remained within the same parish for his whole lifetime, for the first part of his life course from baptism to marriage, for the second part from marriage to burial, or whether he migrated more than once. However, they shed light on local migration systems and changes in the propensity to migrate. It should also be realized that the effect of different parish sizes, settlement patterns and age structures affect rates of migration and stability. Although Souden confirmed that the majority of people had migrated, the aspects of his work which are most interesting are that there were wide variations between local migration systems both between parishes and through time. For example, in some parishes like Hawkshead in Cumbria individuals became more migratory between 1600 and 1780 but the reverse also occurred, for example in the coal mining village of Earsdon in Northumberland, as some parishes found themselves able to employ a greater proportion of the people born there. The study of migration from family reconstitution can also show how trends in migration were connected with movements in fertility and mortality. However, migration is a selective process since people of particular ages and occupations are more likely to migrate than others. Once again, study of migration from parish registers is handicapped because ages and occupations are not generally given so that it is difficult to identify movers and stayers.

SOCIAL STUDIES

Whereas parish registers are the single most important source for historical population studies, they are less significant (though comparatively neglected) in the wider field of social

and economic research. Parish registers are most useful to the analysis of social and economic trends when they contain supplementary information. In fact, many lack such information. However, when they are of value, registers have the advantage that they provide information about almost all members of the community. Table 6 shows some of the main topics that can be investigated and the chief alternative sources that may be used. No attempt will be made to discuss the value of other sources or the conclusions that can be obtained from them. As in demographic work, there are two chief methods of analysis: aggregative techniques of counting the frequency of events and nominative methods which involve record linkage.

Table 6. Social studies from parish registers

Topic	Alternative sources	Aggregative analysis	Nominative methods
OCCUPATIONS	Wills, inventories, freemen and apprenticeship registers, listings of inhabitants	Classification of occupational structures	Occupations and the family
LITERACY	Protestation Oath 1642, Test Oath 1723, wills, church court depositions, marriage licences	Changes in illiteracy, illiteracy and occupations, regional variations	Illiteracy and fertility and mortality
ILLEGITIMACY	Poor law records, churchwardens' accounts, church court records	Changes in illegitimacy, regional variations	Illegitimacy and the family, sub-societies
MEDICAL HISTORY	Books and manuscripts, bills of mortality	Causes of death, crisis mortality	Cause-specific mortality
HISTORICAL GENETICS	Listings of inhabitants, Non-conformist registers, e.g. Quakers	Marriage distances, parent-children distances	Isonymy, persistence of gene structures

OCCUPATIONS

There have been few studies of occupations from parish registers yet they can be useful sources for analysis of aspects of economic conditions. It is difficult to classify occupations in pre-industrial times and it is sometimes hard to establish

what people actually did and what was involved in particular occupational terms which changed in meaning through time. Patten (1977) has shown how a wide variety of occupational terms have been used, and how there have been an equally large number of classifications. It is always difficult to reach agreement about systems of classification, but it is clearly advantageous to adopt a method which is sufficiently flexible to allow the information to be rearranged according to the questions being investigated. It should also be borne in mind that manufacturing and trade were often by-employments in pre-industrial England practised as adjuncts to agriculture, meaning that it may be difficult to assess the relative importance of these occupations.

Another problem when studying occupations relates to which registers - baptism, burial or marriage - to consider. Pickles (1976) counted every register entry in her study of Wharfedale so many people were included more than once. The advantage of doing this is that individuals living in the parish for a period of time would be counted more than once, whilst inhabitants staying for only a short period would be included less frequently. This method might provide a better reflection of the relative importance of different occupations compared with counting adult burials where a non-resident buried in a parish would be given equal weighting to somebody who had lived there several years. The main disadvantage with counting everyone is that it is often asserted that fertility varied between social groups so that some occupations have a better chance of being included than others. In his study of Colyton occupations, Wrigley (1977b) used all three registers as well as the 1851 enumerators' schedules. For the period 1765-79, he also compared the occupational structures derived from the baptism and burial registers taken separately and found that differences were very small indeed. These studies have shown that about half the Colytonians were engaged in agriculture, but there were also significant numbers in manufacturing. Mining was particularly important in Wharfedale, and textile and clothing industries also figured prominently. A fuller study of the occupations would clearly provide more information about occupational structures by examining the main categories more closely, and Pickles (1976) has used registers with considerable effect to indicate changing employment structures in Wharfedale in the eighteenth century and their relationships with demographic changes.

Urban experience shows very clearly how there is further scope for examining the occupational information in registers. Beier (1978) has demonstrated the importance of servants in three London parishes between 1548 and 1652 and has argued that the large numbers of servants was partly connected with increasing vagrancy in the capital. In Liverpool, where some of the registers towards the end of the eighteenth century gave addresses as well as occupations, Langton and Laxton (1978: 81) mapped the actual locations within the town of individuals with different occupations. This work has potential for investigating the relationships between occupational structures and demographic variations, and hence to comment in depth on the connections between the

social and spatial characteristics of a growing port and industrial centre.

In another study Langton (1979) has used parish registers to show how labour in the south-west Lancashire coalfield was recruited locally as production expanded during the eighteenth century. He found elementary record linkage techniques of value in showing how kinship bonds were so important in recruitment patterns, which is hardly surprising considering the way work was organized in family units in the pits. High wages made mining attractive despite high mortality, for analysis of registers showed that miners were residentially very mobile, but they tended to remain in mining throughout their lives.

It is evident from this discussion that parish registers could be more extensively used for occupational studies and with greater effect. Wrigley (1977b: 20) has argued that it ought to be possible to assemble information from a national sample of registers to illustrate some of the changes in employment that accompanied the industrial revolution in England.

LITERACY

Literacy was an important aspect of popular culture in early modern England and it is often helpful to be able to measure the extent of reading and writing. The illiterate can only obtain information from others, often from the church and their social superiors, whilst people who could read were open to new ideas and influences. Literacy is relevant for developments in a number of aspects of English history, especially politics, religion and economic trends. There is one universal, standard and direct measure of literacy which is the ability to sign, for reading was usually taught before writing which suggests that more people could read than write. Illiteracy is connected with the provision of schooling but education and literacy were not directly linked in pre-industrial England. Some of the people who could sign had not been educated at school.

Economic historians usually measure the proportion of the population that was illiterate. The extent of illiteracy can only be studied from parish registers after 1754 when brides and grooms had to sign or mark the marriage registers. Before then, the other sources listed in table 6 must be used. The Anglican marriage registers had very wide coverage. About 90 per cent of adults married during the period, so this measure assesses the extent of literacy of individuals who were mainly aged between 20 and 29 years. All people except Jews, Quakers and members of the Royal Family had to marry in the Anglican church. It has been argued that some brides marked when they were actually able to sign but it is difficult to substantiate this claim. The pioneering work was undertaken by Baker (1961) in a study of seventeen country parishes in East Yorkshire who found that about a third of grooms and two-thirds of brides were illiterate in the 1750s. For men, illiteracy did not decline significantly until the 1840s and was almost eliminated by 1900. Women's levels of

illiteracy declined more gradually from the 1780s and did not match those of men till the 1870s. Schofield (1973) extended this analysis to a random sample of 274 parishes to provide a national estimate of those unable to sign. Male illiteracy was approximately 40 per cent until the beginning of the nineteenth century; it declined from around 1810 reaching 33 per cent in 1839 when the Register General first collected information, whereas female illiteracy was reduced from over 60 per cent in the 1750s to less than 50 per cent by 1840 with the main changes occurring after 1800. Schofield examined all Bedfordshire registers in greater detail. This county contrasted with the national average as 55 per cent of males were unable to sign in 1819 compared with 33 per cent nationally. Between 1754 and 1764, 54 per cent were unable to sign in Bedfordshire, but this figure increased to 60 per cent between 1795 and 1804. Female illiteracy declined from 72 per cent to 67 per cent during the period. The most striking feature of illiteracy was its great variation between particular parishes and Schofield (1973: 448) showed how illiteracy increased in some parishes and declined in others. The predominantly agricultural parishes with high poor law expenditures were the ones with increasing illiteracy. It was also found that literacy was strongly influenced by economic status.

Although registers enable levels of illiteracy to be calculated, there has been considerable debate about the interpretation of the figures. An important controversy has been concerned with the importance of literacy for the beginnings of the industrial revolution. Schofield (1973) argued that literacy was not an important precondition for the onset of industrialization. Recent research by Levine (1979) used the Shepshed reconstitution between 1754 and 1851 to compare the literacy of parents and children. He showed that the children of literate parents were not necessarily themselves literate and that there was little correlation with birth order or family size. This means that much work on literacy must be questioned and the importance of the family as a socializing agent needs to be reassessed. The parish register evidence alone is not conclusive, but it provides strong grounds for thinking that further local and regional studies would be especially valuable.

ILLEGITIMACY

Parish registers distinguish baptisms of legitimate and illegitimate children so they permit a study of illegitimacy. The usual measure of illegitimacy is the illegitimacy ratio, the proportion of all baptisms that were of illegitimate children. Once again, the population at risk is not known so it is almost impossible to measure an illegitimacy rate, the number of illegitimate baptisms per thousand single women aged from 15 to 49 years. The most comprehensive work has been undertaken by Laslett, Oosterveen and Smith (1980), who calculated a number of series of illegitimacy ratios. It is sometimes difficult to identify exactly which children were illegitimate: those described as such, and also children whose father's name was not recorded should be included, except for children of widows. Laslett did

not count foundlings as illegitimate; but in towns many foundlings were illegitimate children rather than orphans. For example, the London parish registers included very few illegitimate children but a large number of foundlings.

There were considerable variations in illegitimacy with a peak of around 3½ per cent in 1600, a trough with a ratio of about 1 per cent in the 1650s, and a further peak with a level of approximately 5½ per cent in 1810. These are probably minimum figures because of slight inconsistencies in recording, inconsistencies brought out by later comparison with civil registration figures. Laslett also showed that there were marked regional variations in levels of illegitimacy.

Once again the problem with these figures is their interpretation. The illegitimacy ratio is clearly of some importance because trends in illegitimacy can probably also reveal something about the determinants of marital fertility, moral changes, the cohesiveness of the family, and perhaps also about social disorganization and social control, for example during the 1650s when low illegitimacy levels have been associated with the growth of puritanism. Parish registers are the most important source because of their very wide coverage. Laslett himself favoured an interpretation linking high levels of illegitimacy with early marriage and high marital fertility, the opposite of the expected viewpoint, and he viewed illegitimacy as a subset of overall fertility behaviour. Laslett further argued that illegitimacy was a predominantly rural phenomena and that it was not especially common in the larger towns. Another important point made by Laslett is that there was a sub-society of people in some parishes who were especially likely to have illegitimate children and who frequently did so more than once. Bastardy tended to occur in particular families, which can be investigated more thoroughly by reconstitution methods.

MEDICAL HISTORY

Because it has been shown that the improvements in health which accompanied the nineteenth-century growth of population were not primarily due to medical factors, and that mortality rates and human health are strongly connected with the quality of the environment, and especially with nutrition, the study of medical history must be primarily concerned with sociological and economic factors other than the history of medical discoveries and clinical treatment (McKeown 1976). Mortality rates are the most satisfactory guide to health and it has already been indicated how these are best derived from parish registers for the period before the commencement of civil registration in 1837. Both analytic and reconstitution techniques are especially helpful in this respect.

A major consideration is that causes of death are not generally known and this makes it difficult to evaluate between circumstances accounting for changes in mortality levels. Environmental factors including nutrition and hygiene must be studied in other sources. The number of parish registers listing causes

of death are very few indeed, an interesting exception being St Botolph Aldgate, London at the beginning of the seventeenth century (Forbes 1971). The London bills of mortality, which were compiled from returns provided by the parish clerks, give causes of death between 1629 and 1636 and continuously from 1647 (Appleby 1975). Even where causes of death were given, the information relates to symptoms rather than to causes meaning that it is often difficult to interpret the data. For example, during London plague epidemics, the number of deaths from other causes also increased which suggests either that attempts were made to conceal plague, or that plague was mistaken for other diseases, or that other diseases increased in importance during plague epidemics. Despite these reservations, it is easier to recognize plague in parish registers because of the dramatic way the crises occurred with up to a fifth of the population dying in a particular year, and also to identify famines because of their very widespread occurrence geographically. The impact of these diseases may be assessed once they have been recognized. For example, there were major plague epidemics in London in 1563, 1603, 1625 and 1665 and less serious crises in 1593 and 1636. Overall, the proportion of the population dying declined slowly in each major epidemic but not the total number of deaths because the city was increasing rapidly in size. Plague was less severe in the wealthiest central London parishes than in the suburban parishes around the walls and it declined earliest in the central parishes and hardly at all in the suburbs. Young children and new migrants were the most susceptible people. The disappearance of plague did not lead to much reduced mortality in London as individuals who were no longer at risk to plague encountered other diseases.

The problem with parish register evidence is to identify these other diseases. The most important single cause for the fall in the mortality rate during the nineteenth century was a reduction in deaths from tuberculosis (McKeown 1976) which, after plague, was the second most important cause of death in seventeenth-century London. However, tuberculosis was an endemic disease occurring every year meaning that it is very difficult to identify from parish register entries. Much of the debate about the contribution of immunization against smallpox to a presumed fall in mortality during the eighteenth century (Razzell 1977) is inconclusive because the proportion of deaths from smallpox cannot be readily established. One method by which causes of death might be inferred is to study registers where this information is already given and then to compare the age-sex incidence, and the seasonal pattern of particular diseases with the incidence in registers where the cause of death is not given. Swedish registers enable changes in different diseases to be traced and Schofield (1979) has studied the effects of a plague epidemic in 1710-11, a dysentery epidemic in 1772 and a fever epidemic in 1808-9 on the age structure of a parish population and their distribution in families. The Swedish evidence is particularly useful because there are continuous population registers which enables the population at risk to be assessed without difficulty. Schofield found the age-incidence of plague was different from seventeenth-century English epidemics as the most susceptible

people were aged 5-19 and over 50 years, whereas in England plague mortality generally declined with increasing age. The implications of this research are important for the clues which it could provide about mortality conditions in England.

Parish register evidence can also shed light on practices of infant and child care. A few registers enable the proportion of stillbirths to be measured, for example in London. Nurse children are included in the registers of many parishes in the London area in the seventeenth century which suggests that many women were not caring for their own infants. This was one of the reasons fertility in London was so high because women who do not breast feed can conceive relatively quickly again after a previous birth (Finlay 1981a).

HISTORICAL GENETICS

Physical anthropologists and geneticists are especially interested in historical studies because the gene structure of a population at a particular point in time depends on its structure at an earlier time and on the amount of migration during the intervening period. They have encountered difficulties in obtaining sufficiently detailed nominative information at the present time which is one reason why they have studied small isolated communities and island populations where the data are adequate. In recent years, a number of scholars have turned attention to historical studies and particularly to parish registers (Harrison and Boyce 1972). They are especially interested in the geographical distances between marriage partners and in the distances between parents and their offspring. Aggregative analysis has enabled a considerable amount of information to be obtained. Dobson (1973) studied four isolated parishes in Northumberland and found a high degree of persistence of surnames and about 40 per cent of the names in the period 1780-1809 were also found in 1690-1719. Although the proportion of endogenous marriages declined during the eighteenth century, it remained high with over two-thirds of the marriages contracted between couples who both came from the same parish. He also constructed parent-offspring distances because the baptism registers gave birthplaces of parents between 1797 and 1812. Although female parents moved further than male parents, probably because of the relationship between marriage and landholding, it is clear that neighbourhood distances were small. All these measures suggest that there was a high degree of genetic continuity in the area.

Rawling (1973) used the same parish register data to study isonymy, which is defined as identity in surnames. This approach assumes that a specific surname implies descent from a common ancestor, and also that the male lines of descent through which surnames are transmitted are representative of all lines. The results could be distorted if one sex was more migratory than the other. Rawling analysed all marriages where both partners in the parish of Warkworth had the same surname and found very high levels of inbreeding, and this was associated with the high proportion of endogamous marriages. However, an increasing in-

cidence of isonymy during the eighteenth century was not consistent with widened marriage distances which suggests the method overestimates the level of inbreeding.

The study of genetics from reconstitution is not as advanced as might be thought because single parishes are reconstituted whereas geneticists are interested in flows and movements across space. Nevertheless, the discussion of migration from reconstitution demonstrates that persistence of populations can be measured in this way. Where automatic reconstitution is possible, it can be used to study a wider area and therefore to trace families across parish boundaries. Historical genetics has more than specialized interest because of the importance of gene structure in affecting disease patterns. In this sense, historical studies make an important contribution to contemporary scientific problems.

MULTI-SOURCE STUDIES

Historical studies are helpless without sources and parish registers are no exception to the dictum that all sources have their advantages and drawbacks for answering particular kinds of questions. Few projects are wholly satisfactory when using a single source, although it is clear that demographic studies are generally more plausible when based on registers alone than social studies. Indeed, much of the pioneering work in English historical demography was concerned to establish the main facts about the course of population change, a very important task as so little was known about demographic trends until very recently. As this work has proceded, it has become very apparent that population changes were very closely connected with the societies and economies of which they were clearly a part. However, it is far easier to underline the importance of the relationships between population, economy, society and environment than to establish the exact nature of these links. Population trends both caused and were influenced by the historical changes that were also occurring.

Until recently both aggregative and reconstitution studies in parish register demography have been related to wider social and economic trends by selecting parishes for special study which were typical of different areas. The classic study was Chambers's (1957) analysis of the Vale of Trent which showed how industrial villages in Nottinghamshire had much higher fertility than agricultural villages during the eighteenth century, fertility being measured by the ratio of baptisms to marriages. Reconstitution greatly improved the demographic techniques of calculating measures of fertility and mortality, but most researchers still selected parishes for special study which were typical of particular kinds of areas. For example, Levine (1977) contrasted the experience of a framework knitting parish, Shepshed, with an almost totally agrarian parish, Bottesford, whilst Finlay (1981a) examined especially wealthy and poor London parishes. The main problem with these analyses is that the population of Shepshed was not exclusively engaged in framework knitting, just as

there were some poor inhabitants living in wealthy London parishes. In order to examine the determinants of demographic changes more closely, it is helpful if the social structure of these parishes can be better defined.

Many of these problems can be overcome if all the sources can be analysed in the same way. For large areas, techniques of time-series analysis can be used to study real wages, prices, and climatic indicators in the same way as baptisms and burials and connections between the various series can be investigated by techniques of correlation and regression (Wrigley and Schofield 1981). Multi-source record linkage achieves complementary results for smaller areas because any record which gives nominative information can be linked to any other record and the same techniques used to analyse parish registers can be applied to court rolls, wills, probate inventories, poor law records, ecclesiastical court and quarter sessions records and many other sources. Examples of the important kinds of questions that can be investigated include the relationships between demographic rates and literacy, wealth recorded in inventories, or receipt of payments made by the poor law authorities. The main drawback is that reconstitution itself is very time consuming so that the addition of other sources to the analysis increases the time needed to complete a project. Macfarlane (1977) aims to link all the nominal records for two communities, Earls Colne in Essex and Kirkby Lonsdale in Cumbria. This is clearly very ambitious and it is not necessarily essential for all records to be matched. Indeed, it might be more advantageous to design record linkage projects with the aim of answering specific questions. For example, did wealthier people have higher fertility and lower mortality, and if so did shifts in the relative proportions of wealthy and poor people explain changes in the rate of population growth? This is particularly important because the same problems cannot be tackled by other methods as no single class of records usually contains sufficient information.

A second problem with multi-source record linkage is that because it is so time-consuming, there is a great tendency to analyse small, but well documented parishes. This is clearly a mistake if statistical calculations are required, and the question of representativeness is important because few other sources are as universal in their coverage as registers which should include almost all the vital events occurring in a parish population. For example, wills and probate inventories were compiled for only about a third of adult males who died so it is difficult to infer the experience of those people for whom there are no surviving probate records. A further point is that reconstitutions refer to the beginning of the life-cycle, because most children were baptized soon after couples married, whereas wills and probate inventories relate to the end of the life-cycle, sometimes many years after the last event occurring in the family. Probate records might not provide a good reflection of family circumstances rather closer to the beginning of the life-cycle if wealth increased with age.

Technical issues such as these are only of interest once multi-source studies are actually being pursued. A number of recent projects have used parish registers in conjunction with other sources to examine the relationships between population, economy, society and environment. Most of these studies are still in their early stages but they include comparative work on an Essex and a Cumbrian parish from the anthropological point of view by Macfarlane (1977), and analyses of Terling, Essex (Wrightson and Levine 1979), Stratford-upon-Avon, Warwickshire (Martin 1977), Melbourn, Cambridgeshire (Mills 1978), Sheldon, Solihull and Yardley in Warwickshire (Skipp 1978), and Cartmel, Cumbria (Finlay 1981c). Much of this work is complex involving difficulties of handling the data, but a new interpretation about the role of population in English rural society should emerge from these studies. Similar methods could also be applied in urban history as Vann (1979) has recently demonstrated.

It is evident from this analysis that the use of parish registers has brought substantial rewards in English historical demography. Parish registers are also valuable when used in other social sciences, in historical anthropology, historical geography and historical sociology. The same techniques for the study of parish registers can also be applied to other nominal records. When several local sources are used in conjunction with parish registers, understanding of the processes of economic and sociological changes is enhanced and the study of historical demography facilitated. This booklet will have served its purpose if it has shown that parish registers could be more widely used in a greater variety of projects, and if it has indicated some of the directions research into early modern and early industrializing England may take.

BIBLIOGRAPHY

Some of the more important works have been marked with an asterisk.

A.B. Appleby, Nutrition and disease: the case of London *Journal of Interdisciplinary History* 6 (1975) 1-22.

*A.B. Appleby, *Famine in Tudor and Stuart England* (Liverpool 1978).

W.P. Baker, Parish registers and illiteracy in East Yorkshire, East Yorkshire Local History Series 13 (1961).

A.L. Beier, Social problems in Elizabethan London *Journal of Interdisciplinary History* 9 (1978) 203-21.

B.M. Berry and R.S. Schofield, Age at baptism in pre-industrial England *Population Studies* 25 (1971) 453-63.

L. Bradley, *A glossary for local population studies, Local Population Studies* Supplement 1 (1978) 2nd ed.

J.D. Chambers, *The Vale of Trent 1670-1800, Economic History Review* Supplement 3 (1957).

P. Clark, Migration in England during the late seventeenth and early eighteenth centuries *Past and Present* 83 (1979) 57-90.

J.C. Cox, *The parish registers of England* (London 1910).

T. Dobson, Historical population structure in Northumberland, pp 67-81 of D.F. Roberts and E. Sunderland (Eds.), *Genetic variation in Britain* (London 1973).

M. Drake, An elementary exercise in parish register demography *Economic History Review* 2nd ser 14 (1962) 427-45.

*M. Drake, *Historical demography* (Milton Keynes 1974).

D.E.C. Eversley, A survey of population in an area of Worcestershire from 1660 to 1850 on the basis of parish registers, pp 394-419 of D.V. Glass and D.E.C. Eversley (Eds.), *Population in history* (London 1965).

D.E.C. Eversley, Exploitation of Anglican parish registers by aggregative analysis, pp 44-95 of E.A. Wrigley (Ed.), *An introduction to English historical demography* (London 1965).

R.A.P. Finlay, Distance to church and registration experience *Local Population Studies* 24 (1980) 26-40.

R.A.P. Finlay, *Population and metropolis: the demography of London, 1580-1650* (Cambridge 1981a).

R.A.P. Finlay, The early modern city: further comments *Past and Present* (1981b).

R.A.P. Finlay, Differential child mortality in pre-industrial England: the example of Cartmel, Cumbria, 1600-1750, *Annales de Démographie Historique* (1981c).

M.W. Flinn, The stabilization of mortality in pre-industrial western Europe *Journal of European Economic History* 3 (1974) 285-318.

T.R. Forbes, *Chronicle from Aldgate: life and death in Shakespeare's London* (New Haven 1971).

D.B. Grigg, *Population growth and agrarian change: an historical perspective* (Cambridge 1980).

P.E.H. Hair, Bridal pregnancy in rural England in earlier centuries *Population Studies* 20 (1966) 233-43.

P.E.H. Hair, Bridal pregnancy in earlier rural England further examined *Population Studies* 24 (1970) 59-70.

G.A. Harrison and A.J. Boyce, Migration, exchange, and the genetic structure of populations, pp 128-45 of G.A. Harrison and A.J. Boyce (Eds.), *The structure of human populations* (Oxford 1972).

B.A. Holderness, Personal mobility in some rural parishes of Yorkshire, 1777-1822 *Yorkshire Archaeological Journal* 42 (1970) 444-54.

M.F. and T.H. Hollingsworth, Plague mortality rates by age and sex in the parish of St. Botolph's without Bishopsgate, London, 1603 *Population Studies* 25 (1971) 131-46.

J.T. Krause, The changing adequacy of English registration, 1690-1837, pp 379-93 of D.V. Glass and D.E.C. Eversley (Eds.), *Population in history* (London 1965).

J.T. Krause, Some aspects of population change, 1690-1790, pp 187-205 of E.L. Jones and G.E. Mingay (Eds.), *Land, labour and population in the industrial revolution* (London 1969).

J. Langton, *Geographical change and industrial revolution: coalmining in South West Lancashire, 1500-1799* (Cambridge 1979).

*J. Langton and P. Laxton, Parish registers and urban structure: the example of late-eighteenth century Liverpool *Urban History Yearbook* (1978) 74-84.

P. Laslett, K. Oosterveen and R.M. Smith (Eds.) *Bastardy and its comparative history* (London 1980).

R.D. Lee, Estimating series of vital rates and age structures from baptisms and burials: a new technique with applications to pre-industrial England *Population Studies* 28 (1974) 495-512.

*D. Levine, *Family formation in an age of nascent capitalism* (New York 1977).

D. Levine, Education and family life in early industrial England *Journal of Family History* 4 (1979) 368-80.

M. Livi Bacci, Can anything be said about demographic trends when only aggregate vital statistics are available?, pp 311-36 of R.D. Lee (Ed.), *Population patterns in the past* (New York 1977).

A. Macfarlane, *Reconstructing historical communities* (Cambridge 1977).

T. McKeown, *The role of medicine: dream, mirage or nemesis?* (London 1976).

B. Maltby, Parish registers and the problem of mobility *Local Population Studies* 6 (1971) 32-42.

J.M. Martin, Marriage and economic stress in the Feldon of Warwickshire *Population Studies* 31 (1977) 519-35.

D.R. Mills, The residential propinquity of kin in a Cambridgeshire village, 1841 *Journal of Historical Geography* 4 (1978) 265-76

Original parish registers in record offices and libraries, Local Population Studies Supplements (1974-)

D.M. Palliser, Dearth and disease in Staffordshire, pp 54-75 of C.W. Chalklin and M.A. Havinden (Eds.), *Rural change and urban growth 1500-1800* (London 1974).

J. Patten, Urban occupations in pre-industrial England *Transactions of the Institute of British Geographers* NS 2 (1977) 296-313.

A. Perrenoud, Les méchanismes de recuperation d'une population frappée par la peste: l'épidémie de 1636-1640 à Genève *Revue d'histoire suisse* 28 (1978) 265-88.

M.F. Pickles, Mid-Wharfedale 1721-1812: economic and demographic change in a Pennine dale *Local Population Studies* 16 (1976) 12-44.

C.P. Rawling, A study of isonymy, pp 84-93 of D.F. Roberts and E. Sunderland (Eds.), *Genetic variation in Britain* (London 1973).

P. Razzell, *The conquest of smallpox* (Firle, Sussex 1977).

C.D. Rogers, The Lancashire population crisis of 1623 (Manchester 1975).

*R.S. Schofield, Dimensions of illiteracy, 1750-1850 *Explorations in Economic History* 10 (1973) 437-54.

*R.S. Schofield, An anatomy of an epidemic: Colyton, November 1645 to November 1646, pp 95-126 of *The plague reconsidered, Local Population Studies* Supplement (1977).

R.S. Schofield, Microdemography and epidemic mortality: two case studies, pp 53-69 of J. Sundin and E. Söderlund (Eds.), *Time, space and man: essays on microdemography* (Stockholm 1979).

B.R. Shearer, The computer file index (CFI) of the Genealogical Society of Utah *Local Population Studies* 22 (1979) 51-2.

V.H.T. Skipp, *Crisis and development: an ecological case study of the Forest of Arden 1570-1674* (Cambridge 1978).

P. Slack, The local incidence of epidemic disease: the case of Bristol 1540-1650, pp 49-62 of *The plague reconsidered, Local Population Studies* Supplement (1977).

P. Slack, Mortality crises and epidemic disease in England 1485-1610, pp 9-59 of C. Webster (Ed.), *Health, medicine and mortality in the sixteenth century* (Cambridge 1979).

*R.M. Smith, Population and its geography in England 1500-1730, pp 199-237 of R.A. Dodgshon and R.A. Butlin (Eds.), *An historical geography of England and Wales* (London 1978).

S. Sogner, Aspects of the demographic situation in 17 parishes in Shropshire 1711-60 *Population Studies* 17 (1963) 126-46.

*D. Souden (forthcoming) Movers and stayers in family reconstitution populations, 1600-1780, in M. Kitch (Ed.), *Migration in pre-industrial England* (London).

*D.J. Steel, *National index of parish registers* (London 1968-).

D. Tabutin, La surmortalité féminine en Europe avant 1940 *Population* 33 (1978) 121-48.

W.E. Tate, *The parish chest* (3rd ed, Cambridge 1969).

N. Tyacke, Popular puritan mentality in late Elizabethan England, pp 77-92 of P. Clark, A.G.R. Smith and N. Tyacke (Eds.), *The English Commonwealth 1547-1640* (Leicester 1979).

R.T. Vann, Wills and the family in an English town: Banbury, 1550-1800 *Journal of Family History* 4 (1979) 346-67.

R. Wall, The age at leaving home *Journal of Family History* 3 (1978) 181-202.

*K. Wrightson and D. Levine, *Poverty and piety in an English village: Terling, 1525-1700* (New York 1979).

E.A. Wrigley, Family limitation in pre-industrial England *Economic History Review* 2nd ser 19 (1966a) 82-109.

*E.A. Wrigley (Ed.), *An introduction to English historical demography* (London 1966b).

E.A. Wrigley, Family reconstitution, pp 96-159 of E.A. Wrigley (Ed.), *An introduction to English history demography* (London 1966c).

*E.A. Wrigley, *Population and history* (London 1969).

E.A. Wrigley, Mortality in pre-industrial England: the example of Colyton, Devon, over three centuries, pp 243-73 of D.V. Glass and R. Revelle (Eds.), *Population and social change* (London 1972).

E.A. Wrigley, Baptism coverage in early nineteenth-century England: the Colyton area *Population Studies* 29 1975 299-316.

E.A. Wrigley, Checking Rickman *Local Population Studies* 17 (1976) 9-15.

*E.A. Wrigley, Births and baptisms: the use of Anglican baptism registers as a source of information about the numbers of births in England before the beginning of civil registration *Population Studies* 31 (1977a) 281-312.

E.A. Wrigley, The changing occupational structure of Colyton over two centuries *Local Population Studies* 18 (1977b) 9-21.

E.A. Wrigley, Marital fertility in seventeenth-century Colyton: a note *Economic History Review* 2nd ser 31 (1978) 429-36.

E.A. Wrigley and R.S. Schofield, *The population history of England 1541-1871: a reconstruction* (London 1981).

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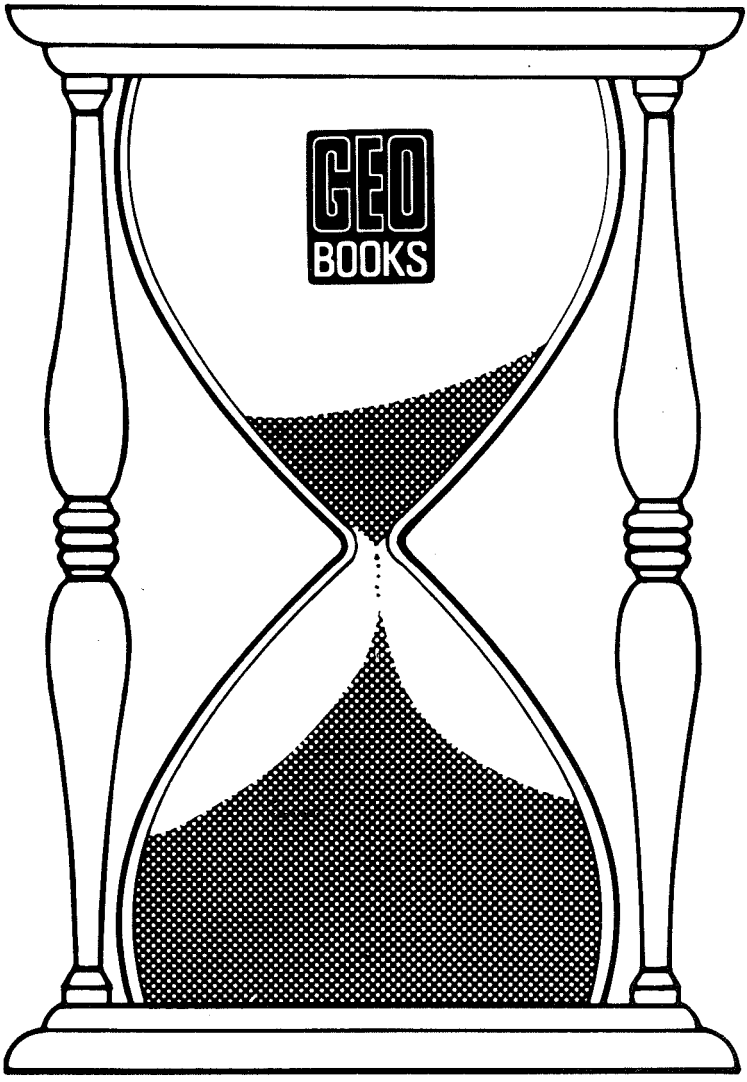

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