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Mortality in the Fifteenth Century: Some New Evidence[1]

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For decades medieval historians have placed population at the centre of their concerns, but it is only in recent years that their studies have begun to constitute a respectable branch of historical demography. From the scrutiny of oblique records which provide indications of such matters as settlement, the size of landholdings, land values, prices and wages, attention has increasingly turned towards sources which may be capable of throwing a more direct light on mortality, fertility and nuptiality. The ultimate benefits of such a shift of emphasis promise to be substantial. For although we are becoming ever more confident about the general direction and scale of movements in England's population between the eleventh and sixteenth centuries, we know relatively little about how and why it behaved as it did. So uncertain is our grasp of the mechanics of population change in the middle ages that a detailed explanation of the causes of the long rise in numbers before 1300, and of the demographic mechanisms whereby it was accomplished, has scarcely ever been attempted, and the relative importance of mortality and fertility in the decline of late medieval population seems set to remain a contentious matter for some time to come.[2] Yet the prodigious advances which have been achieved in the demography of later periods, most recently and notably with the publication by E. A. Wrigley and R. S. Schofield of *The Population History of England, 1541-1871*, offer inspiration.[3] For they not only provide us with renewed incentive to tackle these medieval enigmas, they appear to offer some of the technical equipment with which the task might successfully be accomplished.

A further important shift is taking place: away from the records of the rich to those of the masses. Analyses of the succession records of tenants-in-chief of the crown (inquisitions *post mortem*), which dominated early attempts to

[1] The author is grateful to Paul Atkinson and Andrew Butcher for assistance with the collection of some of the data upon which this article is based. Much expert assistance with computing and statistics was generously given by Ros Davies and Jim Oeppen of the ESRC Cambridge Group for the History of Population and Social Structure, and E. A. Wrigley read two drafts of this paper and made a number of valuable comments. In the early stages of the project, back in 1974, advice given by T. H. Hollingsworth proved of great benefit.

[2] See, for example, the arguments in favour of placing greater weight on fertility put forward by R. M. Smith, in 'Some Reflections on the Evidence of the Origins of the 'European Marriage Pattern' in England', in C. Harris (ed.), *The Sociology of the Family* (1980), pp. 74-112; and 'Hypothèses sur la nuptialité en Angleterre aux XIII[e]-XIV[e] siècles', *Annales: Economies, Sociétés, Civilisations*, 38 (1983), pp. 107-36. See also the comments by E. Moodie in *Social History*, 8 (1983), pp. 159-68.

[3] E. A. Wrigley and R. S. Schofield, *The Population History of England, 1541-1871: A Reconstruction* (1981).

write the population history of the middle ages,[4] have now been supplemented by, and are indeed in danger of being overwhelmed by, analyses of manorial court rolls.[5] Increasing attention is also being paid to wills.[6] The substantial investment of resources in the systematic scrutiny of court rolls is perhaps justified by the sheer value of the information which they may be persuaded to disgorge. Yet we must beware lest enthusiasm blunts the edge of discrimination. It is all too easy when armed with sophisticated techniques and fired by the achievements of historians of later centuries, to push into the background the limitations of the sources upon which medievalists sadly have to rely. The deficiencies of parish registers are well enough known and debated, but the conversion of baptism, burial and marriage entries into actual births, deaths and marriages may turn out to be but a simple matter when compared with the problems posed by court roll surrogates for vital events. The conversion of merchets into marriage rates, heriots into death rates, leyrwite fines into bastardy rates, frankpledge payments into total populations, and the derivation of replacement rates or ratios from inheritance proceedings, pose difficulties which are not only different from those encountered by early modern demographers, they are of an altogether greater order of magnitude. Merchets, heriots and leyrwites were both marks of unfreedom and financial burdens, and we should not be surprised that those liable to them often took steps to avoid detection and payment. We must never forget that manorial courts were not neutral registration and arbitration bodies but seigneurial tribunals whose coverage and efficiency was not merely a matter of managerial competence,

[4] Most notably the extensive use made of IPMs, in J. C. Russell, *British Medieval Population* (Albuquerque, 1948). T. H. Hollingsworth used Russell's data in his calculation of replacement rates in medieval England, *Historical Demography* (1969), pp. 375-88. For a rare recent demographic study based on IPMs see A. E. Nash, 'The Mortality Pattern of the Wiltshire Lords of the Manor, 1242-1377', *Southern History*, 2 (1980), pp. 31-43. J. T. Rosenthal, 'Medieval Longevity: The Secular Peerage, 1350-1500', *Population Studies*, XXVII (1973), pp. 287-93, is based upon the data contained in *The Complete Peerage*.

[5] A revival in the detailed, systematic use of manorial court rolls was begun by J. A. Raftis, and together with his colleagues at the Pontifical Institute of Medieval Studies in Toronto he has been responsible for a succession of publications, many of which deal in part with population or demographic matters; see, for example, J. A. Raftis, *Tenure and Mobility: Studies in the Social History of the Medieval English Village* (Toronto, 1964), and *Warboys: Two Hundred Years in the Life of an English Medieval Village* (Toronto, 1974); E. B. Dewindt, *Land and People in Holywell-cum-Needingworth* (Toronto, 1972); E. Britton, *The Community of the Vill: A Study in the History of the Family and Village Life in Fourteenth-century England* (Toronto, 1977). Different methodologies were employed by S. Thrupp in her pioneering article 'The Problem of Replacement Rates in Late Medieval English Population', *Economic History Review*, 2nd ser. XVIII (1965); pp. 101-19; by Z. Razi in his analyses of Halesowen court rolls: *Life, Marriage and Death in a Medieval Parish: Economy, Society and Demography in Halesowen, 1270-1400* (Cambridge, 1980); and 'Family, Land and the Village Community in Later Medieval England', *Past and Present*, 93 (1981), pp. 3-36; and by R. M. Smith in his unpublished Cambridge Ph.D. thesis 'English Peasant Life-cycles and Socio-economic Networks' (1974). The Economic and Social Research Council has supported court roll analysis projects at the Cambridge Group for the History of Population and Social Structure, under the direction of R. M. Smith, and at the University of Birmingham, under the direction of R. H. Hilton. The increasing popularity of court roll studies has been amply reflected in the topics chosen for postgraduate theses.

[6] The use of wills for the calculation of replacement rates was pioneered by S. Thrupp using the wills of London merchants (*The Merchant Class of Medieval London* (1948), pp. 199-200). Her pupil, R. S. Gottfried, has used large aggregations of probate documents to derive a wide range of demographic information; see, in particular, *Epidemic Disease in Fifteenth-Century England: The Medical Response and the Demographic Consequences* (Leicester, 1978) and *Bury St Edmunds and the Urban Crisis, 1290-1539* (Princeton, 1982). See also M. A. Faraday, 'Mortality in the Diocese of Hereford, 1445-1541', *Trans. of the Woolhope Naturalists' Field Club*, XLII (1977), pt. II, pp. 163-74; and R. Blenkarn, 'Mortality in the Diocese of York, 1430 to 1539' (unpublished M.A. thesis, Teesside Polytechnic, 1983).

but of the changing balance of power between landlords and their customary tenants.

In spite of some heroic feats of effort and ingenuity we are still very far from producing data on peasant birth rates and marriage patterns which will bear the weight of firm conclusions. Adequate replacement rates or ratios have yet to be extracted from records of successions to manorial landholdings. The inefficiencies of manor courts, with their imperfect knowledge of non-resident kin, frequently combined with a lack of either the will or the resources to track them down systematically, led inevitably to the substantial but indeterminate under-recording of children. The declining attractions of unfree landholdings in the later middle ages, which encouraged many heirs to take steps to avoid having to occupy family lands, further exacerbated the inherent weaknesses in the system. Wills provide no direct information on births or the age of progeny, and attempts to calculate the replacement rate per generation from children mentioned by testators face severe and usually unquantifiable problems of under-enumeration. For numerous reasons not all sons would be included in their fathers' wills, and there was a massive under-recording of daughters. We must also remember that even were we able to calculate adequate replacement rates, they would be at some remove from birth rates. Indeed replacement rates may tell us as much, perhaps even more, about mortality than they tell us about fertility.

Progress is no easier when it comes to using court rolls to throw light on peasant marriage patterns. Recent work on marriage fines has shown a wide diversity of practice between manors and over time, and strong indications that they were commonly levied from only a fraction of those who were liable to pay them. Often it appears that whereas lords took cognizance of all or most of the marriages of the daughters of wealthy villeins, very few of the marriages of poorer families were fined. Not enough systematic work has been done in this area, but it is possible that very few, if any, manors can be made to yield data sufficiently robust to allow the charting of marriage patterns over lengthy periods of time.[7] Attempts to use the rare nominative listings of the 1377 poll tax returns to calculate the proportions of the population who were married, also confront formidable problems. At their face value the poll tax listings point clearly to a non-European marriage pattern, with a low age at marriage and a high proportion marrying. But because of the possibility that evasion was not randomly distributed throughout the taxable population, we cannot necessarily accept that this was so. Indeed, if we postulate that evasion was especially high among unmarried labourers and servants, and that all or almost all male heads of household were counted, then the very same data can be made to reveal not a non-European but a European marriage pattern, with a late age at marriage and a high proportion of single persons.[8] Inevitably

[7] See, for example, the reservations and disparate experiences recently reported in Razi, *Life, Marriage and Death*, pp. 45-50; C. Dyer, *Lords and Peasants in a Changing Society: The Estates of the Bishopric of Worcester, 680-1540* (Cambridge, 1980), p. 274; L. R. Poos, 'Population and Resources in Two Fourteenth-century Essex Communities: Great Waltham and High Easter, 1327-1389' (unpublished Cambridge Ph.D. thesis, 1984), pp. 159-84; R. H. Hilton, 'Demographic, Social and Economic History from Manorial Court Rolls', ESRC End of Grant Report, HR3716, pp. 18, 20.

[8] See J. Hajnal, 'European Marriage Patterns in Perspective', in D. V. Glass and D. E. C. Eversley eds. *Population in History* (1965), pp. 101-43, and the criticisms made by R. M. Smith in works cited in n. 1.

such manipulation cannot carry conviction until additional support is forthcoming, despite any temptation which we might feel to draw parallels from early modern England and thereby demonstrate a considerable constancy in marriage patterns over time.

Ideally one would wish to calculate death rates from the incidence of heriots continuously and fully recorded over lengthy periods. The numbers of tenants liable for heriot would be known, thus providing a precise population at risk. We would also wish to know the ages at which tenants entered their tenancies, and what proportions paid heriots on retirement rather than death. More important still when dealing with the later middle ages, we would wish to be assured that heriots were always assiduously collected, and that tenants did not negotiate new conditions of tenure which excluded the liability to render them. Reality is, however, quite another matter. Even for those rare manors with excellent sets of court rolls, one is usually faced with some gaps in the record series, with only distant rentals upon which to base estimates of the population at risk, with merely indirect and often extremely vague indications of the ages of tenants and the incidence of retirements, and with a less than perfect knowledge of changes in conditions of tenure. Thus what begins as a prospective long-run series of peasant death rates, can swiftly degenerate into little more than indications of fluctuations in levels of mortality.

Indications of fluctuations in mortality are also available from aggregations of testamentary documents. Abundant collections of wills and other probate documents exist for many parts of England, and when fully analysed they will provide invaluable indications of short-term regional mortality patterns. In the longer term, however, the proportions of the population which made wills may have changed significantly. The extremely rapid growth in the numbers of wills proved in the years after 1450 in the Commissary Court of Canterbury, the Archdeaconry Court of Canterbury and the Archdeaconry Court of Rochester, for example, renders the separation of real mortality trends from administrative changes and the increasing popularity of will-making among the population a formidable exercise.[9] Moreover, far from being truly representative of the population at large, testators contained disproportionate numbers of the better-off, the elderly and the male. It will never be possible to derive death rates from wills.

I

It is into this context of sparse and intractable data, hard to win and treacherous to interpret, that we must place our findings from the Benedictine priory of Christ Church, Canterbury. A small and unrepresentative sample population the Canterbury monks may have been, but we can reveal their mortality experience throughout the mysterious fifteenth century with an extraordinary combination of accuracy and detail. It is unlikely that many series of comparable quality will ever emerge.[10]

[9] Information from Canterbury and Rochester kindly supplied to the author by Dr P. Glennie.

[10] A number of previous attempts have been made to extract demographic evidence from the Christ Church obituary lists, but all have been incidental or partial investigations. See, in particular, *Royal Commission on Historical Manuscripts*, ninth report, pt. I (1883), p. 127 (also quoted in C. Creighton, *A History of Epidemics in Britain*, I (1894), p. 226); Russell, *British Medieval Population*, pp. 189-92; J. M. W. Bean, 'Plague, Population and Economic Decline in England in the Later Middle Ages', *Econ. Hist. Rev.* 2nd ser. XV (1963), pp. 430, 432-3. For some preliminary comments see J. Hatcher, *Plague, Population and the English Economy, 1348-1530* (1977), pp. 17-18, 29-30.

A remarkable collection of complementary documents provides us with the names of all the brethren of the monastery from January 1395 until May 1505, together with the dates when they were admitted to the fraternity and the dates of their subsequent death or departure.[11] The size of the community normally fluctuated between 75 and 95, and during the 110 years of our study a total of 414 monks come under observation. The greater part of our data is derived from profession and obituary lists. There are two mutually consistent though not identical profession lists, which record the entry of new recruits: one which runs from the exile of the monks on 15 July 1207 to the dissolution of the priory in 1540, and the other from 1207 to 1527.[12] There are three separate documents which systematically record deaths and departures. That covering the longest period, 1286 to 1507, is ascribed to Thomas Cawston who was a monk in the priory from 1454 until his death in 1504. It is bound in the same volume at Canterbury Cathedral as the longest profession list, a volume which has become known as Cawston's *Historia Duplex*.[13] This obituary list is supplemented and amplified by two chronicles: that of John Stone, which notes events of importance to the priory, including the deaths of brethren, between 1415 and early 1472,[14] and the brief chronicle of William Glastynbury, to which is appended a short stark list of monks who died or departed, either of their own volition or by expulsion, between 1415 and 1449.[15]

Whereas the profession lists seem reasonably comprehensive in the recording of names and dates from the later thirteenth century onwards, and can scarcely be faulted from the later fourteenth century, the obituary lists pose a number of serious though surmountable problems. There is a gap of thirty-four years in Cawston's obituary list after the recording of the deaths of 25 monks from plague between 9 June and 4 October 1361. Thus it is not possible to commence our study before the sudden death of John Ipswich on 6 January 1395. From this death onwards, until that of William Tong who died on 28 May 1505, we have a complete record of every monk, except one, who died while a member of the fraternity. The majority of deaths are noted in a full and exemplary manner, including the precise time of death, details of funeral

[11] Space does not permit a detailed description of the diplomatic and palaeographic characteristics of the documents used in this study, nor of all the processes whereby a virtually continuous list of dated admissions, deaths and departures was obtained. Further information on these matters can be obtained from the author.

[12] Canterbury Cathedral Library, MS D.12; Corpus Christi College, Cambridge, MS 298. The last professions were made in 1534 when eight novices were admitted. A composite list compiled from these two documents has been edited by W. G. Searle, (*Christ Church, Canterbury: 1. The Chronicle of John Stone. 2. List of the Deans, Priors and Monks*, Cambridge Antiquarian Society Publications, xxxiv, 1902, pp. 172-96). These documents contain a great deal of useful biographical information on entrants in addition to names and dates of profession, including notes on the previous careers of late entrants and on the destinations of those monks who subsequently departed the priory.

[13] The obituary section of Canterbury Cathedral Library, MS D.12 begins on f. 15b. From September 1485 there are two lists of deaths, similar though not identical in content, and written in different hands; one runs from f. 27b to f. 31a, the other from f. 31b to f. 36b.

[14] Corpus Christi College, Cambridge, MS 417. This chronicle has also been edited by Searle, *Christ Church Canterbury*, pp. 1-152.

[15] Corpus Christi College, Oxford, MS 256. I thank Barbara Harvey for drawing my attention to this document. The chronicle itself, without the lists of monks, has been edited by C. E. Woodruff, 'The Chronicle of William Glastynbury, Monk of the Priory of Christ Church Canterbury, 1418-48', *Archaeologia Cantiana*, xxxvii (1925), pp. 121-51.

rites, and short obituaries which draw attention to the careers, special talents and personal qualities of the deceased. For two periods, however, we have bare lists of names: 13 names covering the years from 1472 to 1481 and 16 names covering those from 1491 to 1496. These names are not dated and they cannot be accurately dated from other sources. Correlation with John Stone's chronicle reveals, however, that undated deaths in Cawston's list are normally in chronological sequence, and it was decided to space these deaths at equal time intervals within the gaps. In addition a total of 25 monks are recorded as having departed from the priory between 6 January 1395 and 28 May 1505. For 17 of these migrants we can obtain the year of departure.[16] Fortunately we know from William Glastynbury's chronicle that 6 of the remaining 8 left Christ Church between 1415 and 1449; it is also evident that Glastynbury's lists of deaths and departures are broadly chronological. Moreover, we can use the dated departures of the 25 migrants from Christ Church to help us towards a more precise estimate of the stages in their careers when the remaining 8 might have left the community.

Having identified all monks who were recorded as having died in the priory, or departed from it before death, the next task was to find a corresponding notice of the admission of these monks in the profession lists. In this way the accuracy of the profession lists was checked. In order to test the comprehensiveness of the obituary lists and the recording of emigrants each notice of an admission was matched against a corresponding death or departure entry. Such cross-checking and matching of the profession and obituary lists was extremely reassuring. The dates of profession of all the monks alive at the beginning of 1395 whose deaths are subsequently recorded, can be found. Thereafter only one person, John Drewle, is recorded as having died a monk without an earlier notice of his profession; and only one person, Edmund Kyngston, was professed a monk but left no record of death or departure in our sources.[17] John Drewle is extremely easy to deal with, for his obituary notice in 1457 tells us that he had been a monk for three years. Edmund Kyngston poses a more difficult, though of course statistically insignificant, problem. It has been necessary to allocate to him the median survival time of monks in the priory, 33·51 years from the date of profession.

In addition to these basic sources the rich Canterbury archives contain a wide range of supplementary records which add precision and amplification to many obituary and profession entries, and extend and deepen our study in other directions.[18] For example, occasional lists of the names of monks

[16] Often these dates are given in the notes appended to the profession lists. Sometimes we are told that a brother was appointed head of another house, and it has been possible to date his departure from the records of that house. For example, from the list of priors of Dover Priory given in C. R. Haines, *Dover Priory: A History of the Priory of St Mary the Virgin, and St Martin of the New Work* (Cambridge, 1930), we are able to date the departures of John Wotton and John Combe from Christ Church to 1416 and 1435 respectively.

[17] The death of Percival Wysden (professed in 1454) is not recorded in the obituary list. The explanation is that he committed suicide, for a note against his name in the profession list tells us that he drowned himself in 1502 (*submersit se in fonte novo ortus conventus*). I can find no substance in the brief but highly critical comments on the reliability of the Christ Church obituary lists made by Gottfried, *Epidemic Disease*, p. 46.

[18] Among the most informative for our purposes are the accounts of the chamberlain, treasurer and prior held in the Dean and Chapter Library at Canterbury Cathedral. Sadly, no infirmarers' rolls have survived. Also of importance are the collections of Christ Church correspondence: W. Stubbs, ed. *Epistolae Cantuarienses* (Rolls Series, 1865); J. B. Sheppard, ed. *Christ Church Letters. A Volume of Medieval Letters relating to the Affairs of the Priory of Christ Church Canterbury* (Camden Society, new series, xix, 1877);

survive, which enable us to conduct spot checks on the accuracy and comprehensiveness of our reconstructed data.[19] The fit between these lists and those monks deemed by our data to be alive and still members of the priory appears to be perfect. More frequent, but somewhat less informative, are records which provide us with the numbers of monks resident in Canterbury. For the most part they arise from the purchase of cloth and shoes by the chamberlain, and are contained in his accounts.[20] Such totals must be regarded as minima, for they exclude non-residents and certain priory office-holders, but with these adjustments they accord well with the total membership of the fraternity derived from our reconstructed data.

Thus we know that a total of 414 monks were members of the priory between January 1395 and May 1505. The year of admission of every one of these monks is known, and the precise date of the profession ceremony is known for 383 (92·5 per cent). The precise date of death is known for 251 monks (60·6 per cent), and the year of death for 275 monks (66·4 per cent); a further 84 monks (20·3 per cent) are known to have been alive when records ceased to be comprehensive in the early summer of 1505. Of the remaining 55 monks, 25 departed permanently from the fraternity, and for 17 (4·1 per cent) of these we have the year in which they left. Thus for 100 per cent of monks we have precise dates of admission, and for 90·8 per cent of them we have an accurate date of termination.[21] We are therefore left with 30 monks whose dates of death have to be estimated, and eight monks whose dates of departure have to be estimated. Fortunately, as we have noted above, in only a handful of cases can our estimates possibly be more than a few years out.

II

Having made these few small, and for the most part insignificant, adjustments and allowances, it is a relatively simple task to produce a broad range of measures and representations of the mortality of this Benedictine community. The simplest of all is the annual total of deaths. Given that the population at risk is continuously monitored, the production of an accurate crude death rate is also straightforward. Figure 1 presents the crude death rate in annual form and as a nine-year moving average. The precision with which dates of death are recorded also enables the seasonal pattern of death to be accurately represented in Table 1.

J. B. Sheppard, ed. *Literae Cantuarienses. The Letter Books of the Monastery of Christ Church Canterbury*, 3 vols. (Rolls Series, 1887-9); R. A. L. Smith, *Canterbury Cathedral Priory: A Study in Monastic Administration* (Cambridge, 1943); C. E. Woodruff and W. Danks, *Memorials of Canterbury Cathedral* (1912), and M. N. Carlin, 'Christ Church, Canterbury, and its Lands, from the Beginning of the Priorate of Thomas Chillenden to the Dissolution, 1391-1540' (unpublished Oxford University B.Litt. thesis, 1970) are also of considerable value.

[19] In particular Canterbury Cathedral Library Register N, ff. 230-5 (1465); MS D.E. 74 (*c.* 1484); MS D.E. 27 (*c.* 1504). There is also a useful visitation, giving names and location of monks, dating from 1511 (M. Bateson, 'Archbishop Warham's Visitation of Monasteries, 1511', *English Historical Review*, 1891), VI, pp. 18-36.

[20] See, for example, Canterbury Cathedral Library, Chamberlains' Accounts nos. 56, 57, 58, 59, 62, 64, 71. References also appear in the Priors' Accounts, e.g. MS M.I. 3, xvii, m. 10. See also Carlin, 'Christ Church, Canterbury', p. 10.

[21] Those cases of profession or death where the year but not the month is given have been allocated to 30 June. Such deaths have, of course, not been included in calculations of seasonality of death.

Figure 1. *Mortality at Christ Church Priory*

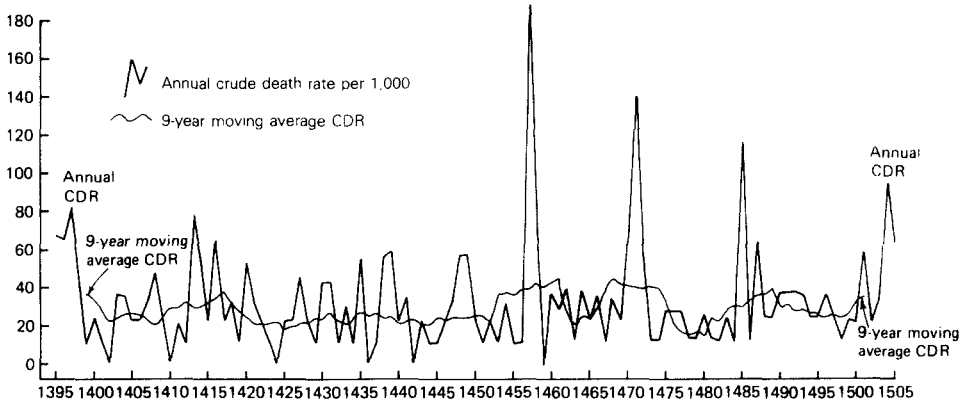


Table 1. *Seasonal Pattern of Mortality in Christ Church Priory*
(expressed as an index of expected mortality)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Before 1450	94	132	77	62	94	97	60	111	119	159	97	119
After 1450	73	92	125	65	52	65	177	271	151*	83*	43	63
Number of deaths	18	22	21	13	16	15	24	33	28*	26*	15	20

This table is based upon precise dates of death only.

* Excluding 9 deaths from sweating sickness which occurred in the late summer or early autumn of 1485, probably in late September or early October. If they were included in September the index would rise to 247; if they were included in October the index would rise to 177.

Informative as these data are they would become far more so if we could put ages to them. As we know precisely the number of years which each monk spent in the priory, the age at entry is the key. Fortunately we have evidence of what the age at profession of some monks actually was, and sound indications of what the typical age range of new recruits was likely to have been. In the obituary book between 1486 and 1507 we are frequently given an age of death as well as a statement of the number of years the deceased had been a monk. The profession lists, of course, give us the date of admission. Regrettably, but understandably, not all ages or lengths of careers are correctly given in this section; for 22 monks, however, we have three mutually consistent figures, and the mean age of profession of these monks is 16·8 years. Moreover, there was great consistency in the ages at which these monks were professed: all were between 15 and 21 years. This reflects even greater consistency on the part of the monastic authorities, since boys were admitted not individually but in groups, usually of four to eight recruits, at intervals of two to four years.

According to the researches of monastic historians these recruitment practices were in broad alignment with those of most large foundations. Prof. Knowles concluded that "the vast majority entered as boys between 18 and 20", although he added in a cautionary footnote that "Clothing at 15 was common in the fifteenth century". Knowles also judged that monastic life in the later middle ages attracted "few late entrants".[22] Prof. Dobson's researches

[22] D. Knowles, *The Religious Orders in England*, II (Cambridge, 1955), pp. 230-1.

in the rich Durham Cathedral Priory archives has led him to conclude that it is probable that "the great majority of Durham monks . . . made their profession in the late teens or early twenties", and that by the fifteenth century there was scant trace of elderly recruits from lay life, or of members of other monasteries being transferred to Durham".[23] Fortunately it is possible to write with confidence about late entrants to the Christ Church community, for their previous careers seem invariably to have been noted in the profession lists or in their obituaries, and usually in both. There were 11 senior recruits in our period, comprising 2·7 per cent of total entrants: 10 were transferred to Canterbury from other Benedictine foundations in Dover, St Albans, Bermondsey, Westminster and Lesnes, and one alone, John Kyngton, formerly protonotary of Henry IV and chancellor of Queen Joan, was a lay clerk seeking a pleasant retirement home. We have estimated the age at which these migrants entered Christ Church from other ecclesiastical foundations using as a guide the ages at which Christ Church monks themselves left to join other monasteries.

We have estimated the age at profession for all novices at 18 years. This is slightly higher than the late fifteenth-century mean, for this was a period of especially high mortality at Christ Church when the age of new recruits may have fallen somewhat. The setting of a precise age at profession was necessary for the ease of programming the data, but in practice the age categories used in the tables and graphs may be interpreted flexibly. At all events we can be certain that the mean age of entrants throughout the period 1395 to 1505 lay between 16 and 20 years, and we can be confident that it fluctuated relatively little and tended to lie towards the mid-point of this range. This sets narrow bounds to any possible error which might result from attributing to each recruit an age at entry.

It is important to discover at the outset the extent, if any, to which the fluctuations in mortality represented in our various tables and figures were due to changes in the age structure of the population at risk, rather than to real changes in mortality levels. In fact the mean age of monks over the whole period fluctuated within relatively narrow limits, and in the greater part of the period it lay between 36 and 40 years. This suggests only a slight impact. But, since the mean age tended to drop in times of high mortality, as more young recruits were taken in to maintain numbers, a modest restraining influence could be exerted upon climbing death rates.

The ascribing of ages to entrants enables us to construct life tables, and in Table 2 this has been done both for the whole monastic population from 1395 to 1505, including those monks who were already members of the priory when our study begins and those who were still alive when records cease (column 1), and for a series of overlapping cohorts constructed at 10-year intervals using the monks who were professed in the succeeding 25 years (columns 2-9). It can be seen in Table 2 that there were around 70 monks or more in each of these cohorts. Finally this table also provides us with expectations of life at 20 and 25 years of age.

III

If we set our index of crisis mortality at 40 per thousand, then Christ Church priory experienced mortality crises more than once in every four years.

[23] R. B. Dobson, *Durham Cathedral Priory, 1400-1450* (Cambridge, 1973), p. 61.

Table 2. *Life Table Death Rates of Christ Church Monks* (1000_{qx})

	Cohort admitted between:								
Age	*1395-1505* ($n = 395$)	*1395-1420* ($n = 92$)	*1405-30* ($n = 82$)	*1415-40* ($n = 70$)	*1425-50* ($n = 69$)	*1435-60* ($n = 68$)	*1445-70* ($n = 72$)	*1455-80* ($n = 68$)	*1465-90* ($n = 71$)
20	65	66	61	29	44	107	155	75	71
25	75	155	133	105	106	86	102	66	77
30	105	58	47	85	85	152	171	266	188
35	102	81	86	94	185	205	209	122	76
40	149	114	96	172	184	145	177	200	189
45	87	111	129	108	90	36	71	80	125
50	198	175	177	222	211	192	200	333	333
55	199	246	191	208	91	48	118	286	500
60	313	208	160	158	300	462	560	800	
65	430	263	333	438	429	632	667		
70	529	571	571	444	250	333	0		
75	813	667	500	600	833	1000	1000		
80+	1000	1000	1000	1000	1000				
Expectations of life:									
e_{20}	28·0	30·8	32·2	31·4	29·6	27·0	23·8	24·2	24·9
e_{25}	25·0	27·6	29·0	27·2	25·8	24·9	22·9	21·1	21·7

Column 1 is derived from the total monastic population between 1395 and 1505, including those monks who were already members of the priory in 1395. Columns 2-9 are derived from those monks who entered between the dates given at the head of each column. Because records cease in 1505 the higher age groups of the cohorts entering the priory from 1445 onwards inevitably become progressively thinner. This is reflected both in the truncated life tables and in the decreasing representativeness of the expectations of life.

Between 1395 and 1505 crude death rates rose above 40 per thousand per annum on 27 occasions: 17 times between 1395 and 1450 and 10 times between 1451 and 1505. But if death rates were high throughout the whole period, a number of distinct changes in the character and level of mortality took place. For the half centuries before and after 1450 displayed many differences as well as similarities. The basic characteristic of the first period was the frequent but, by the standards of the later middle ages, relatively moderate surges in death rates; usually resulting in peaks of between 40 and 60 per thousand. In the later period by contrast the peaks were somewhat less frequent, but distinctly more steep; mortality exceeded 60 per thousand on eight occasions and on four rose far higher still. John Stone tells us that in 1457 a severe pestilence struck Canterbury, as well as other parts of the realm.[24] Certainly it had a massive impact in the city, for 16 monks died in that year, 14 of them between 15 July and 25 September. The result was a crude death rate of 189 per thousand, the highest recorded in our period. Just fourteen years later in 1471 the second highest death rate occurred, 139 per thousand, when plague caused 11 deaths; a further fourteen years on, "the sweat" killed nine monks and pushed the death rate to 116 per thousand, its third highest recorded level. Two significant but lesser plague epidemics occurred in 1487 and 1501, before our records cease, as they began, at a time of plague and mounting mortality.

The consequences of the changed mortality profile ushered in by the epidemic of 1457 can be readily appreciated from a range of indices. As we

[24] Corpus Christi College, Cambridge, MS 417 f. 55b; Searle, *Christ Church, Canterbury*, p. 67.

can see from Figure 1 the crude death rate (9-year moving average), after falling to a nadir of under 20 per thousand in the 1420s held steady within the range of 20 or 30 per thousand during the ensuing 30 years. After 1450, by contrast, it was usually above 30 per thousand and often much higher. Moving from death-rates to expectations of life we gain a further perspective on the deterioration. Expectations of life fell consecutively from a peak of good health enjoyed by the 1405-30 entry cohort, with the e_{20} and e_{25} of the 1445-70 cohort suffering a loss of more than eight years and more than six years respectively.[25] Significantly, the seasonal distribution of mortality also shifted even more prominently into late summer and autumn peaks.[26]

The obituary notices of monks usually contain far more than a simple date of death. Many give the precise moment and place of death and details of funeral rites, and draw attention to the careers, special talents and personal qualities of the deceased. If plague was thought to have been the cause of death, then this too was frequently noted. Plague deaths were noted because special precautions were taken in the priory to prevent the disease spreading. What is more, after 1485 we are usually given details of any serious ailments from which the deceased were thought to have been suffering. The funeral rites of suspected plague victims were curtailed, and bodies were speedily interred for fear of infection.[27] Unfortunately, it is clear that not all plague victims are revealed to us, for not only were some doubtless omitted through error or ignorance, there are, as we have seen, a number of sections in the obituary lists which consist of names alone. Consequently, the one certain figure we can provide is an absolute minimum proportion of plague deaths of 16 per cent of total mortality between 1413 and 1507 (41 out of 254 deaths). But if we proceed on the balance of probabilities and disregard those monks whose deaths are noted by names alone, thereby reducing the sample population at risk, and include a small number of monks whose bodies we are told were hurriedly buried, infected with apostumes and carbuncles, but who are not definitely stated to have died from plague, the proportion rises to more than 20 per cent. If we go further and take account of all deaths from outbreaks of epidemic diseases: the three monks who died "*ex asmatica passione*" in October 1421, the three, possibly five, monks who died "*ex epidemia*", in 1435,[28] and the nine victims of sweating sickness in1485, the proportion begins to approach one in three.[29]

After 1485, in the final sections of the obituary book, we are provided with by far the most detailed and informative medical diagnoses of all. Specific references to morbidity or causes of death from such an early date are rare, which adds greatly to the interest and potential value of these sections. The priory had a large infirmary, run by a master who was a senior monk. It was staffed by laymen who worked as nurses and orderlies, including three

[25] Table 2, p. 28.

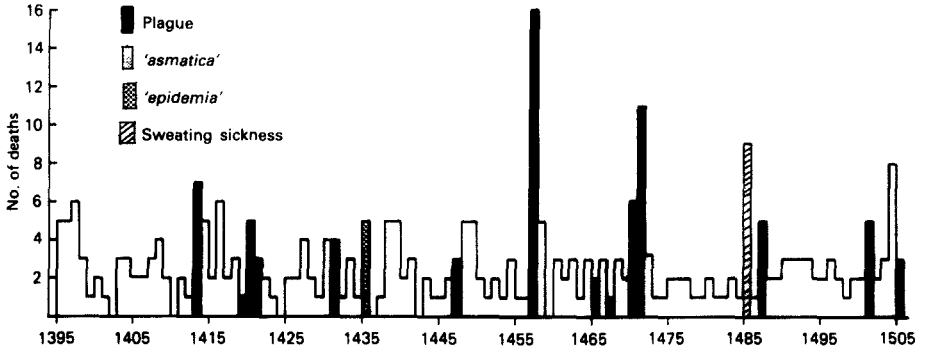
[26] Table 1, p. 26.

[27] For a discussion of previous attempts to extract plague mortality statistics from the Christ Church obituary book see Hatcher, *Plague, Population and the English Economy* (1977), pp. 17-18.

[28] Canterbury Cathedral Library MS D.12, f. 24. Unfortunately there is a short gap in John Stone's chronicle at this time, and it is not possible to learn more of the nature of this epidemic; it may well have been plague.

[29] See Fig. 2, p. 30.

Figure 2. *Epidemic Disease in Christ Church Priory*



The shaded bars indicate those years when epidemics have been identified in the priory and the number of deaths in those years. They do not represent the number of deaths resulting from the epidemic. The bar for 1505 represents the period from 1 January to 28 May only.

laundrymen and a bathman; there was a resident physician and an apothecary. If thought necessary, specialist physicians and surgeons were brought in from outside, and occasionally from as far afield as London. In addition Christ Church possessed an extensive medical library, and there was another close by at St Augustine's.[30] It is likely, therefore, that the diagnoses we are given derive from close and frequent observations; certainly, as we can see from

Table 3. *Diseases Diagnosed in Christ Church Monks Dying between 1485 and 1507*

Disease	*Number of monks with disease*	*Percentage of total monks diagnosed*
Sweating sickness	9	21
Plague	8	19
Tuberculosis	13	31
Pleurisy	2	5
Empyema	2	5
Fistula "in ano"	1	2·3
Dysentery	2	5
Dropsy	4	10
Strangury	3	7
Paralysis	1	2·3
Frenzy/Delirium	1	2·3
Fever	1	2·3
Hernia	1	2·3

All diagnoses are for one ailment per monk excepting one monk who was diagnosed as having strangury and dropsy, one as having fever and tuberculosis, and one, aged 73 years, as having a hernia, dropsy, strangury and tuberculosis.

Table 3, they are often highly specific and have few of the lax generalities that were to persist in public medical records for many centuries afterwards. The health of the members of the community was thus kept under regular and close scrutiny, and if we exclude the deaths of the 16 monks between 24 February 1489 and 14 March 1496, whose names alone are listed, we are told

[30] Sheppard, ed. *Literae Cantuarienses*, III, 4; Smith *Canterbury Cathedral Priory*, pp. 45-6; P. Flemming, 'The Medical Aspects of the Medieval Monastery in England', *Proc. Royal Society of Medicine*, xxii (1928-9), pp. 771-82. For a brief investigation of the Infirmarers' Rolls of Westminster Abbey see Lord Amulree, 'Monastic Infirmaries', in F. N. L. Poynter ed. *The Evolution of Hospitals in Britain* (1964), pp. 11-26.

the afflictions of 85 per cent of all who expired. It is evident, however, that whatever the record might claim, in many cases we are given observable symptoms rather than strict causes of death. We would be wise not to treat this information with the same degree of trust and confidence that we have accorded to the rest of the data we have extracted.

It can be seen that the incidence of tuberculosis in the priory is strikingly high at almost a third of those who died, and of pulmonary diseases in general even higher. Also of significance is the age distribution of those who had tuberculosis when they died: for although the mean age was almost 35 years, two-thirds were under 30 years. The mean age of sweat victims was 30 years, and of plague victims in this period, 1485-1507, it was 36 years. The mean age of all plague victims from 1413 to 1507 lay between 37 and 38 years.

IV

We are thus able to calculate the precise expectations of life of the monks of Christ Church, Canterbury between 1395 and 1505, and to reveal the patterns of their mortality in great detail and from many perspectives. The fifteenth century was manifestly an era of high mortality in the priory, but in order to interpret just how high this mortality was we must place it in a broader context. The most comprehensive comparators are model life tables, which are based upon real data derived from the experience of late nineteenth- and twentieth-century populations. The Princeton series of tables is a convenient collection for our purposes.[31] The best overall fit, taking all ages together for all monks from 1395 onwards, is with the high mortality tables in the Princeton Model West series. Although the fit with any one Model West table is far from close, because the actual mortality of the monks did not rise with age in the expected theoretically ordered progression, it is far closer than with Model North tables, where even those tables portraying the highest mortality level have a far too gentle rate of increase in deaths by age. In the final column of Table 4 the closest approximation of the actual mortality of each age range

Table 4. *Christ Church and Princeton Model Life Table Death Rates* (1000_{qx})

Age	*Model West level 3*	*Model West level 4*	*Christ Church 1395-1505*	*Best fit Christ Church/Model West*
20	77	71	65	level 5
25	87	79	75	level 5
30	100	92	105	level 2
35	117	107	102	level 4
40	140	128	149	level 2
45	160	147	87	level 11
50	198	184	198	level 3
55	235	220	199	level 6
60	308	290	313	level 3
65	392	371	430	level 1
70	504	481	529	level 2
75	649	624	813	below level 1
80	1000	1000	1000	–

Source: A. J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton, 1966).

[31] A. J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton, 1966).

to a model level is given. In this way the unevenness of the monastic experience is highlighted with oscillations age for age from as low as level 1 or below (65-9 years and over 75 years) to as high as level 11 (45-9 years). Especially marked is the curtailed life expectancy between 30 and 45 years of age, and over 60 years. The extent to which these deviations from the norm were due to real factors, notably the age selective impact of disease, or the result of small number uncertainties contingent upon the size of our sample, must remain a matter of judgement. Overall, however, there is no doubt that our aggregate Christ Church data lay near the bottom of the life table range; perhaps close to level 3, where the expectation of life at birth is put at less than 23 years.

Exalted as these mortality levels are, it can be seen from Table 2 that the less healthy cohorts, especially those entering the priory after 1435, experienced yet higher mortality, reaching levels which forced them off the bottom of the scale of the Princeton Model Life Table series. Expressed in terms of expectations of life, the Christ Church data appear a little worse still. As Table 2 shows, the mean expectation of life at 20 for all Christ Church monks was 28·0 years, which is virtually identical with that for Model West level 2; the e_{25} level is similarly close to West level 2, 25·0 years to 25·3 years respectively. The Model West level 2 expectation of life at birth is calculated at just 20·44 years. Once again the expectations of life of the cohorts entering after 1435 fall right off the bottom of the Model West scales, and indeed off all the Princeton scales.

For the comparison of our Christ Church data with England's experience in later centuries we are fortunate to have the recently published study of population from 1541 to 1871, with its massive data base derived from parish registers. The ESRC Cambridge Group has provided useful comparative data for our purposes, of national aggregate population derived from "back projection" techniques and of family reconstitutions undertaken within a small sample of parishes. From our life table analogies we have found that the adult mortality experienced by our monks over the whole of the fifteenth century was consistent with an expectation of life at birth of 21-23 years. In the 330 years covered by the parish register analysis of Wrigley and Schofield the quinquennial mean e_0 produced by "back projection" fell below 30 years on only three occasions: in 1554-63 when it was 27·77 years; in 1678-83 when it was 28·47 years; and in 1729-33 when it was 27·88 years. Looking at mortality from a different perspective we find that the monastic crude death rate (CDR), taking the fifteenth century as a whole, averaged 33·12 per thousand per annum, that the quinquennial mean CDR rose above 40 per thousand five times, and that the annual CDR rose above 40 per thousand no less than 17 times. Using the results of "back projection" analysis on parish register data Wrigley and Schofield found that between 1541 and 1871 the quinquennial mean national annual CDR never rose above 37 per thousand, and exceeded 33 per thousand only three times. Furthermore the annual CDR rose above 40 per thousand on only six occasions in 330 years.[32] Yet stark as these contrasts are we must remember that the Christ Church data are far

[32] Wrigley and Schofield, *The Population History of England*, app. 3, pp. 527-35.

from strictly comparable with such national data. The death rates of our monastic population, for example, will inevitably display considerable volatility because of the small numbers at risk, whereas the aggregation of large samples of parish populations in order to create national estimates will just as inevitably smooth out local and regional fluctuations. Moreover, we are also comparing a population composed of males of 18 years of age and over with a complete population; it is possible that in identical circumstances the former would have a CDR somewhat lower than the latter.

Closer and more valid comparisons can be made with expectations of life derived from family reconstitution studies. The reconstitution of families in the parishes of Colyton (Devon), Banbury (Oxon), Methley (Yorks), Aldenham (Herts), Gainsborough (Lincs), Gedling (Notts), Alcester (Warks), Southill (Beds), and Terling (Essex) has produced a mean male e_{25} of 27·3 years for the period 1550-99 and of 28·8 years for the period 1600-49. These compare with a mean e_{25} of 25·0 years for all our Christ Church monks. The low levels of life expectancy prevailing in Christ Church priory, especially in the second half of the fifteenth century, are further emphasized by the fact that these reconstitution data are likely to significantly understate the true expectations of life of the inhabitants of these parishes, since they are based upon known dates of death only, and are thus biased towards those who stayed at home and died young before they could migrate.[33]

Precisely because of the rarity of sound demographic evidence from the fifteenth century, and of the exceptional quality of that forthcoming from Christ Church priory, the relationship of the mortality of our monks to the mortality of the population at large both in the middle ages and after is a matter of significance. Can the Christ Church data suggest something of the character of English mortality in the fifteenth century? Do they lend additional support to those who contend that the slump in late medieval population was primarily due to high mortality? What light if any can they throw on the contrasting demographic experiences of fifteenth and sixteenth century England? Such questions must be asked, but no answers can yet be given which are likely to command unanimous respect. Those who quite legitimately seek to use this material to throw light on the gloomy expanse of late medieval demography will be moving from the narrow security of near certainty to the precariousness of generalized speculation. For the strengths of the Christ Church data lie in their accuracy not in their typicality.

Nonetheless, it is possible to go further in the provision of information on those factors which influenced the mortality of the monks, and the first step must be an examination of the environment and life styles of the brethren of Christ Church priory. In so doing we are left in no doubt that by almost any standards of comparison the monks were exceedingly well fed, clothed and sheltered, and that they benefited from levels of sanitation, hygiene and medical care which were wholly exceptional for the times. It would be tedious to recount in detail the sumptuous living enjoyed by the brethren of later medieval Benedictine houses, for it was castigated by contemporary moralists and reformers scarcely more frequently than it has been enunciated by

[33] Unpublished data kindly supplied by the ESRC Cambridge Group.

historians. Yet we must draw some attention to those aspects of the monastic existence which were most likely to have had an influence on the health and longevity of the community. In so doing we must not forget that Christ Church was one of the richest as well as one of the largest English monastic houses.[34]

Plentiful and, at times, gargantuan quantities of nutritious food and drink were served at the various refectory tables; indeed the monastic diet was almost as notable for its variety as for its proportions. Wheat bread, fish of many kinds (ranging from eels and herring to salmon and sturgeon), red meat and poultry, milk, cheese, eggs, fruit, and a wide range of spices, conserves and confections, were washed down with copious draughts of good ale and wine. There can, therefore, have been little chance of the health of monks suffering from a deficiency of food. On the contrary, it may not be too frivolous to suggest that dietary-related ailments were more likely to have stemmed from over-indulgence than from malnutrition.[35] Nor have we any reason to believe other than that the monks were more than adequately clothed and sheltered by fifteenth-century standards. Their habits were made from fine quality cloth, they had undershirts of linen and drawers and socks of wool. In winter supplementary garments of leather and fur were made available and each monk was given a new pair of shoes every year. There were ample supplies of linen, blankets, towels and soap. All of these clothes and drapery were kept clean by a squad of washerwomen: shirts, drawers and socks were washed every fortnight in summer and every three weeks in winter. It would appear that monks washed frequently, but bathed seldom.[36]

Adding greatly to the salubrity of the community was its direct supply of fresh water and elaborate network of drains and sewers. The former was a remarkable feat of Norman engineering, by which water was conveyed from springs a mile and a half to the north of the priory, through a system of pipes and aqueducts and no fewer than five filtering tanks. Once in the priory a circuit of conduits distributed the water to kitchens, latrines, wash-houses, and wash basins throughout the institution. An equally elaborate and effective drainage system, using excess spring water, waste and rainwater, helped to flush the sewers and great drains and deposit the monastic effluent into the city ditch.[37]

As we have suggested above, the medical care which the monks received must have been close to being the very best available at the time. A large infirmary was located in a wing of the monastic buildings, and consisted of a hall, chapel, dining hall, kitchen and lavatory. In addition to the sick, it

[34] Except where otherwise stated the sources for the following paragraphs are drawn from Smith, *Canterbury Cathedral Priory*, ch. III; Woodruff and Danks, *Memorials*, chs. X and XI; Carlin, 'Christ Church, Canterbury', ch. IV; and the series of Chamberlains' and Cellarers' Accounts in Canterbury Cathedral Library.

[35] A brief perusal of the Cellarers' Accounts suggests that high standards of cuisine and consumption were maintained throughout the fifteenth century. It is not surprising to find no significant correlation between priory death rates and local wheat prices (I am grateful to Andrew Butcher for supplying me with the Canterbury City Jurats wheat price series).

[36] It was the responsibility of the chamberlain to supply clothing, shoes and linen for the monks; his accounts therefore provide details of purchases. See, for example, Canterbury Cathedral Library, Misc. Accounts, vol. ix.

[37] Woodruff and Danks, *Memorials*, pp. 51-5; R. Willis, *History of the Conventual Buildings of the Monastery of Christ Church* (1869), p. 175 *et seq.*

accommodated those brethren who were too old or infirm to take part in the normal routine of the cloister and those who were undergoing their periodic bleeding. There is ample evidence to show that the monastery practised a strict regime of isolation for brethren believed to be suffering from infectious or contagious diseases. As a further measure to protect the health of the community, potential novices were medically examined and required to swear an oath that they suffered from no incurable or contagious disease.[38] Finally among the life-enhancing influences, we must take account of the beneficial impact of the sedentary lives which most monks pursued. They did not engage in manual labour, and the risks they experienced of suffering accidental death or serious injury were likely to have been substantially below average.

Running counter to this formidable array of positive influences was an array of negative influences. It must be stressed that, despite the rules of their order, Christ Church monks did not normally lead isolated lives. We know that in the fifteenth-century priory there could be twice as many servants as monks,[39] and that in addition the priory housed a substantial but unquantifiable number of permanent and temporary lay residents and corrodians. Furthermore, there was a constant stream of visitors, for Christ Church priory was rich and influential, the cathedral was the foremost English shrine, and Canterbury was a convenient staging point on the main route between the Continent and London. There should be scant danger of exaggeration if we suggest that on many occasions during an average year the total population living or working in the priory comfortably exceeded 300 persons. Moreover, just as the network of contacts was enlarged within the walls of the priory, so monks made frequent contact with the wider world. The priory was centrally-sited in a bustling market town, with a population of perhaps around 4,000-5,000 persons in the fifteenth century.[40] We can safely assume that just as townspeople visited the priory, so the monks frequented the town. Moreover, a number of monks had administrative duties in the monastic and church bureaucracies, which regularly took them around the priory estates or further afield. Some young monks spent several years studying at Canterbury College, Oxford, and in the fifteenth century it was common for monks to take vacations.[41]

Are we therefore justified in concluding that because Christ Church monks were well-fed, clothed and sheltered, and lived in relatively hygienic conditions free from the rigours of harsh manual labour, they enjoyed a better life expectancy than the mass of the population? It would seem plausible to argue so. For the ample provision of these basic human needs, and the protected environment of the monastic life, might well be held sufficient to transcend all other normal considerations. Even in an age so favourable to the material welfare of common people, the inevitably enhanced vulnerability of the rural and urban masses would appear sufficient to have produced mortality higher

[38] Woodruff and Danks, *Memorials*, p. 249.

[39] Smith, *Canterbury Cathedral Priory*, p. 50, suggests twice as many servants as monks around 1400, and Carlin, *Christ Church Canterbury*, p. 149, sees the number of servants ranging between 100 and 150 between 1412 and 1466. An undated fifteenth-century list of servants (Canterbury Cathedral Library, MS D.E. 29) records around 50 servants belonging to the cellarer, almoner, bartoner and garnerer alone.

[40] 2,574 persons paid the Poll Tax of 1377.

[41] Corpus Christi College, Oxford, MS 256 f. 182^{v} has a list of 23 monks who took holidays in 1438.

than that of monks. Yet, if we turn our attention to certain of the negative factors the outcome may not appear so definite. Was the mortality of Christ Church monks high because they were monks? Was it high because they were monks living in Canterbury? The prevalence of tuberculosis has been noted above, and it is possible that the "dormitory life" of the monastery served to heighten the incidence of some mortal afflictions. Moreover the environs of the priory, with which the monks had constant contact, were probably relatively unhealthy. Indeed there is good reason to believe that the later fifteenth- and early sixteenth-century peaks of mortality in the priory mirrored those in the city of Canterbury. For the period of our study coincided with a sustained and profound fall in city rents and the occupation rates of shops and houses, which reached its nadir in the last quarter of the fifteenth century and the first quarter of the sixteenth. It has been claimed that epidemic disease was at the centre of this collapse.[42] It is axiomatic in pre-industrial demography that death rates were higher in towns than in the countryside, and the accepted wisdom is that in the course of the later middle ages plague increasingly became an urban phenomenon. Certainly, there is overwhelming evidence of marked systematic differences in urban-rural mortality in early modern England, with market towns having excessive death rates. It is possible that Christ Church monks may have been at even greater risk, because they were normally recruited as boys from villages in the surrounding Kentish countryside. If we follow later parallels we find that those who migrated into towns were especially likely to succumb to disease.[43]

V

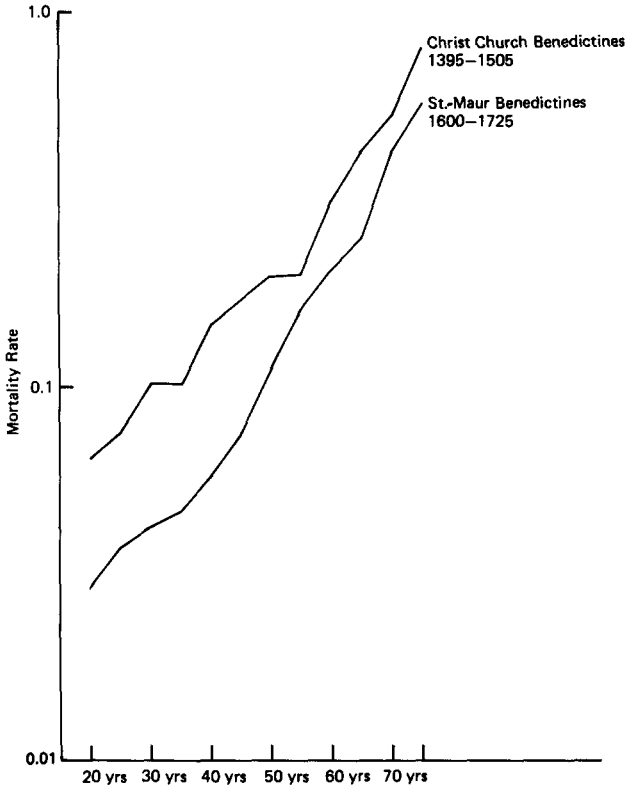
Further light on the relationship of the demography of Christ Church priory to that of the world at large must come from close comparisons with the experience of other monastic houses and other medieval populations. The possibilities that the mortality of our Benedictines was lower than the average of fifteenth-century Englishmen and that average mortality in the fifteenth century was exceptionally high, are strengthened by the experience of the French Benedictines in the seventeenth and eighteenth centuries. The great register of Saint-Maur, which records the name, place of birth, the date and place of profession, age at profession, and the place and date of death of over 8,000 monks has enabled Hervé le Bras and Dominique Dinet to furnish a mass of data comparable with those drawn from fifteenth-century Christ Church.[44] There are two conclusions of especial significance for our own study. First, it is clear that the Maurist Benedictines enjoyed substantially better expectations of life than those of seventeenth- and eighteenth-century Frenchmen as a whole until they reached their fifties; after which the advantage began to narrow appreciably or vanish. Second, as Figure 3 demonstrates, the

[42] A. F. Butcher, 'Rent and the Urban Economy: Oxford and Canterbury in the Later Middle Ages', *Southern Hist.* 1 (1979), pp. 37-43.

[43] E. A. Wrigley and R. S. Schofield, *The Population History of England* (1981), pp. 165-6, 415.

[44] H. le Bras and D. Dinet, 'Mortalité des laïcs et mortalité des religieux: les Bénédictins de St-Maur aux XVII[e] et XVIII[e] siècles', pp. 347-83. *Population*, 35 (1980). By 1685 the congregation of St Maur numbered 180 monasteries throughout France. Monks were professed to the congregation not the individual houses.

Figure 3. *St-Maur and Christ Church Life Table Comparisons*



Benedictines of Saint-Maur enjoyed enormously better expectations of life than the Benedictines of fifteenth-century Christ Church. Put briefly, the mortality suffered by the healthiest Christ Church cohort (1405-30) was far more severe than that of the very worst Saint-Maur cohort (1600-25). This point is made with equal force by a comparison of expectations of life: overall the expectation of life at 25 years of age ranged from 37·66 years down to 33·436 years at Saint-Maur, while at Christ Church it ranged downwards from 29·0 years to less than 23 years.

The closest medieval comparators are the life tables of the peerage and of the tenants-in-chief compiled by J. T. Rosenthal from *The Complete Peerage* and J. C. Russell from inquisitions *post mortem*.[45] It can be seen from Table 5 that there is a strong measure of consonance between these three data sets. But perhaps too much significance should not be attached to this since there are considerable differences in the quality of the sources from which the life tables have been constructed, in the methods which have been applied to them, and in the nature of the populations at risk.

In conclusion it would seem necessary, if we are further to illuminate the darker reaches of medieval population history, to divert some resources from excessively speculative aggregative ventures into the collection of more robust

[45] Rosenthal, 'Medieval Longevity', p. 239; Russell, *British Medieval Population*, pp. 184-5.

Table 5. *Comparative Medieval English Life-table Death Rates* (1000_{qx})

Age	*Secular peerage 1350-1500*	*Christ Church monks 1395-1505*	*Tenants-in-chief 1401-25*	*Christ Church monks 1405-30*	*Tenants-in-chief 1425-50*	*Christ Church monks 1425-50*
20	35	65	104	61	102	44
25	72	75	92	133	135	106
30	90	105	98	47	106	85
35	107	102	85	86	164	185
40	152	149	122	96	130	184
45	183	87	153	129	174	90
50	224	198	209	177	165	211
55	212	199	250	191	286	91
60	328	313	295	160	242	300
65	479	430	366	333	245	429
70	532	529	385	571	282	250
75	1000	813	594	500	412	833
80+		1000	1000	1000	1000	1000

Sources: Secular peerage: Rosenthal, 'Medieval Longevity', p. 289.
Tenants-in-chief: Russell, *British Medieval Population*, pp. 184-5.

data, albeit necessarily derived from small and untypical social groups. At present we cannot even tell whether the experience of Christ Church monks was similar to that of other English monastic houses, for no comparable figures have been collected.[46] Yet it would not seem impossible to do so. Westminster Abbey and Durham Cathedral Priory in particular have promising archives.[47] It would also seem time to return to the study of inquistions *post mortem*, a source whose considerable demographic potential has as yet been far from adequately exploited. From these, and possibly a few like sources, our stock of reliable data can be significantly expanded. Of course the demography of the peasantry must be our ultimate goal, yet here too there is much to be said for a selective approach concentrating upon the most reliable sources and using the most secure methodologies. Perhaps one way forward lies in the reconstitution of the very best documented peasant families.[48] Certainly, even in the villages it is the relatively small proportion of richer inhabitants who will provide us with the most plentiful and trustworthy data. Just as the poor are under-represented in surviving records so the rich appear most frequently. Sadly it looks as though for the middle ages there will always be an inverse relationship between the quality of demographic data and the representativeness of the groups from which they are drawn.

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[46] A recent attempt to produce demographic data using a list of entrants to Glastonbury Abbey between 1342 and 1375 would seem to be marred by inadequate evidence: J. P. Carley, 'Annotated Edition of the List of Sixty-three Monks who entered Glastonbury Abbey during the Abbacy of Walter de Monington', *Downside Review*, 95 (1977).

[47] Some indications of the quality of the Westminster and Durham archives can be found in E. H. Pearce, *The Monks of Westminster* (Cambridge, 1916); Amulree, 'Monastic Infirmaries', and Dobson, *Durham Priory*, ch. ii.

[48] As suggested by J. M. Bennett, 'Spouses, Siblings and Surnames: Reconstructing Families from Medieval Village Court Rolls', *Journal of British Studies*, 23 (1983, pp. 45-6).