Dearth and Disease in Wiltshire: The Mortality Crises of 1603-1658

ANTHONY SALERNO *

I *Introduction*

It is by now a commonplace that England experienced a series of severe population crises during the sixteenth and seventeenth centuries. The period between 1630 and 1670 often is singled out as one in which mortality crises occurred with particular harshness and regularity, and contributed to the end of a long-term upward movement of population.[1] What caused these crises? Since World War II, the accepted answer has been that the twin evils of dearth and disease combined to retard population growth: that is, periods of prolonged food shortage bred a malnourished population which was highly susceptible to mortal diseases, particularly plague.[2] Before his death, J. D. Chambers stood practically alone in attacking this thesis. He argued instead that epidemics in pre-industrial England were largely unaffected by food shortages, and that a variety of diseases — influenza, smallpox, typhus, and above all plague — were solely responsible for the major population setbacks of the period.[3] Recently, Andrew Appleby has, on the one hand, offered evidence from London to confirm Chambers' thesis; [4] and, in an earlier study of northwest England, has argued the converse of that view: that starvation, unassisted by disease, determined population change.[5] One is confronted, then, with three different explanations of pre-industrial England's population setbacks: that (a) dearth, or (b) disease, acted autonomously to cause mortality crises; or (c) that a conjunction of dearth *and* disease was the principal cause of death during the crisis periods.

As with other important historical problems of early modern England, our understanding of the causes of the country's demographic setbacks may best be served through investigations on the local level. Appleby's research is pioneering in this respect. Yet, he makes no claim that the localities he has chosen to study

* Mr. Salerno, recipient of the third prize, earned a B.A. at LaSalle College and both the M.A. and Ph.D. degrees from the University of Virginia. Currently he is doing research into the question of migration in England during the 17th century.

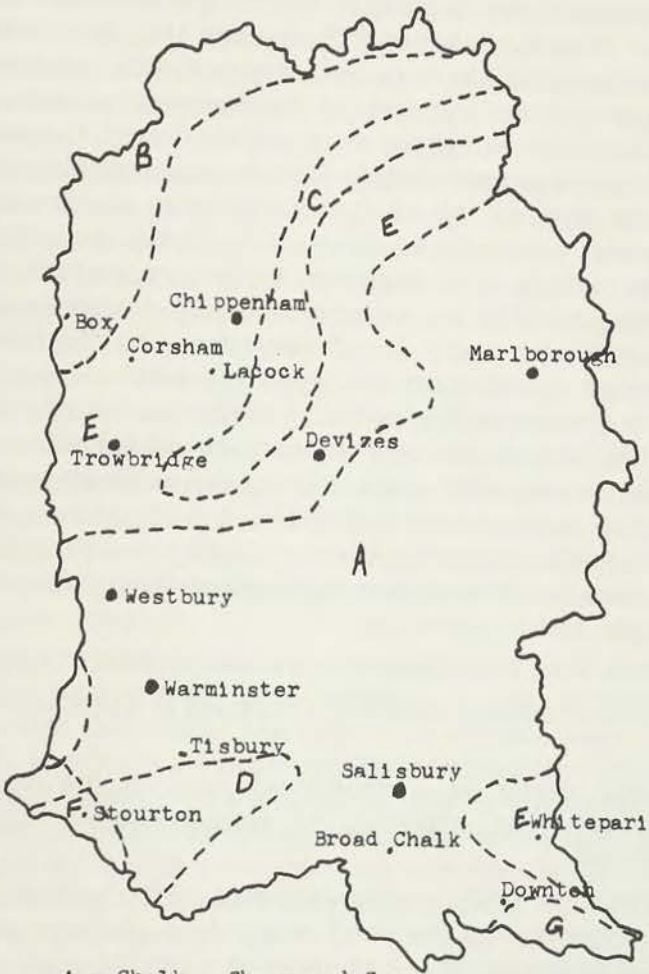
— London and the northwestern counties, Cumberland and Westmorland — are typical of the rest of England. In order to test the validity of his conclusions, it is necessary to concentrate on a region less remote than that of the extreme north-west, and one which was more rural (and thus more typical) than London. For this reason, I have chosen Wiltshire — a largely agrarian county in the West of England — as the locus of this study. The Wiltshire communities chosen for investigation are representative of the county's demographic, economic, and geographic structure. Wiltshire's most populous and most economically diversified towns, Salisbury and Marlborough, are included, as are Chippenham, Devizes, and Trowbridge — smaller towns having firm roots in the cloth industry. A number of rural villages are included in the sample to represent Wiltshire's major farming regions (see accompanying map).[6] Corsham and Lacock, for example, lie within the dairying, largely pastoral "Cheese" region, while Box, Broad Chalk, Downton, and Tisbury are located in the grain-producing "Cotswold" and "Chalk" regions. Finally, the cattle-rearing, pig-keeping, forest-edge region of the south-east is represented by the village of Whiteparish.[7]

Before the causes of a severe population setback can be examined, there obviously has to be evidence of such a crisis. Demographic historians generally agree that a mortality "crisis" should be defined as twice the normal number of annual burials — "normal" here defined as an average of burials computed for a number of non-crisis base years.[8] Evidence of mortality crises of this and even greater proportions can be found in the various localities' parish registers which, more often than not, include well-kept records of parochial burials.[9]

Employing the accepted formula for determining crisis years, one finds that Wiltshire communities experienced eight mortality crises during the first six decades of the seventeenth century: 1603-04, 1624-5, 1627, 1635, 1637-8, 1641-6, 1656, and 1658. The crises of 1603-04, 1637-8, and 1641-6 were the most widespread, often involving ten or more communities. It remains to determine what caused these crises.

II *The Role of Dearth*

The existence of successive killer famines sweeping over much of France during the seventeenth and eighteenth centuries has



Mixed Farming Types

A = Chalk-- Sheep and Corn

B = Cotswolds-- Sheep and Corn, with some stock-rearing

C = Corallian Ridge-- Sheep and Corn, with some pig-keeping

D = Vale of Wardour-- Sheep and Corn, with some stock-keeping and rearing

Pasture Farming Types

E = Dairying (Cheese), with some pig-keeping

F = Dairying (Butter), with some pig-keeping

G = Stock-keeping with corn growing; some dairying

been thoroughly documented by Pierre Goubert, Jean Meuvret, and other French historians.[10] Ever since their work appeared, British social historians have been intrigued with the question of whether or not large segments of the English peasantry actually died of starvation during the same period. Though the consensus is that England escaped deathly food shortages, Appleby recently has shown that not all of the country was so fortunate. By exhaustively analyzing baptisms and burials recorded in a particular region's parish registers, Appleby suggests that in 1597 and again in 1623 a large number of Cumberland's and Westmorland's peasantry died of starvation.[11] As admirable as his methodology and research are, Appleby's conclusions cannot be applied to the rest of England until similar studies of other, less remote and perhaps less poor regions, are carried out.

In order to determine whether or not severe dearth acted as an autonomous cause of death in Wiltshire, it is necessary to establish a suitable methodology. The work of Appleby and Peter Laslett [12] make it clear that at least four requirements must be met to prove that people died of starvation:

1. There must be evidence of an actual mortality crisis.

2. Epidemic diseases should be eliminated as a probable cause of death.

3. There should be a substantial drop in the number of conceptions — an indication of amenorrhea resulting from malnutrition.

4. More importantly, a correlation should exist between years of extreme dearth — a result of either food shortage or severe industrial depression [13] — and years of mortality crisis.

The first criterion has already been met, since at least eight Wiltshire demographic crises have been identified in the previous section. The second requirement will be dealt with in the following section. As for the third criterion, the baptismal records [14] of the Wiltshire parishes under study reveal that a significant drop in conceptions did occur during mortality crises at Salisbury in 1604 and 1627, and at Downton and Whiteparish in 1638. Yet, as we shall see, the decline in the number of conceptions during these crisis years might have been caused by the presence of plague in those communities.[15]

The final criterion — existence of a correlation between periods

of dearth and mortality crises — should be considered carefully, since in the absence of dearth, starvation conditions obviously could not arise. Evidence of the availability of foodstuffs normally could be drawn from yearly local grain prices: very high prices would suggest relative scarcity. Unfortunately, the lack of Wiltshire grain price figures precludes a thorough analysis. One alternative, very popular among historians, is to turn to the various "national" grain price series compiled by Hoskins, Bowden, and Harrison.[16] The major drawback of these sources is that they say very little about either yearly harvest qualities or annual prices in *Wiltshire.* Hoskins does employ Exeter prices to describe harvest fluctuations in "Western" England. But Exeter prices were generally higher than most,[17] and often depict a situation of dearth and extreme hardship when and where there was actually none. For instance, Hoskins claims that the year 1638 was a very difficult one in Western England, caused by the harvest failure of 1637. Yet, there is no mention of dearth-induced suffering on the part of the Wiltshire poor in either the local records or the records of the central government.[18]

Perhaps the most useful remaining alternative is to rely on eyewitness accounts of local officials. It has recently been demonstrated that county and other local officials were, in times of dearth, nearly always prompted into administrative action by a fear of social disorder and a sense of their own responsibility to ameliorate the crisis. The common responses to dearth on the part of the local authorities were: (a) to restrain various "middlemen" of the victualling trade who were always the first to be accused of engrossing and forestalling; (b) to suppress alehouses; (c) to re-distribute grain from those areas having surpluses to those communities in need. If the authorities failed to respond by such administrative order, public disorder in the form of corn riots usually ensued.[19] Hence, one can probably safely assume that in the absence of administrative fiat, rioting, or any other mention of dearth in contemporary records, the county stood clear of real food shortage.

If one adopts this method of determining the presence and incidence of dearth, it is possible to identify only two periods of acute and prolonged dearth in Wiltshire during the first six decades of the seventeenth century: 1622-3 and 1647-50.[20] There is evidence of additional suffering resulting from grain shortage in 1613-14,

when the county's Justices of the Peace (J.P.'s) sought to suppress "jobbers", "forestallers", and to prevent maltsters from buying grain until the harvest of 1614.[21] This particular shortage, however, was not nearly as severe or as prolonged as those of 1622-3 and 1647-50.[22]

The grain shortage of 1622-3 is fairly well-documented, and there can be no question of its severity. Suffering was especially widespread since the deficit came in the midst of the county's most serious industrial depression in the broadcloth industry.[23] Wiltshire's justices issued the usual orders in attempting to combat the lack of grain. They were particularly adamant that the malting of grain be stopped. Despite these administrative measures, the industrial depression and serious corn shortage combined to set off sporadic outbreaks of violence.[24]

The dearth of the late 1640's was perhaps even more severe than that of the early 1620's. Four very poor harvests between 1646 and 1649 drove up grain prices dramatically (50%) to a peak in 1650. Complaints of dearth and distress were continuous throughout these years. The Wiltshire J.P.'s, fearing that many of the county's poor would perish from the "scarcity of corn and grayn not only in this kingdome in gen'all but alsoe in this county," ordered that alehouses be closed and unlicensed malting be suppressed.[25] Again, none of this was enough to prevent popular disturbance, especially when in 1647 and 1648 Bristol carriers were forcibly prevented from buying and transporting grains out of the county.[26]

In neither of these periods of acute dearth is there any convincing evidence of corresponding mortality crises. None of the parish registers investigated indicate an abnormal rise in burials during the period 1621 to 1623, when high grain prices and unemployment caused widespread misery.[27] One could argue that the depression in the cloth industry continued in certain areas for several more years, reduced income, made it difficult to buy food, and thus was responsible for the heightened mortalities of the years 1624-5. Yet, this argument is less than convincing in light of the following facts. First, there is no mention of continued dearth in Wiltshire after 1623 in either the local official records or the State Papers. Second, the parish registers of neither Chippenham St. Andrew nor Marlborough St. Mary, two parishes which experienced mortality crises in 1624-5, indicate any significant drop

in conceptions — a necessary requirement, as we have seen, in proving death by starvation.[28]

One must be more cautious in dismissing the possibility of starvation during the late 1640's. Parish registers generally were badly kept during these years, precluding a thorough check for mortality crises. Yet, several of our sample registers appear to have been relatively well-kept,[29] and none of these indicate excessive deaths during that time. Nor are there any contemporary references to Wiltshire mortality crises in the years 1647-50.

Hence, even in the absence of more complete records, it is at least fairly certain that dearth was not an autonomous cause of death in Wiltshire. In light of Appleby's findings for Cumberland and Westmorland, it seems that Wiltshire's population, unlike that of counties in the far north of England, was not so poor that they could not afford to purchase grain, even in times of extreme food shortage and industrial depression. Perhaps the county's own grain-producing region was extensive and productive enough, and its local government effective enough, to insure that some grain would always be available, thus preventing deaths from starvation.

III *The Role of Disease*

If dearth alone did not cause the identified mortality crises, it stands to reason that epidemic diseases played a major role. The objective of this section will be to identify the particular diseases at work during the population setbacks, a task greatly facilitated by a basic understanding of the epidemiology of the great killer diseases of the period.

Plague

The major features of bubonic plague have been treated elsewhere at length [30] and need not concern us unduly at this point. Only a brief description of its most important identifying characteristics are needed here.

Most plague epidemics in sixteenth- and seventeenth-century England followed an essentially similar seasonal course: they struck first in late spring or early summer, took their heaviest toll in lives in late summer or early autumn, then gradually declined in virulence until hardly any deaths resulting from plague were reported in the month of December. Moreover, the disease affected people of all ages, children and the elderly having been no more or

less susceptible than others. Finally, a visitation of plague normally resulted in a marked drop in conceptions during its most deadly stages.[31]

In lieu of reliable medical records, these characteristics make identification of plague epidemics possible. The major tool used in the process of identification is the parish register's record of burials and baptisms. Another type of evidence which is helpful in identifying a disease as bubonic plague is contemporary observations, usually found among records of local officials and the State Papers.

There exist numerous contemporary references to plague during Wiltshire's initial seventeenth-century mortality crisis. In 1603, plague spread westward from London to Oxford, then southwestward to Wiltshire. Marlborough was probably visited first, then Devizes, Salisbury, Fisherton Anger, and Westbury where payments of 40 s. a week were ordered as plague relief. The county J.P.'s also directed that weekly sums be paid to weavers of Devizes, Fisherton Anger, and Salisbury who were losing work because of the disease. Mortalities at Salisbury reached crisis proportion in 1604, when about a sixth of the town's population was buried.[32]

However, contemporary identification of disease as plague can sometimes be misleading. Plague was such an appalling and fear-inducing ill that observers often either noted its presence in places which it had never visited, or confused it with other diseases. For instance, the Privy Council ordered that Steeple Ashton fair be closed in 1625, since several nearby towns and villages were said to be infected with plague.[33] It is true that a fresh, virulent strain of bubonic plague had entered England in 1624, and was believed to have ravaged Wiltshire on its way to the West Country.[34] Yet, a careful look at recorded burials in a number of Wiltshire parishes [35] reveals not even the slightest hint of disease-induced mortalities during the years 1624-5. Mortalities did reach crisis proportions in at least two Wiltshire towns during these years, but deaths there can be ascribed to other diseases.[36]

There is no question that plague was present at Salisbury in 1627. Registered burials of the town's three parishes totalled 462 for that year, more than double the average annual number. As Figure 1 indicates, moreover, mortalities followed the typical seasonal pattern mentioned earlier: burials heavily concentrated in

FIGURE 1. — RECORDED BURIALS, ST. MARTIN'S AND ST. EDMUND'S, SALISBURY, 1625-1629

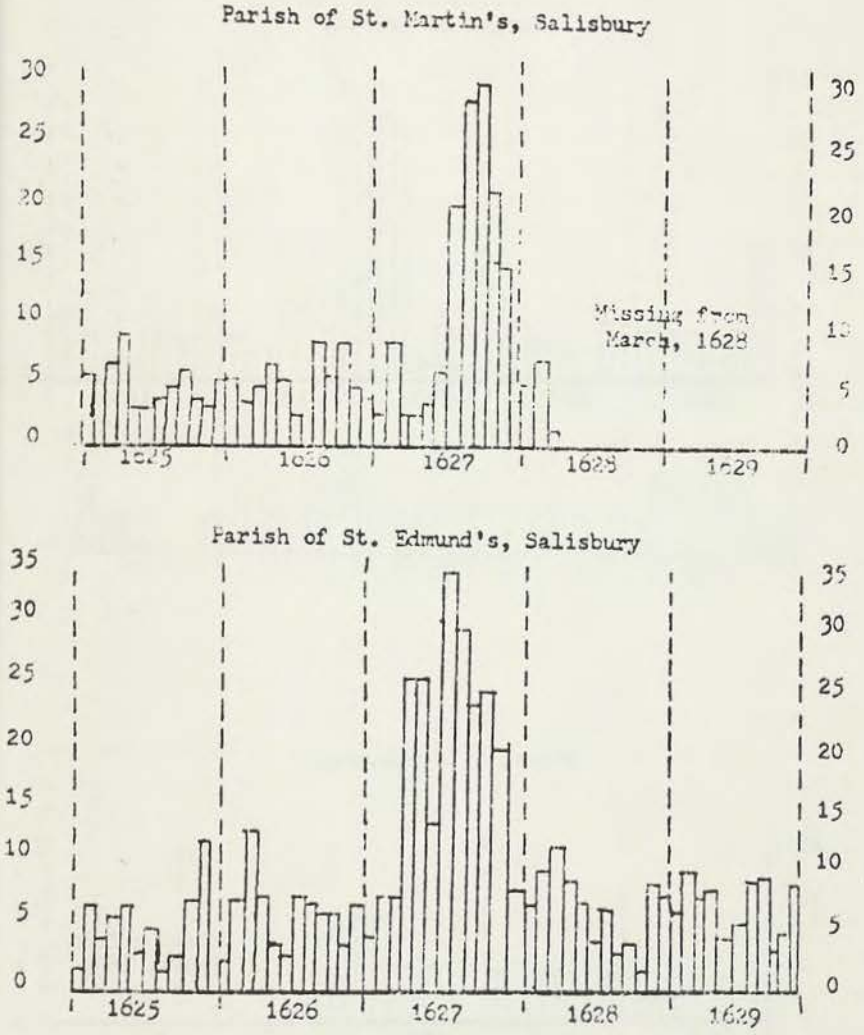


FIGURE 2. — RECORDED BURIALS, DOWNTON AND WHITEPARISH, 1636-40

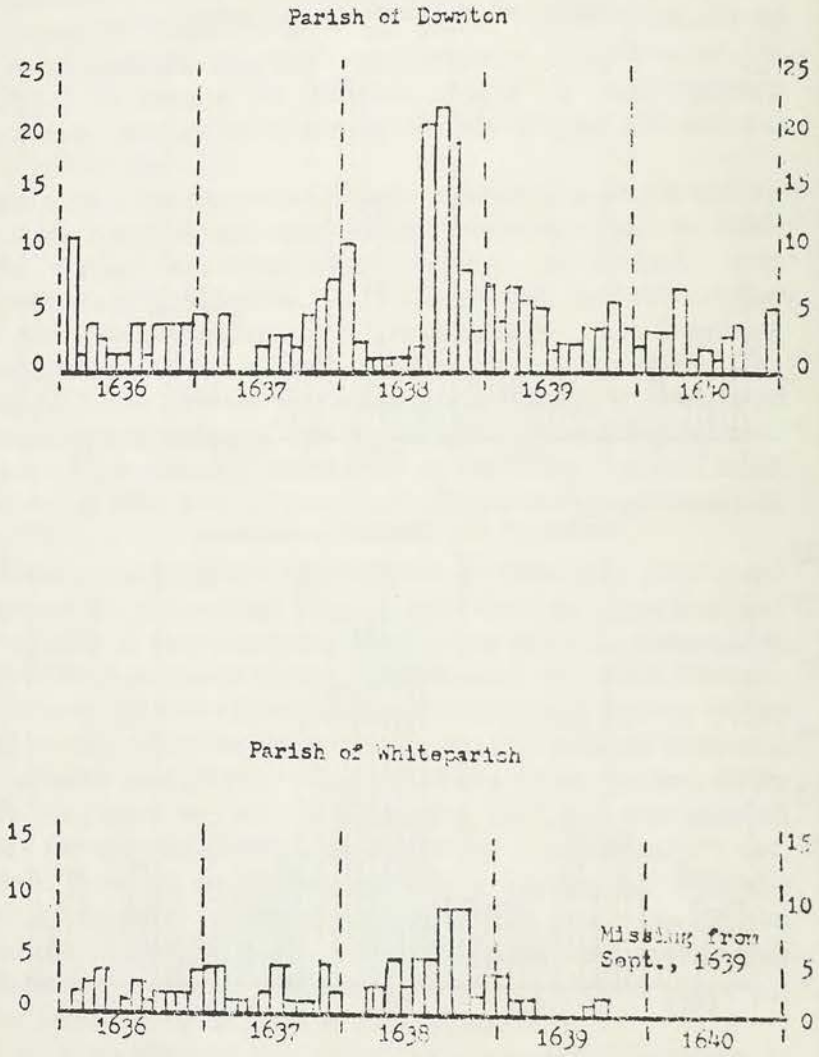
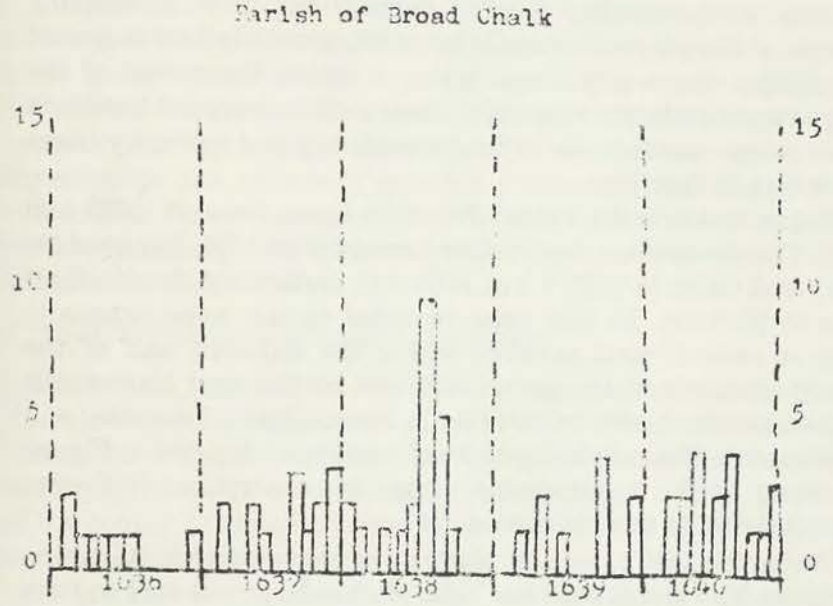


FIGURE 2 (contin.). — RECORDED BURIALS, BROAD CHALK, 1636-40



the late summer or early autumn, with very few during the month of December. In September, at the height of the epidemic, a memorial sent by town officials to the J.P.'s indicated that 88 houses were shut up because of infection and that nearly 2,900 persons were receiving relief.[37] Perhaps the most astonishing feature of this plague outbreak, however, was its failure to spread throughout the county. Steps taken to insure the spread of the plague were evidently successful, since neither recorded burials in other sample parishes nor official records suggest mortality crises elsewhere in that year.

Plague undoubtedly visited Wiltshire again between 1636 and 1638. The disease was reported at Amesbury in 1636, Donhead St. Mary and Calne in 1637,[38] but 1638 was apparently the deadliest year in Wiltshire. In that year, recorded burials were unusually high in several rural parishes within the southern half of the county. Analysis of the parish registers reveals that plague was responsible for heavy mortalities in Broad Chalk, Downton, and Whiteparish. The seasonal pattern of burials, as depicted in Figure 2, along with a noticeable drop in conceptions,[39] points unmistakenly to this conclusion.

During the 1640's, bubonic plague was again active in Wiltshire. Between May and September 1642, Malmesbury was said to have been visited for fourteen weeks. In 1646, a number of localities throughout the county, including Wilton, Marston, Wooton Bassett, Devizes, Highworth, Maiden Bradley, Horningsham, and Fisherton Anger, were reportedly suffering greatly from the effects of plague visitations.[40] Unfortunately, the appropriate parish registers were either unavailable for inspection or, when available, could not be sufficiently analyzed as a result of gaps in the record of burials and baptisms during the 1640's. Hence, there is no way of adequately confirming whether these parishes truly did experience mortality crises, or if the culprit disease was in fact plague. One must be cautious since other diseases, originally thought to be plague, were in the region during these years (see below, pp. 77-80). On the other hand, some of the documentary evidence, in describing the seasonal incidence of the disease, suggests that it actually may have been plague.[41]

Wiltshire evidently was free from plague during the remainder of the Interregnum. Though gaps in the parish registers' records of burials and baptisms preclude any complete search for mortality

crises, those that are complete enough to allow analysis reveal no sign of plague epidemics. Nor is there any mention of plague in the official records, even though the disease was endemic in other parts of England.[42]

In spite of the difficulty of confirming its presence during the 1640's and 1650's, it is clear that plague was the most active of the killer diseases in Wiltshire during the period. Between 1603 and 1658, there were no less than nine confirmed instances of mortality crises resulting from plague, the late 1630's and mid-1640's representing the periods of greatest plague activity. Though the cost in lives from plague was greatest in Wiltshire's largest urban center, Salisbury, the disease proved fatal to numerous rural villagers as well.

Typhus, Influenza, Pneumonia, Smallpox

Historians' peculiar fascination with plague has led them at times to lessen the significance of other major killer diseases of the period. In Wiltshire, typhus, smallpox, and fatal complications arising from sporadic outbreaks of influenza had a hand in many of the county's mortality crises during the first six decades of the seventeenth century.

Eruptions of typhus and perhaps a fatal strain of pneumonia were responsible for sharp increases of deaths in several Wiltshire parishes during the years 1624-5, when plague was wrongly said to be ravaging the county. Burials between January 1624 and March 1625 totalled 68 at Marlborough St. Mary, far above the norm for similar fifteen-month periods.[43] As Figure 3 indicates, mortalities were greatest during the winter months, and lowest during the warmest months of spring and summer. Because of this winter incidence, one must suspect typhus, a disease carried by human body lice. Epidemics of typhus usually begin in winter, when cold weather discourages bathing and changing clothes, and disappears with the coming of warm weather.[44]

Moreover, typhus rarely kills children.[45] The parish registers of Wiltshire do not give age at death, but they often indicate a person's status, which can be used as a guide to age. For instance, if the person buried is designated "the son [or daughter] of . . .", one could count him or her a "child". Obviously, this is a rather crude method since the person could actually range in age between

one and mid-twenties. But even this rough designation of "adult" and "child" can offer clues to the causes of mortality, if great changes in the proportion of each group buried takes place. Such was the case at Marlborough St. Mary, as the following table indicates. The number of children's deaths remained essentially the same, and the number of adult deaths rose dramatically.

	1622	*1623*	*1624*	*1625*	*1626*
Adult Males	6	7	23	13	10
Adult Females	10	9	27	12	5
Children	2	2	4	4	5

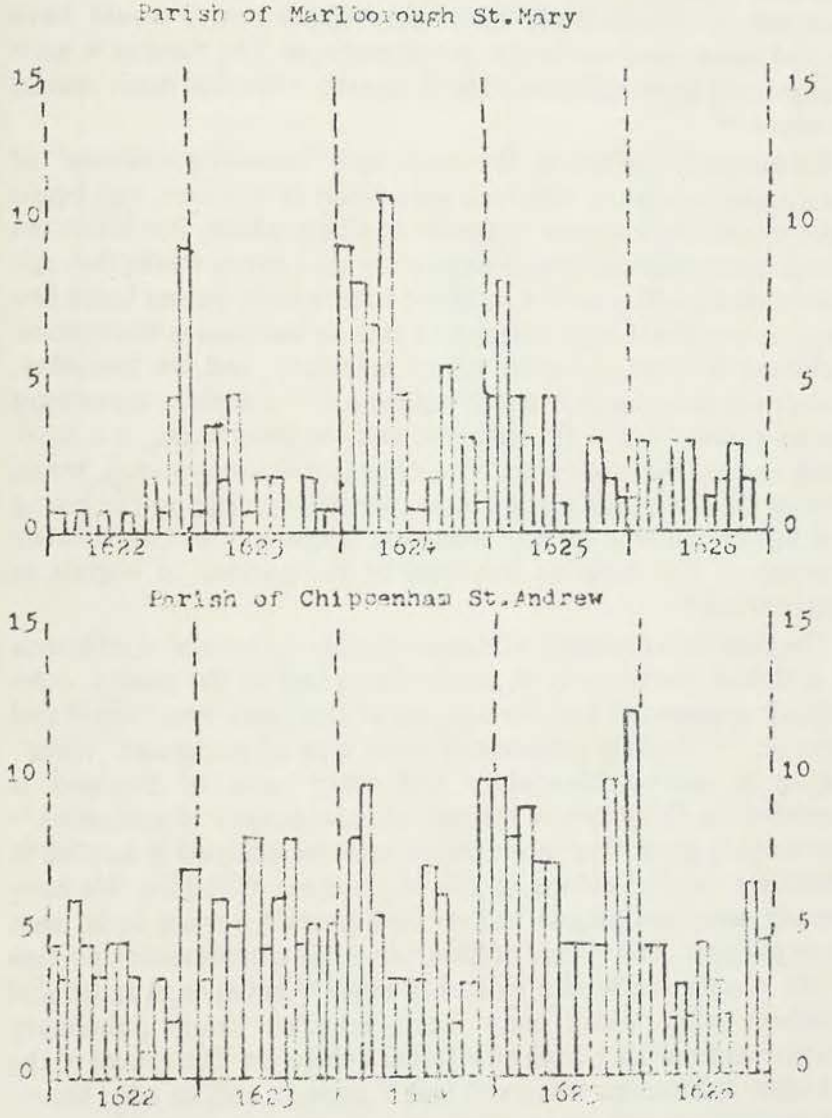
Typhus epidemics exhibit other characteristics which allow us to identify it in specific historical instances. Because of its etiology, it usually is centered in cities and towns. Unless assisted by famine,[46] typhus rarely spreads over wide regions. The disease simply does not spread quickly from one group to another. Perhaps the latter feature explains why the sickness failed to spread to Marlborough's other parish, St. Peter and Paul.[47]

The winters of 1624 and 1625 were particularly fatal at Chippenham as well, although total burials in neither year constitute a crisis as we have defined it. Yet, mortalities were sufficiently high in certain winter months to merit further attention. Because of its cold-weather incidence, one might again suspect typhus. But the following table shows that the number of children buried during the years 1624 and 1625 was rather substantial:

	1622	*1623*	*1624*	*1625*	*1626*
Adult Males	17	17	15	20	8
Adult Females	14	15	15	26	10
(Widows)	(5)	(6)	(6)	(13)	(2)
Children	15	35	29	30	15
Strangers/Paupers	2	1	2	1	1

Considering the number of children buried, one might reasonably point to any of the cold-weather childhood diseases, such as diphtheria, whooping cough, or measles.[48] Yet, none of these explain the increase of adult burials, particularly those of 1625.

FIGURE 3. — RECORDED BURIALS, MARLBOROUGH ST. MARY AND CHIPPENHAM, 1622-1626

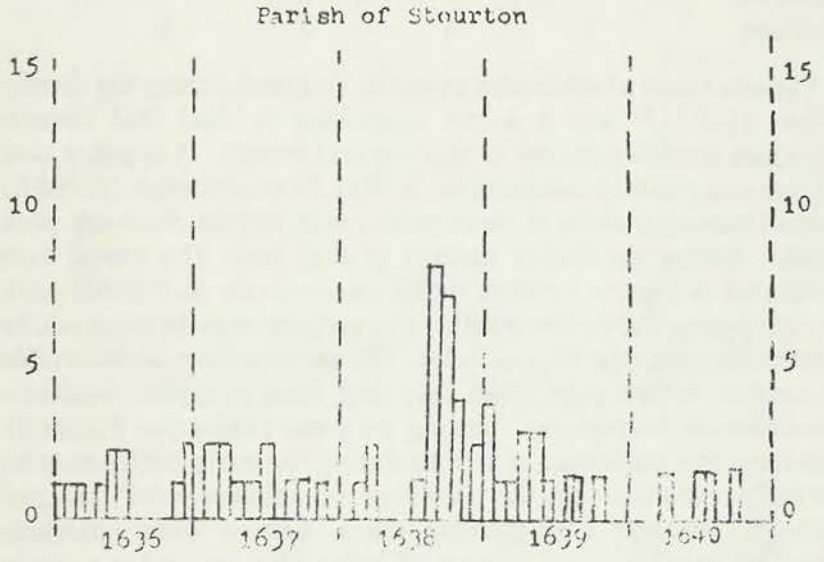


One might also suspect smallpox which is usually most active in towns, has a winter incidence, and which, though it affects all ages, normally proves most fatal when contracted by children. However, smallpox probably would have caused many more deaths than occurred at Chippenham; and, more importantly, would have elicited some comment in the parish register. The disease is such a physically ugly affliction that it usually attracted such special attention.[49]

Epidemics of influenza, the nortorious "sweating sickness" of the sixteenth century, were not uncommon at this time, and might have caused the increase of deaths at Chippenham. But influenza runs a quick epidemic course of no more than seven weeks through a community, and even if it recurred successively during these two years, it would not have occasioned such an increase in mortalities. Influenza is noted as having a high morbidity, and low mortality, with fewer than one per cent dying from it.[50] A serious pulmonary illness *arising from* a flu epidemic, such as pneumonia, is a more likely choice. The latter, recurring over two winter seasons, would explain the sharp upturn of deaths, particularly among the young and aged,[51] as well as the relatively short ten- to twelve-week duration of the crisis as indicated by the pattern of burials at Chippenham.[52]

The year 1638 probably witnessed further outbreaks of influenza in Wiltshire, particularly in the southern half of the county. John Aubrey commented that the autumn of that year was "sickly and feverish." [53] Further evidence of some type of malignant "fever" raging in nearby Hampshire and other parts of England is furnished by Creighton in his monumental survey of epidemics.[54] Certainly, a great deal more parish register analysis is needed to determine the full effects of this in southern Wiltshire. We have already seen that plague had created mortality crises in at least three parishes. The village of Stourton in the southwestern portion of the county suffered a mortality crisis [55] between August and October 1638, which may have resulted from pulmonary complications arising from an influenza epidemic. The course of the epidemic at Stourton was swift (see Figure 4); and, as seen below, the disease carried away a significant number of children and widows. All of these characteristics match those exhibited in the earlier epidemic at Chippenham.

FIGURE 4. — RECORDED BURIALS, STOURTON, 1636-1640

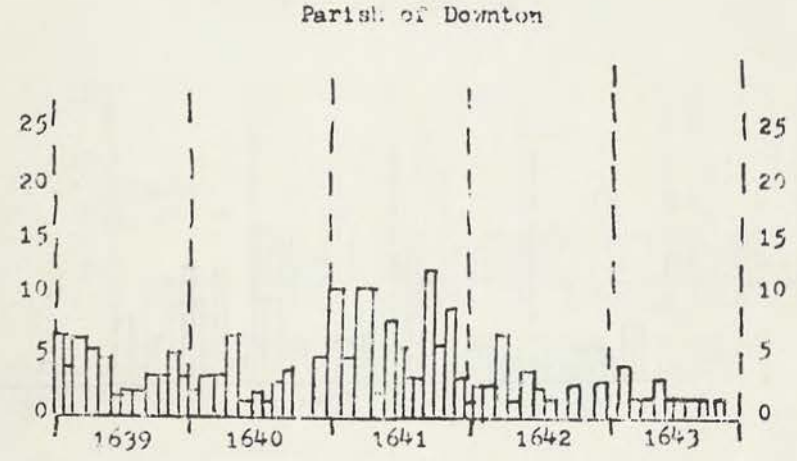


	1636	*1637*	*1638*	*1639*	*1640*
Adult Males	6	2	8	4	1
Adult Females	4	5	5	4	3
(Widows)			(4)	(1)	
Children	1	4	9	5	

Various types of epidemics raged in England during the deadly years, 1640-44,[56] and it is not surprising to find that several Wiltshire localities shared in this general misery. It appears that typhus was partially responsible. In 1641, Downton experienced its second mortality crisis in three years, with deaths reaching peak heights during the winter months of that year. The burial data presented in Figure 5 points rather conclusively to typhus: peak burials during the colder months, and proportionately more adults than children having been affected. The same pattern is discernible at Lacock, where mortalities resulting from a typhus epidemic reached crisis proportions [57] during the years 1643-4 (see Figure 6). The recurring outbreaks of typhus during the early 1640's may be partially explained by the numbers of soldiers who tramped through Wiltshire during these years. Armies were notorious breeding grounds for a variety of killer diseases, most notably typhus, and could have spread it about as they moved through the county.[58]

Smallpox appeared as a major killer for the first time among the chosen sample parishes in 1656 at Devizes. The major features of smallpox which enable the historian to identify it are its normal occurrence during the winter and colder months of spring, and its deadly predilection for children (though all ages and both sexes were susceptible).[59] An investigation of Devizes' two parishes burial records for 1656, the results of which are presented in Figure 7, suggest that smallpox was responsible for the mortality crisis of that year. Another major feature of smallpox which allows confirmation of its presence at a particular locality is its physical ugliness. Because it was such an appalling disease, smallpox was usually identified in parish registers and/or other local records. For instance, the recorder of burials at St. Mary's Devizes singled out smallpox deaths in 1656 with the inscriptions "pox" or "in ye small pox".

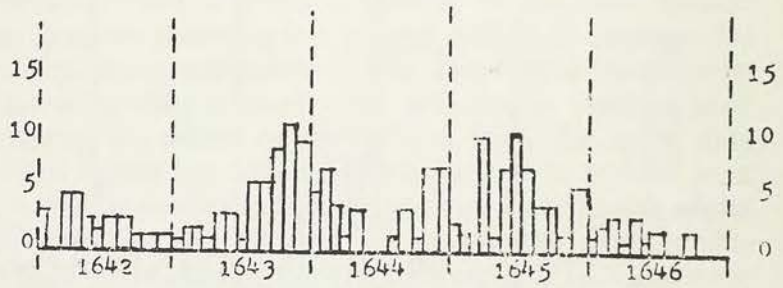
FIGURE 5. — RECORDED BURIALS, DOWNTON, 1639-1643



	1639	1640	1641	1642	1643
Adult Males	12	11	25	?	5
Adult Females	19	8	26	?	?
Children	19	12	15	?	
Strangers/Paupers			3	1	

FIGURE 6. — RECORDED BURIALS, LACOCK, 1642-1646

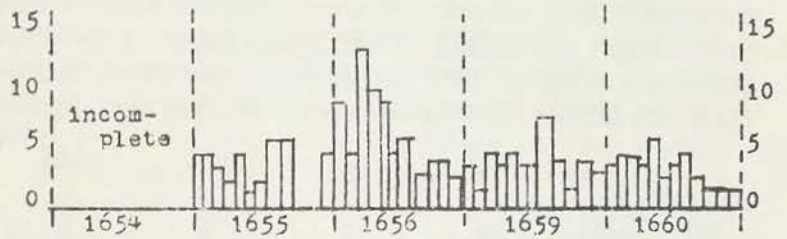
Parish of Lacock



	1642	1643	1644	1645	1646
Adult Males	3	16	13	12	3
Adult Females	6	18	8	8	7
Children	11	15	15	6	5
Strangers/Paupers					
Soldiers				3	

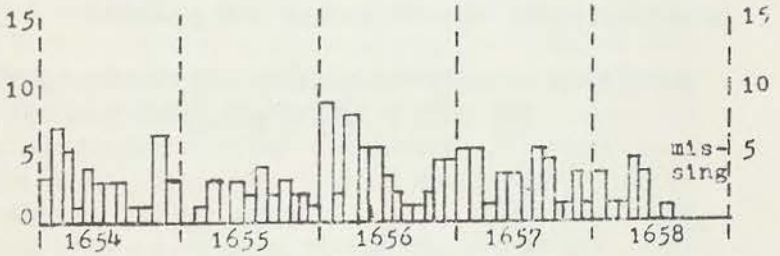
FIGURE 7. — RECORDED BURIALS, DEVIZES, 1654-1660

Parish of St. John the Baptist



	1654	1655	1656	1659	1660
Adult Males		10	13	7	4
Adult Females		8	14	4	6
Children		16	33	10	9

Parish of St. Mary



	1654	1655	1656	1657	1658
Adult Males	8	7	11	8	4
Adult Females	10	6	12	9	3
Children	22	10	21	17	6

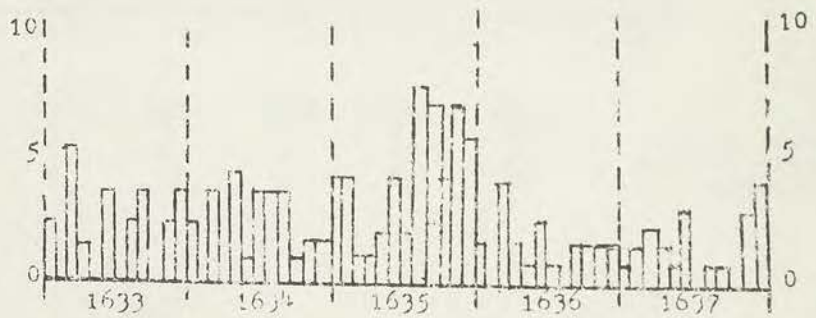
Childhood Diseases: Dysentery, Diphtheria, Whooping Cough

During the period under investigation, several Wiltshire parishes experienced mortality crises which cannot be explained by any of the diseases previously discussed. Parish registers reveal that children were the main victims in these crises, in all cases comprising fifty per cent of the registered burials, sometimes much higher. For example, the following table indicates that in the population crisis of 1635 at St. Peter and Paul, Marlborough, children's burials constituted seventy-five per cent of the total.

	1633	*1634*	*1635*	*1636*	*1637*
Adult Males	2	4	5	6	5
Adult Females	10	9	6	6	8
Children	5	10	34	9	7
Strangers/Paupers	4	1			2

Considering its seasonal occurrence during the late summer and early autumn, one might discount in this instance such childhood diseases as smallpox, diphtheria, measles, and whooping cough, all of which raged during the colder months of winter and early spring.[60] A particularly malignant form of dysentery perhaps bears major responsibility for the mortalities. The disease, while it does not restrict its attacks to any age group, has been known to be especially fatal for children and young adults.[61]

FIGURE 8. — RECORDED BURIALS, MARLBOROUGH ST. PETER AND PAUL, 1633-1637

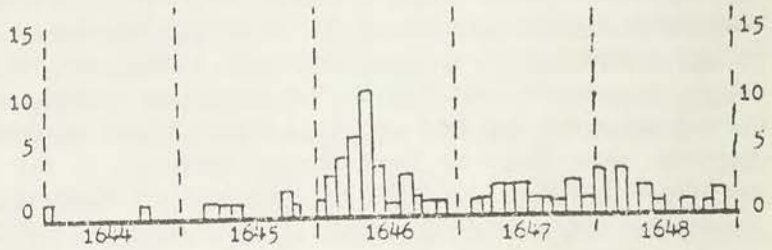


Other Wiltshire mortality crises involving the deaths of large numbers of children deserve attention. One occurred at Box, where in 1646 the minister annotated the burial record of eleven children and four adults with the words "of the sicknesse." Since most of these deaths occurred during the spring (see Figure 9), one might reasonably suspect any one of the following children's diseases having winter-spring seasonal incidence: diphtheria, whooping cough, measles or smallpox.[62] The latter two perhaps can be discounted, since the skin eruptions characteristic of these two diseases were likely to have elicited comment in the parish register.[63] Lacking any type of contemporary observation or description, one can only speculate about which of the former two illnesses, diphtheria or whooping cough, actually induced the mortality crisis at Box. Both were potentially deadly diseases which elsewhere were responsible for countless children's deaths during the seventeenth and eighteenth centuries.[64]

One of the childhood illnesses was the most likely cause of excessive deaths during the winter and early spring of 1658 at Warminster. As Figure 9 indicates, over half the burials of that year were children's, most of these having been concentrated in the three-month period, February-April. Again, one would have expected some comment in the parish register if measles or smallpox were responsible. Moreover, if the latter was solely at work, adult burials certainly would have been much higher than they were. Fortunately, a description of an epidemic which raged throughout England during the spring of 1658 is available, and permits approximate identification of the disease. A contemporary physician, Dr. Willis, described some of the symptoms: fever, coughing, catarrh "falling down on the palate, throat, and nostrils"; some bleeding at the nose, and bloody spittle.[65] All of these symptoms point to diphtheria,[66] to which the excessive childhood mortalities at Warminster must be attributed.

FIGURE 9. — RECORDED BURIALS, BOX AND WARMINSTER

Parish of Box

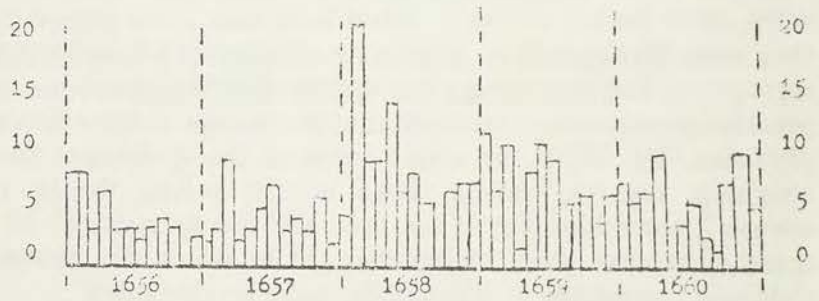


Burials by Status, Box

	1644	1645	1646	1647	1648
Children		3	17 (11)	4	3
Adult Males	1	3	8 (1)	5	8
Adult Females		1	14 (3)	5	2
Soldiers					

( ) = Those who died "of the sicknesse".

Parish of Warminster



Burials by Status, Warminster

	1656	1657	1658	1659	1660
Children	17	22	51	26	29
Adult Males	13	9	20	21	16
Adult Females	13	17	24	27	15

On balance, it does not appear that any of the viral, rickettsial, and childhood diseases *individually* were as active as plague was in Wiltshire. Typhus was the most active of all during the period, and one finds only five instances of mortality crises which can be attributed directly to that disease. But considered together, they were highly significant causes of suffering and death, and require more attention than historians have given them thus far. In fact, typhus, smallpox, diphtheria, and measles seem to have been becoming more important as killer diseases than plague during the 1640's and 1650's. Whether or not this trend continued is a question which deserves further investigation.

IV *Dearth and Disease?*

We noted earlier that dearth was not an autonomous contributor to the Wiltshire mortality crises. The question of whether it played an indirect role by rendering the population more susceptible to disease remains to be considered. The conventional argument linking dearth to disease runs as follows. After a harvest failure, food prices rose, the poor ate less and consumed a cheaper but less-balanced diet. They became malnourished and their resistance to disease was lowered, permitting an endemic disease to grow to epidemic proportions, or allowing a disease to be easily introduced from the outside.[67]

Recently, this view has been challenged by Appleby in a case study of London, 1550 to 1750. Using London bills of mortality and London bread prices, he showed that there was little correlation between nutritional levels (as indicated by bread prices) and disease-induced mortality levels. The price of bread, though a suitable index of nutrition, was not decisive in that instance.[68]

Similarly, there is no evidence of a correlation between dearth and disease during the initial Wiltshire grain shortage of 1622-3. There is no indication, in either the official governmental records or in the sample parish registers analyzed, that diseases were active in Wiltshire during these years. One could argue, in turn, that epidemics did not occur simply because the population was not exposed to deadly illnesses during the early 1620's. That is, the acute lack of grain did in fact result in malnutrition and increased susceptibility, and awaited only the introduction of disease. This is an important point of contention and imposes an obligation to deal briefly with the question of Wiltshire's exposure to disease. No one

could seriously claim that the county was constantly exposed to all types of infectious ailments during the first six decades of the seventeenth century. Perhaps only London provides an example of a locality being more or less constantly subjected to a variety of diseases.[69] Yet, certain illnesses were endemic in the country during the century, especially in areas of concentrated population. Typhus, because of its etiology, was endemic in most English towns during the winter months.[70] Influenza, and perhaps diphtheria and measles, were more or less constant threats.[71]

Moreover, the connection between dearth and several of these endemic diseases — especially typhus and influenza — was very close. That is, when assisted by famine and malnutrition, typhus atypically spreads very quickly into widespread rural areas, and influenza atypically develops into a killer disease.[72] Hence, if food shortage was at all determining, one would have expected a greater number and wider incidence of deaths attributed to typhus and pneumonia during the early 1620's in Wiltshire. Yet, of all the communities' parish registers analyzed, only two (Chippenham and Marlborough St. Mary) offer any evidence of the two diseases, and these occurred in 1624-5 after the worst of the dearth had ended.

It is also possible that this initial period of dearth was not prolonged enough to have brought about serious malnourishment. That is, because the dearth lasted only two years, Wiltshire's poor may have been able to fend off malnutrition by eating more low-priced grains such as oats, barley, and rye (all of which were readily available in Wiltshire), stretched with peas, beans, and other fillers. Even though these alternatives to wheaten bread, meat, poultry and dairy products represented a caloric and nutritional decline in food intake, the degree of malnutrition might not have been as great as perhaps it would have been had the dearth lasted three years or more.[73]

Wiltshire's second serious grain crisis — that of the late 1640's — was undoubtedly prolonged enough to have caused severe malnutrition, and thus provides a truer test of the thesis. Upon investigation, the evidence again does not reveal a connection between dearth and disease.

We have seen that various diseases were active in the county between 1645 and 1647. Plague was especially prevalent during those years, having infected various communities throughout the county. Curiously, plague's deadly course through Wiltshire had

evidently ended in 1647, when real hardship resulting from dearth only began to be felt. If there was a positive correlation between plague and dearth, one would have expected the disease to have recrudesced in those communities already infected, or to have spread — carried perhaps by beggars pushed on the roads by the continuing food shortage — to other regions of the county between 1647 and 1650.

Apparently, it did not. Considering the condition of most parish registers during these years, one must be cautious in denying the existence of any disease. Yet, in the case of plague, one would have expected some mention of it in other local records or in the State Papers. As Appleby has pointed out, the State Papers often exaggerated the existence and extent of plague outbreaks,[74] and one can safely assume that in the absence of any reference in those documents, it was not active in Wiltshire during the last three years of the decade. One might conclude from this, as Appleby and others have, that plague was so grave a disease that, when contracted, even the well-nourished have little chance of recovery.[75]

Had the populace been made more susceptible to disease through malnutrition, one would expect to have encountered typhus epidemics as well, particularly in the largest of Wiltshire towns. Because it discourages cleanliness — which in turn encourages body lice, the carriers of typhus — famine is often closely associated with typhus. Moreover, dearth usually pushes beggars into larger towns seeking charity, thus promoting crowding which contributes to the spread of the disease.

Whether these preconditions resulting from famine — malnutrition, further crowding, and increased uncleanliness — actually led to epidemic outbreaks of typhus in Wiltshire towns between 1647 and 1650 must, unfortunately, remain conjectural, given the condition of most parish registers. Yet, here again the silence of the official records suggests that Wiltshire probably escaped widespread epidemics of typhus or any other disease. While isolated outbreaks of typhus, influenza, and the various childhood illnesses did not normally draw the attention from local officials that plague and smallpox drew, epidemics in a number of communities would have evoked at least some comment. Hence, the lack of reference to diseases in either the local records or State Papers, combined with an absence of mortality crises in several

parishes having well-kept registers,[76] leads one to conclude that there was no correlation between dearth and disease in Wiltshire during the late 1640's.

V *Conclusion*

It is clear that even though Wiltshire's populace was fortunate to escape the killer famines that afflicted France, Scotland, and other regions of England, they were hardly immune to visitations of epidemic diseases. We have seen that a variety of diseases were active in Wiltshire during the six decades under study. Careful analysis of recorded burials in a group of county communities indicates that, of these ailments, plague was the greatest, but not the only, killer. Typhus, pneumonia, smallpox, and an assortment of children's diseases were responsible for a number of severe mortality crises. These crises, moreover, surfaced in all types and sizes of communities. Outbreaks of fatal disease recurred, as one would expect, in Wiltshire's largest urban centers, Salisbury and Marlborough. Smaller towns such as Calne, Chippenham, Devizes, Warminster, and Westbury, with populations ranging between 1,000 and 3,000 were also targets. So too were Broad Chalk, Stourton, and Whiteparish — all rural villages numbering no more than between 400 and 800 inhabitants.[77] Nor did the diseases display a particular predilection for any sex or age-group, though the frequency and virulence of the childhood disease epidemics is noteworthy.

Moreover, our study of Wiltshire mortality crises provides little support for the thesis that recurring grain shortages explain the unusual virulence of seventeenth-century diseases. In Wiltshire, the two greatest periods of probable malnutrition resulting from food shortage, 1622-3 and 1647-50, were remarkably free of crisis-producing sickness. Combined with what we know about the connection between nutrition and disease in London, this suggests that disease was an autonomous factor in overall demographic growth. Along with conscious limitation of family size, it helps explain why the English population failed to grow in periods — such as 1650 to 1690 — when grain prices were low and when standard of living was relatively high.

One can only surmise the psychological effects of having one's family, neighbors, and friends carried away during these mortality crises. The social and political ramifications are not entirely clear,

but visitations of deadly epidemics undoubtedly contributed to the shattering of traditional ties to family and neighbors. Lawrence Stone has suggested that, by implication, this helped make the lower ranks of society more receptive to revolutionary political and religious ideas circulating in the early seventeenth century.[78] More research is needed to prove the validity of this causal connection. Certainly, no similarly far-reaching claims can be made for the effects of mortality crises on geographic mobility. It has been shown elsewhere that mobility resulting from visitations of disease was mostly short-distance and temporary, and figured little in longer-distance, more permanent, movements such as seventeenth-century emigration to America.[79]

NOTES

[1] Peter Bowden, "Agricultural Prices, Farm Profits, and Rents," in Joan Thirsk, ed., *The Agrarian History of England and Wales, 1500-1640* (Cambridge, 1967), p. 621; J.D. Chambers, *Population, Economy, and Society in Pre-Industrial England* (New York, 1972), pp. 22, 136; E.A. Wrigley, *Population and History* (New York, 1969), pp. 82-8.

[2] Recent expressions of this opinion can be found in Bowden, "Agricultural Prices," p. 633; Jean Meuvret, "Demographic Crisis in France from the Sixteenth to the Eighteenth Century," in D.V. Glass and D.E.C. Eversley, eds., *Population in History* (London, 1965), p. 510.

[3] Chambers, *Population, Economy, and Society,* chs. 1, 4.

[4] Andrew B. Appleby, "Nutrition and Disease: The Case of London, 1550-1750," *Journal of Interdisciplinary History,* 6 (Summer, 1975), 1-22.

[5] Appleby, "Disease or Famine? Mortality in Cumberland and Westmorland, 1580-1640," *Economic History Review,* 2nd ser., 26 (1973), 403-31.

[6] Wiltshire's farming regions are clearly delineated in Eric Kerridge, "The Agrarian Development of Wiltshire, 1540-1640." (unpublished Ph.D. dissertation, Univ. of London, 1951).

[7] Population estimates (with approximate dates) of some of these localities are as follows: Salisbury (1630's), 6,876; Marlborough (1630's), 3,031; Devizes (1655), 2,640; Trowbridge (1630's), 1,319; Chippenham (1676), 1,244; Box (1620's), 898; Corsham (1620's), 1,637; Lacock (1620's), 1,476; Downton (1620's), 1,030; Tisbury (1620's), 1,088; Broad Chalk (1620's), 496; and Whiteparish (1620's), 547. See A. Salerno, "The Character of Emigration from Wiltshire to the American Colonies, 1630-1660" (unpublished Ph.D. dissertation, Univ. of Virginia, 1977), Appendix C, E.

[8] In Stourton, for instance, average burials were 8.1 p.a. for the base years 1581-9, 1610-16, 1623-26, 1628-1630, 1633-37, 1639-45. During the mortality crisis of 1638, burials totalled 22.

[9] The parish registers used in this analysis, and their location, are as follows: The registers of Box, Chippenham St. Andrew, Corsham, Devizes St. John the Baptist (microfilm), Downton, Marlborough St. Mary, Marlborough St. Peter and Paul,

Tisbury, Trowbridge, Warminster (microfilm), and Whiteparish — all at the Wiltshire County Record Office [hereafter cited as WRO], Trowbridge; Salisbury St. Edmund and Salisbury St. Martin — both at the Diocesan Record Office, Salisbury. Transcripts of the Devizes St. Mary and Lacock registers are at the Devizes Museum Library, Devizes. Those of Broad Chalk and Stourton are published: Rev. Cecil G. Moore, ed., *Register of Broad Chalk, Co. Wilts., from 1538 to 1780* (London, 1881); Rev. John H. Ellis, ed., *The Registers of Stourton, County Wilts., from 1570 to 1800,* Harleian Society Publications, 12 (London, 1887).

[10] Meuvret, "Demographic Crisis in France," in Glass and Eversley, eds., *Population in History*; P. Goubert, "Recent Theories and Research in French Population between 1500 and 1700," *ibid.*

[11] Appleby, "Disease or Famine?", 403-31.

[12] P. Laslett, *The World We Have Lost* (New York, 1965) p. 113.

[13] A depression in the cloth industry, for instance, would have reduced incomes to the point where even cheap food could not be bought.

[14] Baptismal figures are converted to conceptions by subtracting nine months from the date of baptism.

[15] See below, pp. 65-66. In the seventeenth century, plague was perhaps the only disease frightening enough to have interrupted the female cycle, thus causing a drop in conceptions.

[16] W.G. Hoskins, "Harvest Fluctuations and English Economic History, 1480-1619," *Agricultural History Review,* 12 (1964), 28-46; Hoskins, "Harvest Fluctuations and English Economic History, 1620-1759," *Agric. Hist. Rev.,* 16 (1968), 15-31; C.J. Harrison, "Grain Price Analysis and Harvest Qualities, 1465-1634," *Agric. Hist. Rev.,* 19 (1971), 135-55; Bowden, "Price of Agricultural Commodities: Annual Averages," Appendix A of Thirsk, ed., *The Agrarian History,* pp. 820-1.

[17] Bowden, "Agricultural Prices," p. 610.

[18] It should be noted that the Privy Council was just as interested as the local authorities in ameliorating grain shortages, and thus averting popular disorders. Inactivity on the part of the central government is a clear indication that the food situation in a locality was not desperate.

[19] John Walter and Keith Wrighton, "Dearth and the Social Order in Early Modern England," *Past and Present,* no. 71 (May, 1976), 22-42.

[20] Others have identified these two periods as the most serious to affect Wiltshire in the first half of the century. See Paul Slack, ed., *Poverty in Early-Stuart Salisbury,* Wiltshire Record Society, vol. 31 (Devizes, 1975), p. 7.

[21] Historical Manuscripts Commission, *Report on Manuscripts in Various Collections,* I (London, 1901), p. 87. The terms "jobbers" and "forestallers" came to be used in a general pejorative sense to describe those middlemen who hoarded grain in order to drive up prices.

[22] Because of the lack of yearly grain prices, the relative severity of the crises cannot be quantified. In this instance, relative severity is indicated by the degree of governmental action.

[23] This acute recession, mainly a result of currency manipulation and debasement on the Continent as well as major interruptions of trade caused by the Thirty Years' War, is thoroughly analyzed in G. D. Ramsay, *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries* (London, 1943), pp. 77-9, 81; see also, B.

E. Supple, *Commercial Crisis and Change in England, 1600-1642* (Cambridge, 1959), chap. 3.

[24] Ramsay, *The Wilts. Woollen Industry,* pp. 78-9; HMC, *Various,* I, p. 94.

[25] Great Britain, Public Record Office [hereafter cited as PRO], Western Assizes. Order Book, 1641-1652, fols. 104r-105r; HMC, *Various,* I, pp. 116-20; WRO, Quarter Sessions, Orders. Order Book no. 1 (1642-1654), Trinity 1647; B. Howard Cunnington, ed., *Records of the County of Wiltshire* (Devizes, 1932), pp. 180-3.

[26] Walter and Wrighton, "Dearth and the Social Order," 27.

[27] It is especially significant that none of the sample parishes which lie within the county's broadcloth-producing region — Box, Corsham, Lacock, Chippenham, and Trowbridge — were affected by mortality crises in these years.

[28] Conceptions at Chippenham St. Andrew averaged 65 p.a. in 1580-1, 1583-9, 1621-41, 1647, 1661, 1664-8; in 1624, they totalled 71, and in 1625, 75. Conceptions at Marlborough St. Mary averaged 45 p.a. in 1621-41; in 1624, they totalled 39.

[29] The registers of Salisbury St. Edmund, Corsham, Lacock, Box, Stourton, and Trowbridge are all fairly complete for these years.

[30] Plague can take three different forms: bubonic, septicaemic, and pneumonic. The latter two so rarely affected sixteenth- and seventeenth-century England that most historians feel secure in disregarding them, and concentrate instead on the bubonic form. See, in particular, J. F. D. Shrewsbury, *A History of the Bubonic Plague in the British Isles* (London, 1970); L.F. Hirst, *The Conquest of the Plague* (Oxford, 1953).

[31] For a good summary of these characteristics, see Appleby, "Disease or Famine?", 406-07.

[32] Shrewsbury, *History of the Bubonic Plague,* pp. 270-1; HMC, *Various,* I, pp. 72-3. For a fuller treatment of the incidence and effects of the 1604 plague in Salisbury, see Paul Slack, "Poverty and Politics in Salisbury, 1597-1666," in P. Slack and P. Clark, eds., *Crisis and Order in English Towns, 1500-1700* (London, 1972), pp. 169-70.

[33] *Acts of the Privy Council of England,* vol. 40 (1625-6), p. 127.

[34] Shrewsbury, *History of the Bubonic Plague,* pp. 341-2.

[35] The parishes checked were Box, Corsham, Downton, Salisbury St. Edmund, Salisbury St. Martin, Stourton, Tisbury, Trowbridge, Warminster, and Whiteparish.

[36] See pp. 72-73.

[37] The burial figures for St. Martin and St. Thomas are from the Bishop's transcripts at the Diocesan Record Office. The average annual number of burials for the three parishes, 1631-1640, was 197; HMC, *Various,* I, pp. 96-7. For a more thorough discussion of this epidemic at Salisbury, See Slack, "Poverty and Politics," pp. 171-2.

[38] WRO, Quarter Sessions, Great Rolls, Hilary 1637; Cunnington, ed., *Records of Wilts.,* pp. 123-4; PRO, Privy Council Registers 2/48/23. The inhabitants of Donhead St. Mary petitioned for relief from what they called "the contagious desease [sic] of the plague." (WRO, Quarter Sessions, Great Rolls, Trinity 1637). Unfortunately this parish's available registers begin only in 1678, and thus do not allow verification. Nor were the registers of Amesbury and Calne available for inspection.

[39] Conceptions were as follows:

	1638	*Average, 1628-37*
Downton	26	46
Whiteparish	15	28
Broad Chalk	5	16

[40] HMC, *Various,* I, pp. 110-14; WRO, Quarter Sessions, Order Book no. 1 (1642-54), Michaelmas 1646, Hilary 1647, Trinity 1649.

[41] Besides the previously-noted presence of the disease at Malmesbury between May and September, plague was reportedly active at Marston between the end of July and the end of October. HMC, *Various,* I, pp. 110-13.

[42] Shrewsbury, *History of the Bubonic Plague,* pp. 425-49.

[43] During the years 1621-3 and 1626-33, the average number of burials per fifteen-month (Jan.-Mar.) period was only 24.

[44] C.H. Stuart-Harris, "The Rickettsial Diseases," in Sir Samuel Bedson, et al, eds., *Virus and Rickettsial Diseases of Man,* 4th edn. (London, 1967), p. 418; John C. Snyder, "Typhus Fever Rickettsial," in Frank L. Horsfall, Jr., and Igor Tamm, eds., *Viral and Rickettsial Infections of Man,* 4th edn. (Philadelphia, 1965), p. 1075.

[45] *Ibid.,* p. 1075.

[46] On the connection between typhus and dearth, see pp. 83-86.

[47] Burials for the same fifteen-month period at St. Peter and Paul totalled only 33, just slightly above the average (31 for a number of non-crisis fifteen-month periods). Assuming that gross under-registration did not occur, one can conclude that the epidemic remained confined to St. Mary's.

[48] See pp. 80-82.

[49] See p. 76.

[50] Thomas Francis, Jr. and Hunein F. Maasab, "Influenza Viruses," in Horsfall and Tamm, eds., *Viral and Rickettsial Infections,* pp. 689, 711.

[51] The Chippenham registers do not give ages of those buried, but there was an abnormal number of widows among the recorded burials of 1625. One cannot be certain that they were all older women, but the sharp increase in this particular year is noteworthy.

[52] See Figure 3.

[53] John Britton, ed., *The Natural History of Wiltshire by John Aubrey* (London, 1847), p. 75.

[54] Charles Creighton, *A History of Epidemics in Britain,* 2nd edn., I (New York, 1965), pp. 540-42.

[55] There were 22 burials at Stourton in 1638, much higher than the yearly average of eight, a figure computed from burials during the years 1581-9, 1610-16, 1623-6, 1628-30, 1633, 1635-7, 1639-45.

[56] Chambers, *Population, Economy, and Society,* p. 136; Creighton, *A History of Epidemics,* p. 544.

[57] Burials totalled 49 at Lacock in 1643, more than twice the yearly average (22) for the years 1630-5, 1641-2, 1646-9, 1654-7, 1659-65.

[58] For other instances of "war-typhus" in England during these years, see Creighton, *A History of Epidemics,* pp. 547-55.

[59] A. W. Downie, "Smallpox," in Bedson et al, eds., *Virus and Rickettsial Diseases,* p. 101.

[60] Shrewsbury, *History of the Bubonic Plague,* pp. 131, 277; Samuel L. Katz and John F. Enders, "Measles Virus," in Horsfall and Tamm, eds., *Viral and Rickettsial*

Infections, p. 795; A. B. Christie, *Infectious Disease: Epidemiology and Clinical Practice,* 2nd edn. (New York, 1974), chaps. 21, 29.

[61] For instance, Goubert has found that dysentery, raging during the late summer and early autumn of 1701, was responsible for the heavy mortalities among the young in Upper Brittany: see P. Goubert, "Recent Theories and Research," p. 471. Moreover, there is evidence that dysentery epidemics in seventeenth-century New England carried away mainly infants and young children. See John Duffy, *Epidemics in Colonial America* (Baton Rouge, 1953), p. 215.

[62] A. W. Downie, "Poxivorous Group," in Horsfall and Tamm, eds., *Viral and Rickettsial Infections,* p. 946; Katz and Enders, "Measles Virus," p. 795; Christie, *Infectious Diseases,* p. 734; Shrewsbury, *History of the Bubonic Plague,* p. 277.

[63] Until the late seventeenth century, measles was often confused with smallpox. See Katz and Enders, "Measles Virus," p. 784.

[64] Shrewsbury, *History of the Bubonic Plague,* pp. 133, 277; Duffy, *Epidemics in Colonial America,* chap. 5.

[65] Cited in Creighton, *History of Epidemics,* pp. 570-1. Creighton, it should be noted, believed that the epidemic "was a pure and unmistakable epidemic of influenza-cold."

[66] Christie, *Infectious Diseases,* chap. 29.

[67] Bowden, "Agricultural Prices," p. 633; Meuvret, "Demographic Crises in France," p. 510.

[68] Appleby, "Nutrition and Disease," 1-22.

[69] *Ibid.,* 7-8.

[70] Shrewsbury, *History of the Bubonic Plague,* p. 306.

[71] See sources cited in note 60.

[72] Typhus epidemics were not normally very widespread, and were usually concentrated in towns. Influenza rarely proved fatal (see p. 74), except if those sickened are weakened by malnutrition, at which time pulmonary complications could develop. Appleby, "Disease or Famine?", 408, 413, 423.

[73] Appleby's study of nutrition and disease in London suggests that dearth lasting three or more years led to serious malnutrition. Appleby, "Nutrition and Disease," 11.

[74] Appleby, "Disease or Famine?", 424.

[75] Appleby, "Nutrition and Disease," 10.

[76] See note 29, above.

[77] See note 7, above.

[78] L. Stone, *The Causes of the English Revolution, 1529-1642,* Harper Torchbooks (New York, 1972), pp. 111-12.

[79] Salerno, "The Character of Emigration," pp. 82-95, 166-76.