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A HISTORICAL DEMOGRAPHY OF THE ROLVENDEN HUNDRED WITH REFERENCE TO POPULATION GENETICS

by

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A HISTORICAL DEMOGRAPHY OF THE ROLVENDEN HUNDRED
with reference to Population Genetics.

M.Sc. thesis

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ABSTRACT

This thesis studies some aspects of the demographic history of the Rolvenden Hundred in the Weald of Kent during the period 1560-1980, and attempts to assess the factors affecting population change in the region over that period. Research into the regions historical background revealed a number of key variables which may have influenced the course of historical demography. The established views of several Kentish authorities, together with material derived from the Anglican parish registers provided the basic approach to this study.

The study starts with a general introduction to the population history of the region. Particular interest is devoted to folk movements of the Anglo-Saxon period who settled in Kent during the early fifth century. It appears to have been their descendants who were so successful in developing the soils of the Weald for agriculture. Their drove roads determined the orientation of inter-parish movement at much later dates in history.

The main section of the work is concerned with the populations adaptive responses to changing socio-economic conditions. It is argued that the pioneering settlers within the Weald were peculiarly well adapted in terms of genetic 'fitness' and had presumably earlier evolved such genetic traits due to natural selection. The consequences of their failure to adapt to the demands of a market economy forms the basis for later discussion, with particular emphasis upon epidemic cycles acting as a vehicle for natural selection.

The parameters of this study were of necessity limited, many possible avenues of further investigation are highlighted in the last chapter. Some statistical material was found to differ considerably from other contemporary studies. No positive conclusions can be drawn at this stage; the object of this study was primarily to provide a basis for future personal fieldwork in this region.

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Introduction

Interest in genetic demography has produced various studies concerned with piercing together possible reasons for variation in the demographic determinants of the genetic structure of Britain's regional populations. When such material is used in conjunction with a detailed census of the existing population and a survey of genetic markers such as those for many of the blood groups it can provide very useful information on the differentiation of human populations.

It is not possible to emulate the controlled breeding experiments on animals such as the fruit fly which have enabled the population geneticist to understand many of the mechanisms involved in population variation. Under laboratory conditions it has been possible to control the environment, population sizes, sex ratios and breeding habits of these creatures to such a fine degree that many factors such as natural selection, genetic drift and the influence of migration can clearly be seen to affect the genetic composition of the experimental populations.

Analysis of the genetic demography of a particular region does however provide one with a better understanding of underlying historical influences which may have pre-determined the course of historical demography. One lacks precise information but it appears possible to develop a working hypothesis which may make a basic contribution to the discussion of known variation in the demographic

determinants of genetic structure. Most contemporary studiesdevote considerable attention to the geographical regions traditionally regarded as areas of refuge in the past and in particular Wales. South-east Britain, subject as it was to invasion and settlement over many thousands of years has been termed a 'zone of cultural replacement' and as such is assumed to have been subject to much gene pool fluidity. Perhaps for this reason alone the region has not attracted the same attention as the western region. The late Professor Fleure did however suggest earlier this century that 'the Weald along with Romney Marsh were potential areas of genetic survival from perhaps the Neolithic period onwards'.

Initial interest in this study area was derived from Professor Fleure's suggestions which do not appear to have produced further comment or discussion. From a purely practical viewpoint the existence of a gene pool continuous in time from the Neolithic period to the present does not appear a tenable proposition in either the Weald or Romney Marsh.

In order to establish a working hypothesis for theory building purposes this study investigates a number of significant variables that may have had a profound effect on the regions genetic demography. The Anglican parish registers were used as a basic source of information from the mid-sixteenth century onwards. During the course of

research however it was felt that the origin and development of the Wealden settlements was of considerable importance. Unfortunately written records for this period are few and far between, the interpretation offered here based on an analysis of practical problems involved with pioneering agricultural development was derived from personal interest in the subject.

This particular parish was chosen for a number of reasons. The Anglican parish records are amongst the earliest surviving in the country and were easily accessible. Interest in the Weald had already been stimulated by the late Professor Fleure's observations with regard to Neolithic survival. However the close proximity to London, the lack of any obvious degree of isolation did at first appear to detract from the feasibility of this study area.

This particular work has two main aims. The first is to provide demographic information on the historical population of a small area of the South-east which has not attracted attention before. The basic aim of the project was to outline potential value of local historical material often of variable quality, and assess its value for further research projects.

CHAPTER 1

The historical background

Though this thesis is basically concerned with the historical demography of a small area of the Kentish Weald it is necessary to look in some depth at the ongoing development of the population structure of the South East in general. Long term migration patterns appear to have had a profound influence and have undoubtedly led to much gene pool fluidity and considerable dilution of any contribution made by earlier invaders to the common gene pool. Probably the most significant factor open to discussion is the claim made by Professor Fleure (1916) that the Weald, together with Romney Marsh, were areas of 'Neolithic survival'. If he was right, and there remains to this day a considerable degree of gene pool survival within areas of Kent, then this raises a number of important issues. Having given the matter considerable thought, and taking into account both migrations and the historical background which underlies the development of the Kentish Weald, an argument in support of Professor Fleure's earlier work is offered. This approach may differ radically at times from the long accepted pattern of development associated with the South East in general. Some authorities however have already described Kent as being 'a part of, and yet a land apart from the rest of the country', and this is probably even more true of the Weald. The Weald, of course, was only developed and settled in historical times and we have therefore to look

beyond the area to Kent itself and the South east in general in determining the genetic constitution of the primary settlements. However at a much later date the parish records demonstrate a strong tendency for Wealden folk to marry spouses from within the area. Those born outside the Weald were 'strangers' and this may be particularly significant in terms of factors affecting the region's historical demography. Selective pressures operating on a small population and the distribution of settlements may have produced some degree of inbreeding as a result. It may be that genes present in the Neolithic population operated with a selective advantage, the land making its own peculiar demands, on the constitution of individuals. The present approach supports Professor Fleure's earlier observations but it is intended to extend and develop his hypothesis in order to offer a possible explanation.

Small bands of palaeolithic men wandered across the South east, as over the rest of Britain, hunting and drifting in the long periods of ice recession during the Pleistocene, living in small bands. We have fossil evidence in the form of the Swanscombe skull discovered in the hundred foot terrace of the Thames gravels, dating from the second inter-glacial period. Also the Oldbury Hill rock shelters, just south-west of Ightham provide evidence for tool working at various periods between 200,000-100,000 years B.P. Such examples of course are far too remote in time to have contributed to a gene pool

continuous in time. After the final retreat of the ice-sheet, as game and begetation increased with the warming of the climate, a Mesolithic culture developed. The economy was based upon hunting, fishing and the collection of edible roots and nuts. Though no doubt suspicious of the Neolithic farmers at first these survivors of an earlier age must soon have been attracted by barter and absorbed.

The transition from a pre-agricultural to an agricultural way of life during the Neolithic period needs to be seen as a slow and complex process. It is also necessary to look beyond Britain initially and consider the varied and gradual adjustments between man and the land in different European environments. By the time the first waves of migrants arrived on British shores it is reasonable to assume a considerable gene pool diversity had resulted in Europe as a whole. We know from archaeological evidence the direction from which the main influx came and that the South east rapidly became a zone of cultural replacement and probably much gene pool fluidity from the Neolithic period onwards. What may be particularly significant however is that the newcomers appear to have passed through and presumably mingled with earlier established gene pools in Europe. It would appear possible that genes with a positive selective advantage, determined by adjustment and pressures imposed by environmental determinants, may constantly have been introduced. Cross-fertilization may have produced 'hybrid vigour' and greater fecundity in females which would be in

accord with Neolithic ideals. Lowland Britain of course had the ability to absorb and support a higher level of population and could well have created a reservoir gene pool on a smaller scale than, but similar to, that of North east Europe. Later migrants of both pre- and post-Roman times came mainly from across the North sea and in spite of the endless folk movements in Europe may all to a greater or lesser extent have shared in an ancestral gene pool that originated during the Neolithin period.

Professor Fleure (1951) suggests that 'cultural relations with Denmark and the Western Baltic are indicated as existing as early as the second millennium B.C.' Archeological evidence in the form of a series of burial chambers similar in type to those found in Scandinavia and northern Germany supports this theory. One barrow however appears to be an outlying specimen of the unchambered long barrow more familiar in Wessex and elsewhere on the chalk; this is known locally as Julliberries' Grave and lies close to Ashford. Another long barrow of particular interest is Coldrum which when excavated earlier this century was found to contain the skeletons of at least twenty two individuals including infants as well as the aged. They had been buried at different times in this communal tomb, but certain skeletal likenesses make it probable that they were all members of one "family". It would also appear that they are similar in morphological type to migrants from the western Mediterranean region. This may mean that the socio-political balance of power up to about 2000 B.C.

rested with the powerful megalithic civilization earlier established. Chitty and Fox (1932) demonstrated this cultural duality by their distribution studies and suggest this persisted throughout history.

Since they wrote however more evidence has become available and various general interpretations based on changing ideologies have been made. The article by Richard Bradley and Ian Hodder (1979) is based on an approach which integrates the study of cultural and economic evidence. They suggest that there were 'three major phases which need to be identified. In the first place, the early and middle Neolithic, a stable arable economy was the context within which the expanding lineage groups could emphasize their common rights. At this stage there is little evidence of the formation of regional interest groups. The build up of strains within this system led to a second phase (later Neolithic and Bronze Age) in which the emphasis on widespread links between smaller and less stable settlement units, and in which the major strains were between hierarchical levels. In the third phase, the middle and late Bronze Age and Iron Age, there was a radically different social and cultural system based on stable intensive agriculture. Regional groups, perhaps the first 'tribes' in British prehistory, emerge with a common and competitive interest in maintaining and symbolising their rights to tracts of land'.

Their first stage appears to be in accordance with the evidence derived from the long barrows in Kent and suggests

that 'kinship' traced through dead ancestors was important. For instance one of the skulls recovered from the Coldrum long barrow appears to have been accorded special attention; it was found placed on a carefully made stone shelf in the chamber. But it is the second and third stages of their suggested process of integration that are of particular interest. Here again though it is perhaps necessary to look beyond Britain to Europe for the origin of these influences. They appear to represent inherent adaptive responses from within the wider continental gene pool itself that were transmitted to Britain by subsequent waves of invaders who probably introduced some modifications to the gene pool. The most interesting aspect raised is that of the development of a hierarchy and this appears to have been the role undertaken by the Bronze Age migrants. If for a period they represented an elite group marrying within itself then the majority of the population would not have been affected. On the other hand possible widespread links between the smaller and less stable settlements could have led to a gradual mingling of gene pools giving rise to the possibility of some 'hybrid vigour' of potential benefit.

The origin of the Bronze Age migrants appears to have been in Bohemia and Moravia. In central Europe they had mixed with the 'Battle Axe People' who used stone battle axes perforated to accept a handle. This suggests the culture of a warlike people who presumably had been obliged to adjust their adaptive strategies due to environmental or

population stresses. In the long term this gave them a potential advantage and created an elite. They migrated through Holland from the Rhineland and made their first landfalls on the East coast and gradually expanded their areas of influence and presumably political control. As migrants they represent an enigmatic group. It is generally thought however that they may have been of Alpine stock, taller than the average Neolithic person and with distinctive round heads. Eventually they appear to have become absorbed into the wider gene pool leaving little distinctive trace. Perhaps in Europe they contributed more to the Celtic gene pool and one may speculate that the later Belgae who migrated to Kent during the first century B.C. had shared in an ancestral gene pool. Strabo noted in Roman times 'that prisoners taken in South-east Britain were six inches taller than the tallest men in Rome'. But this must remain a matter open to speculation as many other factors could have been involved.

The Celtic peoples of Europe appear to be descended from dominant elite populations. Two of these are the Battle Axe fold, originating from east of the Danube during the third millennium B.C. and probably of Indo-European origin. The other ancestral group appear to have migrated from the Iberian peninsular probably from Portugal. Both groups had at an early date acquired copper which gave them a powerful elitist image. As we have seen they met and mingled and at the Czech village of Unetice the first evidence of bronze smelting in Europe was attributed to this

group. This elite group or associated elites were fortunate in being situated in such a position as to control all the major trade routes. Their later influence in Britain is reflected in the dominant Wessex culture which flourished up to about 1500 B.C. To this period also one could possibly attribute Fleure's 'established trade links with Scandinavia and the Western Baltic regions'. Somewhat later, about 1250 B.C. the Urnfield Culture people migrated into the valley of the Rhine and eventually across France. The period from Battle Axe people to the Urnfield migrations spans some fifteen hundred years. During this period a considerable admixture of genes and gene pools must have taken place together with natural adaptations to land and environment.

This must have been a period of even greater tensions between spatially defined groups in Europe subject as it was to even more folk movements. There is much evidence for defended settlements and a subsequent reliance on centralized authority over extended periods. The interesting question that arises from the conflicts is how this could potentially affect the migrations taking place particularly from Europe into Britain. If one assumes that the ordinary folk relied upon a central authority then their security of livelihood depended upon membership of such a unit. Under such circumstances short distance migrations undertaken within one's lifetime would appear to be the logical step. This would probably have led to some gene pool diversity as well as the development of

tribal units, but unless the central elite suffered catastrophe that rate of change in genetic terms would be slow. Carrying this argument a stage further to consider migrants to Britain, many of these appear to have reached south-east Britain from the French, Flemish and German coasts. Many had perhaps been subject to generations of adaptation and as a result did not differ radically from the genetic constitution of earlier migrants who had passed along the same routes and undergone similar adaptations to environmental pressures. The Belgae however appear to have migrated en masse to Kent due to Teutonic tribal pressures from the area east of the Rhine and they therefore represent an entirely different category of influence.

As far as the settlement of Kent is concerned therefore about 100 B.C. migrants believed to have come from the area of modern Belgium appear to have displaced the earlier indigenous population. The newcomers represented a vigorous, technologically advanced elite and the building of hillforts dating to this period, as the first evidence for intensive agricultural development and forest clearance on heavy land attests. The Belgae themselves are of particular interest in terms of their genetic constitution. It is thought that they derived as a result of cross-fertilization between Celtic peoples of the Marne and Aisne valleys and Teutonic migrants from Northern Germany. It would appear possible that they provide a typical example of 'hybrid vigour' which resulted in a particularly vigorous and well-adapted people. Such a situation would

appear to have been by no means unique in the prehistory of European populations. Perhaps it is possible that here we are witnessing a later reintroduction of genes by Teutonic peoples that had at a much earlier time been introduced by the Battle Axe folk into the gene pool.

The Belgae on the Germanic side of their ancestry had inherited the traditions of forest dwelling folk. It is from them that they had developed techniques adapted to forest clearance, an advantage of particular significance to their descendants, and the use of heavy ploughs. All previous inhabitants of Britain had occupied areas of primary settlement, the lighter soils, whether on uplands or on river terraces which were naturally drained and unencumbered by heavy woods. As a natural result of their advantageous position the Belgae were by the time of Julius Caesar's invasions already well established in the south-east. A dense population of vigorous settlers were developing their farms over the countryside, clearing forest, breaking up new land with their heavy ploughs and reaping rich crops.

It is interesting to note that the settlements of Kent itself came from the area of modern Belgium and appears to have involved whole tribes. About 50 B.C. other waves of Belgae from northern France crossed the Channel to settle mainly in Sussex and elsewhere. They appear to have been more mixed in ancestry than the original migrants, arriving in smaller numbers from Roman Gaul and to have mingled with the older indigenous peoples of the area. In terms of the regions' historical demography they may be very significant

to the development of the Wealden population. From the admixture of genes the Romano-British morphological type appears to have become established at least by, and probably well before, the Roman Conquest, and to have persisted to this day.

During the period of Roman occupation Kent was to become one of the richest provinces; Canterbury became the most important centre but a number of other towns also evolved. The tribes of the Belgae became integrated into one administrative unit based upon Canterbury and the Celtic population of the Romano-British period evolved. Iron mining within the Weald became increasingly important as did the traffic from the Channel ports to London. The period is however suggestive of a settled agricultural economy; villa systems had flourished for a period until the decline in Roman fortunes led to the eventual abandonment of Britain and the arrival of fresh waves of migrants from across the North Sea. A pattern of events thus set in motion a process that was to lead to the eventual settlement of the Weald itself. The area had from the earliest times remained conspicuously unpopulated; the "Jutes" were to be the pioneers in this latest stage of development. Academic opinion differs regarding their origin, the term 'Jute' does not apply to a separate people or tribe, though they are associated with the Anglo-Saxon migrations.

According to the Anglo-Saxon Chronicle, in 449 A.D., a band of mercenaries under the leadership of Hengist and

Horsa was called in by the British King Vortigern and settled in Thanet to help protect the country against the Saxon pirates - a practice commonly employed by the Romans during the later years of the empire. The newcomers turned against the Britons and in a sharp campaign, during which Horsa was killed, conquered the whole of Kent as far as London. Bede suggest that the Jutes themselves may, as their name suggests, have come from Jutland, but there is little else to support this connection. Their dialect was Anglo-Frisian, there was strong Roman and a Celtic element in their law, their jewellery and grave goods show a variety of influences, chiefly Frankish and there were markedly Frankish resemblances in their land system. These heterogeneous cultural elements prompted Hodgkin (1935) to suggest that the nation was first formed in Kent itself out of a gathering of federates and adventurers assembled by Hengist from the whole seaboard of north-western Europe. This is a particularly persuasive theory and needs to be given serious consideration. There is however another aspect; Jolliffe for example looked for continental parallels, particularly with regard to systems of land use, and found them among the Franks of the Middle Rhine. The Franks had long been in contact with Roman rule but, like others, had been displaced in the great surge of tribal movements along the crumbling frontiers of the Roman Empire. In their search for new lands to settle it would appear feasible that by following the fortunes of a warrior elite their chances of re-settlement were increased considerably.

Kent itself may have appeared the ideal area as its previous inhabitants' culture probably did not differ markedly from that of the invaders. There is considerable evidence also for a high degree of Romano-British survival, perhaps because it was as associates of the Britons that the Jutes first arrived. The earliest surviving code of Kentish law, that of Aethelbert, shows the existence of a submerged class, the 'laets' whose 'were geld' or blood price was markedly lower than that of the ordinary freeman. This may of course be a reflection of the long established elite hierarchical traditions, a descent in stages from the royal household, through the ranks of free warriors and their descendants who had originally followed Hengist and his son, Oisc, to the indigenous folk. All were to form a part of the independent kingdom of Kent with its royal line of descent from Hengist's son Oisc, the Oisingas or Eskins. By the seventh century however following the eclipse of the fortune of the royal house, the name Cantware was used to describe the population of Kent who now occupied the old Roman tribal area of the Cantii.

Though initial Jutish expansion extended into parts of Surrey and elsewhere, British resistance stiffened under Ambrosius Aurelianus and the legendary Arthur, and a number of battles were fought, culminating in about 500 A.D. in a great British victory at Mons Badonicus. This eclipsed the fortunes of the royal houses of Kent and Sussex, brought to an end the first stage of the conquest by Germanic peoples and caused the Jutes to fall back upon their base in Kent.

Never again were they able to take the initiative, the advance against the Britons being taken up some fifty years later by the new Saxon and Anglian Kingdoms of Wessex and Mercia, which had come to be established in the Thames and Trent basins. Due to their growing power the Jutes were fenced in without possibility of expansion and barely able to defend their border lands in Surrey. However materially advanced the Kentish nation was, however strong its constitution and the order of society upon which they rested, this handicap could never be overcome. Eventually they had to face a Mercian kingdom, now firmly in control of Surrey, bent on expansion and at the height of its power under Offa. The resistance of the Kentish people to Offa was bitter and prolonged. At a battle fought at Otford in 776 A.D. the Mercian armies were either defeated or so badly mauled, that they were forced to withdraw, gaining the kingdom a respite of nearly ten years. The charters show however that Offa had re-established himself in Kent by 785 A.D. and this effectively marks the end of its independence.

The supremacy of Mercia was itself short-lived. In 823 A.D. its power was overthrown by Egnert of Wessex at Ellendun, and Kent was occupied shortly after, it seems with resistance; indeed Egbert may have been welcomed. The Danish wars which followed welded Kent into the Kingdom of England, but its distinctive customs and tenures, nurtured during the long years of independence were by then ineradicable; neither the English nor even the Norman kings

attempted to supplant them and the last vestiges lingered on into the twentieth century with the laws of Gavelkind. Throughout the centuries the customs so perpetuated, developed by their own internal logic to determine in the Weald, first the use to which the forest was put, then the manner of its clearance, and the finished appearance of the countryside, intimate and enclosed as it is today. The Wealden charters, beginning in the reign of King Wihtred, show an unbroken progression until the Norman Conquest, spanning the years of Mercian and English rule and in the developments they disclose, are projected well into the reign of the Plantagenets.

We do not know how fast the population of Kent grew from the time of the Kingdom's foundation, but there must have been serious checks caused by the scourges of war, famine and epidemics common to simple societies. The conflict with Mercia at the close of the eighth century and the Danish wars which followed would certainly have taken a heavy toll. So long as the old settled lands could sustain the population however there can have been little attraction in the Weald.

From about the ninth century onwards agricultural pioneers began to make substantial inroads, clearing areas of virgin forest, and cultivating the forest clearings. The successful adaptation to environmental stress, and the successful modifications which occurred must have been inherent in the genetic constitution of these pioneers. Their presumed pedigree would suggest a strong Germanic influence; people

who had long been adapted to such a lifestyle. The Belgae had been earlier influenced and had inherited a selective advantage; so too the Franks at a later time underwent similar conditioning. In terms of biological fitness the richness of the gene pool, constantly influenced and modified by introduced or re-introduced genes of similar origin from the migrant groups of north-east Europe would appear to have been a positive advantage. Life for the pioneers must have been particularly demanding and made specific demands in terms of adaptive response, leading perhaps to some gene pool diversity within the Wealden population. There is also the cultural aspect to consider, particularly the question of inheritance, land and property passed to immediate kin. Perhaps some gene pool diversity may have resulted due to a system of prêferred marriage in order to preserve the kinship networks hold over land. This hypothesis needs to assume a sufficient density of population to allow this preferred marriage system to operate and as there appears to have been every indication of high mortality it may not be of great significance. What is more practicable perhaps is a system by which Wealden folk married within the Weald itself. If both partners were derived from Wealden stock one might assume a higher degree of biological fitness may have operated. If more children survived the selective advantages would eventually predominate and gene pool diversity gradually increase. There may be some recognisable genetic traits within the present Wealden population which may be identifiable. However it is only possible to speculate

at this stage about the earlier Wealden population and probable influences that affected the regions' historical demography. Later trends appear significant. From parish register material extending to other areas within the region it does appear that at least 95% of marriages were with Wealden folk. Much more work of course needs to be carried out to confirm this hypothesis, but it appears to be particularly significant.

Though extensive settlement of the Weald proper began after the Norman Conquest, following a rapid rise in population up to the period of the Black Death in 1349, the genetic determinants in terms of biological fitness are of course far older in time. The Jutish lords were replaced by Normans but the hierarchy itself is not of particular importance; it is the peasant stock who survived, subject to considerable adversity, adapted to changed circumstances but passing on their genes to the future generations. We shall never, of course, know how many of the Wealden peasants were among the battle dead at Hastings. Some at least appear to have found sanctuary in the Wealden forest to return eventually to their settlements.

Following the Norman Conquest a considerable natural increase in population appears to have taken place; a trend reflected throughout the country as a whole. The Wealden population however, as it increased, brought pressure to bear on the available land resources and further clearance work was frequently frustrated by the ancient forest laws. In any case the soils of the Weald were unsuitable for intensive agricultural use and so had a limited capability

with regard to the support of a growing population. Considerable internal stresses of an environmental nature leading to a complex interplay between the genetic composition of the population at local level, operating as an adaptive response, must be presumed to have occurred. Marked variability of the A B O blood group system, with a possible higher incidence of the A gene frequency may be significant here. It is perhaps debatable if pressures due to environmental stress were ever high enough to have a significant effect by themselves. However as there appears to be an increasing incidence in the blood group A in Northern Europe a selective advantage could have been introduced by migrants over several millennia to this region. Some of the pressures on land resources were offset by traders and stallholders settling and establishing themselves at an early stage. Rolvenden's origins are of a trading community rather than a purely agriculturally dependance and as a result its early associations with the rising market economy were a positive advantage. The internal stresses remained however, as the endless disputes over timber rights etc. demonstrate. Any rise in population therefore must have been as an adaptive response to the underlying stresses inherent within the area up to the eve of the Black Death.

The plague constituted a devastating destroyer of human life of course and by the end of the fourteenth century at least a third of the country's population had been wiped out. It is notable that the Wealden contemporary records

are surprisingly silent about the passage of the plague at this time. Even later the parish registers are reticent about plague entries in general and only an indirect estimate of mortality levels is possible. Most authorities believe that mortality levels may have been lower in the Weald, an assumption based on the levels of population compared with the towns. There may well be reason to suppose that the A B O genotypes influenced differential mortality and this aspect will be further dealt with elsewhere, together with other possible consequences. There can be no reasonable doubt however that the plague had a dramatic effect on the region's historical demography.

Perhaps of most significance was the indirect benefit to the woollen industry that led to a period of prosperity for the survivors of the plague. The Flemish weavers who were invited to settle at Cranbrook and elsewhere represent the last significant influx of migrants to influence the Wealden gene pool. They also provided the economic basis that enabled Kent to become economically and politically one of the most important of all counties of the realm between 1480 and 1660 A.D. Nearness to London and its situation athwart the principal lines of communication between the capital and the Continent were also of great significance. The Wealden population shared to varying degrees in the prosperity, and, inevitably, suffered considerable hardship following the collapse of the woollen industry. The survivors' adaptive response to this socio-economic crisis led to an increasing dependence on

agricultural resources. A considerable migration to the towns and subsequent depopulation appears likely at this time; others chose to remain and face the new challenge.

The indigenous population of the Weald today represents the result of selection to the harsh environmental demands made upon individuals throughout historic times. Though the region could be seen as an area of refuge for remnants of earlier populations, the most significant event appears to have been the founding of the Jutish kingdom by Hengist and Oisc. They of course represented a strong group of invaders who were of more than sufficient size for gene pool stability. At this stage one can envisage in Kent itself much gene pool fluidity, a mingling of Romano-British genes with those of the Germanic peoples who may not in fact have differed genetically to any great extent. Some centuries later due to population expansion settlements came to be founded within the forest itself which led to peculiar demands on the genetic constitution of the pioneers and their descendants. It is arguable that the successful adaptation responses owed much to the ancestral gene pool particularly that of continental Europe where different migrants had undergone various regional adaptive responses from the Neolithic period onwards. Inherent within the gene pool were presumably potentially useful genes which even if present at only a low level would, as they conferred a selective advantage, rapidly increase over the generations. Genes from the Neolithic period could as Professor Fleure suggests be detectable in morphological types. Such genes may however have been introduced by later migrants from Europe however and should

not be taken as evidence for indigenous survival in Britain itself. Some genes may well survive from this period in the Weald, but the later Belgic settlements may well have driven westwards the indigenous groups. The population of the Weald does however appear to be of particular significance in terms of historical demography.

CHAPTER II

The Land and its Development

In order to discuss some of the more significant problems associated with agriculture, both past and present, an 'agriculturalists eye-view' is adopted for the present study. Even today the soils of the High Weald in general are regarded as being amongst the poorest in Kent and were most certainly unattractive to primary settlement. For all practical purposes the Jutes can be said to have begun the process of forest clearance that was to lead to eventual settlement and arable farming. Their culture and customs particularly with regard to land use and settlement appears to have been particularly well adapted to the hard pioneering lifestyle of the early settlers. What is perhaps even more significant is that the process of forest clearance was undertaken by individuals or family units over many generations. It is the ongoing investment in time and effort and the peculiar Kentish land law expressed in the customs of Gavelkind that is of particular significance here. In terms of the regions historical demography there would appear to be an important link between the land and the individuals involved in its reclamation from the forest. In practical terms of labour inputs and time involved the cost must have been enormous and the return on the investment can only have been calculated as a legacy entrusted to future generations. The fierce independence and self-sufficiency of the Jutes

and their descendants appears to have set them apart from the rest of the country. This influence lingered and even at the close of the eighteenth century the county as a whole remained mainly agricultural; generations lived out their lives, remaining suspicious of strangers and going about their business behind their high-hedged lanes. It is this air of continuity that is most important; the nineteenth century saw the introduction of 'scientific agriculture' and the twentieth even more remarkable changes, yet the basic problems remain the same. The hard won land the Jutes once held in trust has now passed into the hands of modern agriculturalists and so the process of continuity goes on.

Many factors contribute to make farming difficult in the High Weald. The land is hilly and deeply dissected with many steep slopes and there are many springs and wet patches requiring drainage. The different soils are generally acid and low in phosphate and potassium and occur in a highly complex pattern so that often several different soils may occur in the same field. Such natural handicaps can be more easily overcome today but in the past they must have added considerably to the pioneers' problems.

Before considering the practical problems involved it is necessary to outline the Jutish system of land use and the laws that reflected it as this was to have far-reaching consequences. The features which chiefly distinguished the Jutes from their Anglo-Saxon neighbours were the greatly superior status enjoyed by the ordinary freeman; their

system of administration which divided the Kingdom of Kent (small as it was) into a number of separate provinces or 'lathes'; laws of inheritance which provided for the equal partibility of property between surviving sons or daughters if there were no sons; and perhaps the greatest contrast of all the practice of settling in scattered farms and hamlets rather than in compact villages.

The Jutish practice of allocating areas of land to the use best suited to them led to the land of the present Rolvenden Hundred being valued for the ubiquitous acorn yield that provided pannage for the swine. The forest laws specifically forbade the felling of mature trees of oak and beech, and others forbade autumn ploughing or complete enclosure, which while especially desirable in a forest country to keep out wild animals, also kept out the foraging swine. However, with the break-up of the commons from the eighth century on, the removal of these latter impediments came to depend upon the co-operation of the great lords on whom the protection of pannage had devolved with the dens.

It was in the lords' own interests to encourage settlement, they being concerned to make what profit they could from their dens without prejudicing the rights of their upland tenants and the dens were in general so large that cultivation or enclosure of a few acres here and there were unlikely materially to affect the pannage yield but could be turned into a useful additional source of revenue. There were rents that could be imposed in money or kind, and the tenants could even be required to make good to the

lord through payment of 'danger' any loss he suffered through the failure of the acorn harvest. The most profitable venture of all was to sell them the rights they needed by way of 'lef yeld' which permitted autumn ploughing and 'gate-penny' which permitted enclosure to be completed by hanging gates. The forest laws which specifically forbade clearance provided the most fundamental problem, yet these too could be manipulated. Some unauthorised clearance by densmen could be tolerated and perhaps turned to the lord's advantage by the convenient expedient of collusive fines. Under such circumstances it was not to be expected that the forest tenants living far distant from the upland manor and the lord's court should have too nice a regard for the laws that forbade clearance; still less if the lord, calculating fines and rents against profits of pannage, should show himself amenable.

The forest tenants would also have had to calculate in terms of practical advantages and disadvantages involved in clearing areas. The work called for an enormous investment in time and effort with a low return in agricultural terms, even where the land was reasonably fertile. The laws of Gavelkind appear to reflect this thinking; a man's short lifetime may never have been long enough for him to reap the long-term benefits. The land appears to have been held in trust, one generation to the next, each contributing a share to the clearance and ongoing reclamation of forest land. This fact is probably one of the most important in terms of the region's historical demography, and appears to

point to gene pool continuity over centuries, subject of course to the natural checks imposed by wars, famine and diseases. The land was reclaimed at high cost and gave rise to a fierce independence of the agricultural community of the county as a whole, though the whole process was to take many centuries to complete.

Timber was of course an important by-product of the initial clearance and as population grew following the Norman Conquest, so did demand for timber, both for building purposes and as a source of fuel. As the men of the eastern dens were as independent minded and litigious as any, no arbitrary action by the lords was likely to pass unchallenged. Over generations they had found it possible to skirmish along the ill-defined frontiers of custom. It may be that the Jutish lords, sharing the same long-standing cultural traditions as the densmen, were more amenable to changing circumstances. However, after the Norman Conquest, the Jutish lords were supplanted by Normans and most of the established manors passed into their hands also. As the value of timber continued to increase the densmen became increasingly disinclined to acknowledge that trees growing upon the soil they owned were by ancient forest law the property of the lord. At the same time the great lords, mostly churchmen, showed themselves disinclined to yield to the depredations of their tenants, nor were they prepared to barter away their rights as in the past either for rents or other advantages.

Rolvenden was advantageously situated close to the Rother Havens and could easily dispose of timber, either for

shipment to London or to the foreign shippers (mostly Flemish) plying the Rother. This trade was to remain important to both legitimate and illegitimate traffickers alike up to the eve of the Black Death. Timber as a natural primary crop represented a practical return for the high labour inputs involved in land reclamation. Unauthorised felling however led to endless disputes and a particularly determined effort at enforcement of the forest laws was made in Edward II's reign by the Archbishop of Canterbury. He took proceedings against the tenants of eight of his dens for the illegal felling of more than six hundred oaks and beeches as a result of which a number of offenders were gaoled. These proceedings did not go undisputed. Thus the tenants of Kensham and Friezingham in Rolvenden parish pleaded (though to no avail) that the transfer of timber rights had been implicit in the conversion into knight's fees.

As population rapidly increased after the Norman Conquest the laws of Gavelkind presented another problem. A diminishing supply of land and restrictions on further clearance made it more difficult for enterprising individuals to add to their holdings by making new 'assarts' of cleared and reclaimed land. Other possibilities available might be to supplement one's livelihood by some craft such as smith's work or hurdle-making, or he might hire himself out as a labourer or abandon the countryside altogether for one of the growing towns. In the free community of Kent all these choices were open; it was a society in perpetual ferment.

The Black Death decimated the population and left more arable land available than could be managed. The only logical solution was to adopt a less labour intensive system by putting land down to grass and raising sheep and cattle. There was of course already an established and increasing market for wool upon which the prosperity of the region came to depend. Yet there remained scope for the individual entrepeneur to experiment and to cultivate land as he wished.

Among the survivors of the Black Death were many well placed to exploit the situation. The free market in land that had always existed now provided a unique opportunity for amassing holdings, while the ability of the occupier to put land to whatever use he chose, compounded this advantage. There thus developed within the county a yeoman class of exceptional power and independence, able to employ their own hired labour, and merging with the lesser lords into a new gentry. The inequalities, already marked in Kentish society, were aggravated; not because the poorer peasants or wage labourers were less well off here than in other parts of the country or that their status had been depressed, but because the enterprising or fortunate had become so much better off. The sense of this acting within a community even where the humblest had always regarded themselves as free and the qualities of self-reliance had been instilled for generations, fomented grievances. In the eyes of the poorer peasants the lords and the wealthy Gavelkinders appeared more and more to be

in collusion.

Rolvenden however appears to provide an exception probably because it originated as a trading rather than an agricultural community. The craftsmen provided a local service industry for the larger farms; others with a few acres could make use of the woollen trade's cottage industry potential, at least until its decline. At the same time, if they wished the land they owned could still be worked as in the past. Yet the larger farmers in their turn could, and did, contribute to the well-being and ongoing economy of the parish itself. For more than a hundred and fifty years, up to the close of the eighteenth century, Rolvenden's affairs were controlled by an oligarchy of large farmers who ran the parish. They were a benevolent influence, dealing with all cases of hardship that came to their attention, and at the same time providing work opportunities suited to an individual's capacity. Their paternal interest in the community probably did much to ensure its survival as the woollen industry and its associated outwork went into decline. The system of 'living-in' ensured that all involved could in some capacity great or small contribute towards the old affinity with the land and its crops.

With reference to the diversity of crops grown, grass was and still is ideally suited to the heavier soils. Grazing cattle and sheep ensured a positive return and sheep grazed on the lighter soils increased the potential fertility of the soils and this enabled barley to be grown, a crop traditionally utilised by the brewers. Wheat could be

grown on the heavier soils provided they were not too marginal, all of which provided a diversity of crops best suited to particular soils. Hops were introduced in Elizabeth's I's reign and the Kadwell family are credited with its introduction into Rolvenden parish. Some crops were more labour intensive than others and must have been influenced by market demands over the years. They did however provide a constant source of labour and contribute towards the communities' self-sufficiency. Wages, such as were paid, remained low and depressed the standard of living to some extent, yet the land continued to support the needs of the population.

Nineteenth century agricultural practice introduced new techniques and machinery to assist with the working of the land but many basic problems remained. The introduction of clay tiles assisted in draining waterlogged soils and increased potential yield. Problems with soil acidity could be more easily corrected in the short-term by using chalk or lime and deficiencies of nitrates, phosphates or potassium could be made good by using recently introduced chemical fertilizers. All these represented a fairly high labour input, drainage being by far the highest but with the best long-term benefit. Each investment of effort aimed at improving the soil again formed another part of an on-going investment; generation after generation, the land and its peculiar problems remained the same.

The twentieth century has seen far more advances in agricultural techniques; modern agriculturalists now farm

the land the Jutes once cleared. Tractors and modern agricultural machinery make many tasks easier and have taken the place of the bullock teams, horses and men. Modern agriculture is orientated towards world markets with cereal varieties and breeds of cattle and sheep specially bred to meet the beeds of a modern market economy. The land can now support continuous cereal crops and where grass is still the main crop, it is capable of supporting higher numbers of cattle and sheep than it did in the past.

The land held in trust by many generations despite its practical problems has sustained the community of Rolvenden since perhaps the ninth century. There have naturally been many changes; the once great farming families of the parish have gone like the great lords before them. Others have taken their place but agriculture today remains a particularly important source of employment. Some of the families present in the parish have long associations with the village or the immediate area. All could be said to share in the on-going legacy founded by the Jutes and handed down to those who live and work in the parish today.

CHAPTER III

An Outline of Population change within the Rolvenden Hundred 1560-1980

Period I

This section considers some of the main determinants of population trends during the period covered by this thesis (1560-1980) using the parish registers as a source of raw data. Particular emphasis is attached to any changes in socio-economic circumstances that appear to have acted as potential variables in determining demographic change.

Of paramount importance was the spread of the broadcloth industry to Wealden villages and hamlets during the 1560's. Refugees from the Low Countries with new technological skills and access to markets not previously available to the Wealden woollen trade created new socio-economic opportunities. As the actual manufacture depended on the large number of inhabitants for whom farming could not provide a full livelihood it may have influenced migration patterns. However in dealing with the 'insular' Wealden population it is thought that short-distance opportunistic migration, particularly following periods of crisis mortality, may be more applicable to Rolvenden and perhaps elsewhere in the Weald.

In calculating pre-census population estimates a multiplier of 4.5 persons per household was used from the late seventeenth century onwards based on the findings of Krause (1957). Laslett (1969) points out that a major problem in working out person to household ratios is the definition of 'household', which appears to have varied

considerably. Rolvenden households appear to have been based upon an extended family principle during the sixteenth and early seventeenth centuries. As there was work potential for children as well as adults in the carding, spinning and weaving processes two or three generations could have contributed. My research findings to date suggest that housing was limited in Rolvenden parish during the late sixteenth and early seventeenth centuries.

As no parallel study of a Wealden village appears to have been undertaken, for the purpose of this pilot study the following hypothesis is offered as a basis for discussion. It is felt that the peculiar laws with regard to inheritance are of particular significance; by tradition the house passed to the youngest surviving son and any land was divided equally amongst elder siblings (Witney 1976). Where large units of land were involved the problem was not great but a point must surely be reached where a small landholding jointly shared as a pooled resource plus house space in the ancestral home become a feasible alternative to sale of share and migration. The potential for outwork in the broadcloth industry may even have encouraged such action. Of course overcrowding, perhaps acute overcrowding, and subsequent falls in an already low standard of living would be a probability. Limited or over-stretched economic resources would have meant limited means were available for new housing as far as the majority of the population were concerned.

It must be stressed however that population density in a Wealden country parish was already strictly limited by an agrarian economy practised on marginal soils and probably numbered less than seven hundred. A small community appears to have existed around the present church, with Rolvenden Layne and numerous semi-isolated farms and settlements on the sites of ancient 'dens'. The farms would have provided both basic amenities and work opportunities making them particularly attractive to unmarried newcomers to the parish. It would appear possible therefore that the farms acted as a reservoir for surplus workers who could be gainfully employed while awaiting the opportunity to enter permanent employment.

When the parish registers were well-established during the 1560's, baptisms and burials were in the region of 32.6 and 30 per annum respectively. This would give a very rough rough baptism rate of 50.1 when based upon an estimated average carrying capacity for the parish of 650 persons. Burials would be in the region of 46.1 per 1000 during this decade. An increase in population size was occurring in England as a whole around this time (Chambers 1972). This was accompanied by a rise in demand for corn and foodstuffs and the farmers and landlords benefited from the rising prices ensuing from this demand. It is probable that the effect on population and price increases varied locally and as far as the Weald was concerned the fluctuating fortunes of the broadcloth trade provide a key variable. Some slight fall in the baptism rate if detectable and this may have

resulted from minor trade depressions or early signs of the rise of non-conformity soon to become well established. Rolvenden's population however appears to have become increasingly dependent on the woollen industry for support and as a result it became increasingly vulnerable to the vagaries of a market economy.

The question then arises with regard to adaptive response on the part of the local population when faced with serious trade recessions. Established families and other economic units were probably obliged to stay until conditions ameliorated. As a result, a drastic reduction in already low living standards with resultant malnutrition appears to have been inevitable. A particularly serious depression between 1614 and 1616 resulted from the disastrous failure of the merchants to organize the London markets (Chalklin 1961). The same author suggests that the woollen industry reached the 'nadir of its depression in 1622 and thereafter slowly recovered'. However, further trade disruptions and uncertainties created during the Civil War and Commonwealth period led to a rapid decline. Unfortunately the quality of the Rolvenden registers declines rapidly after the 1630 period, possibly as a result of non-conformity and it is not possible to determine the degree of adaptive response with any degree of accuracy.

It is known however that a particularly disastrous outbreak of plague occurred about 1665/1666 which is said to have severely reduced the population, the present village surrounding the church being systematically burnt and the

villagers moving out to Lain Green. A decline in population had probably begun earlier due to increasing poverty, and to this period also could possibly be attributed some selling of land and the gradual amalgamation of substantial land-hildings by a reduced number of farmers. A return to an agrarian-based economy meant that the carrying capacity of the land resources once more became the major socio-economic and demographic determinant. By 1700 an estimate based on a house count suggests that the population level had fallen to below 500 and the decline continued into the early years of the eighteenth century. Chalklin (1961) comments on the great and general poverty suffered by the inhabitants of the adjoining parish of Benenden and a decline in population following the loss of the wool markets and associated trade.

Period II 1701-1840

Estimates for 18th century population figures are based on a count of households taken at ten year intervals from 1701 onwards. A standard multiplier of 4.5 was used throughout (Krause 1957) for the sale of standardisation. The population of Rolvenden appears to have reached its lowest point about 1711 when an estimate of 430 is suggested. Baptisms and burials were in the region of 15 and 12 per annum respectively about this time suggesting a baptism rate of 34.9 and a burial rate of 27.9 per 1000. Baptism rates may be reduced due to some degree of non-conformity, though opinions differ as to the degree and extent of such influence. A gradual increase in population appears to have begun soon after 1711 and continued until the 1750's followed by a more rapid increase sustained apart from a minor fluctuation during the 1760-70 period and reaching a peak of 1,507 in 1831.

History and literature alike have tended to represent the villages of rural England in the eighteenth century as controlled by an autocracy of squires. Such was not the case in Rolvenden where for more than 150 years the control of the parish was but for slight supervision by the Justices, in the hands of an oligarchy of farmers. The names of the leading farming families changed with the passage of time but the thorough and benevolent attitude adopted towards social problems remained. The patriarchal system based on the farms appears to pre-date the Speenhamland

System by almost a century but in origin reflects some degree of atavism. To descendants of Germanic settlers who over generations had won tracts of land from the forests the land, marginal though it may have been, was always important. As the land was finite, demand inevitably exceeded supply and the introduction of a patriarchal system may have provided another evolutionary process.

It is however questionable if the agricultural resources alone could have supported sustained population growth, even after the Agricultural Revolution. There is no evidence either that principles of agricultural improvement of marginal land as practised by Coke of Norfolk were applied to Wealden soils. The land could, in the absence of harvest failure, provide a considerable return; there was a high investment in labour inputs per hectare, wages were low but the workers were well-fed so real wages were not particularly important. The patriarchal system may therefore have checked further decline in population, a move thought necessary by the oligarchy of farmers who needed a high investment of labour to work the difficult soils. Once stabilised, population growth appears to have been based on a redistribution of monetary resources in order to maintain a reasonable standard of living. The threat of poverty was to some extent averted by the introduction of an annual rateable value based on house and landholdings and redistributed as necessary.

There was a progressive increase in both the rateable value and the rating during the eighteenth century. In 1699 a yearly rate of one shilling in the pound brought in £65.

In 1748 a twice yearly rate of 9d in the pound brought in £195. In 1798 a twice yearly rate of one shilling in the pound brought in £600. Thereafter there was a rapid increase in destitution due to the rise in the price of commodities and the low level of wages and a consequent rise in the poor rate. By 1812 three rates of one shilling and sixpence, four shillings, and three shillings brought in £2,360. This was the peak year, during the Napoleonic War period; thereafter the rate was gradually lowered. The agricultural depression of the 1820's caused a further rise to eight shillings in 1823 and finally nine shillings in 1829. Between these dates some 700 to 1000 payments of casual relief were made annually in addition to the support of upwards of fifty individuals maintained in the Poor House itself. A state of impasse in terms of population had been reached and it is said that people were encouraged to emigrate to the Colonies.

The patriarchal system probably did much to improve basic living standards during the first half of the eighteenth century. Weatherboarded cottages in the present High Street dating from this period indicate an improved standard of housing. Living standards in general probably declined following an increase in population during the second half of the century. As the amount of grain available for local consumption decreased, the potato became more and more the staple food, always a sign of a decreasing standard of living. It should however be remembered that nearly all the farm workers had free accomodation in either farm cottages or if

they were unmarried, in the barns and outbuildings of the farms and there was always food in the farmhouse kitchen or milk to take home to the cottages. In principle, the arrangement was very sound and may have been further strengthened by the involvement of all levels of rural society in smuggling activities for which the Weald was notorious during this period.

Smuggling provided a lucrative income throughout the eighteenth century and during the Napoleonic period. Considerable profits were derived from such activities and most able-bodied Rolvenden residents were by repute involved. It may not be too cynical to assume that profits from such a source could be re-distributed by way of the patriarchal system, or invested in improved housing, and to some extent may underly the increase in population. The region indeed gained national notoriety during the 1760's due to a reign of terror instituted by rival factions. Some writers dismiss this as pure avarice, but equally important could be an attempt to maintain living standards when faced with an increase in village populations. Smuggling was a finite resource and the demand for contraband fluctuated due to changes in tax levels, but profits from such a source must have been particularly valuable in terms of maintaining living standards. Government intervention during the late 1760's led to the presence of an Excise Officer who became a Rolvenden resident for a period. This coincides with the slight fluctuation in the population estimate, but may be entirely an unrelated incident in demographic terms. What is more significant is an increased rate of mortality indicating

a falling living standard about this time. A more significant link between attempts to maintain a reasonable standard of living and the outbreak of inter-community violence, though Rolvenden parish was not directly involved, is significant. The smuggling runs continued throughout the war years and may have done much to supplement the system of poor relief; after the war ended the farms alone, suffering from a depressed system of agriculture on a national scale, were unable to support such a high level of population.

The rapid increase in population during the eighteenth century probably resulted from the interaction of a number of socio-economic variables operating at the local level. The imposition of a patriarchal system by an oligarchy of local large-scale farmers at least ensured that a minimum standard of living would be maintained. As this was still long before both the Agricultural and Industrial Revolution period, some degree of protection against harvest failures for the inhabitants resulted. Over dependence on the woollen industry and its associated trade depressions and the uncertainties of seventeenth centure harvests had in the past proved costly in terms of population growth. The patriarchal system does appear to have created stability and much of its success was undoubtedly due to the personal involvement of all members of the parish in local affairs. Community size would again be important in the thorough and benevolent supplying of all necessary relief in money or kind by the oligarchy of farmers who were acutely aware of all

situations arising. The community itself appears to have had a remarkable degree of unity of purpose; there may be atavistic traits inherent within the Wealden communities impossible to quantify, but upon which their tendency to survive depended; or it could perhaps have arisen from a mutual involvement in other clandestine activities. The important point however is that a minimum standard of living was maintained, better nutritional standards resulted and this appears to have taken place at about a period of rising fertility in the country as a whole. For the first time it would appear that some of the major factors limiting population growth in this parish at least were removed. What the patriarchal system created was of course an artificial situation, cushioning the local population against some of the more dire consequences associated with natural selection, but the high degree of social organization and welfare within the parish appears to have ensured a rapid rise in population, particularly after the 1750 period.

When plotted as a 25 year moving average of baptisms and burials this trend may be easily identified. Caution is however needed in interpretation as some degree of non-conformity exists leading to under-registration of baptisms. However it is felt that the underlying trend is adequately revealed by the graph and particular interest is attached to the fall in the mortality rates. Increased opportunities for survival to adulthood offered opportunities for further natural increase to take place than had formerly been the case due in part to a decline in the virulence of various epidemics. Though it would be almost impossible to quantify the degree of increase

due to the influence of the patriarchal system and the artificial situation it imposed it may have been quite significant.

In the Census of 1811 Rolvenden had a population of 1,130 (530 males and 600 females) consisting of 195 families (136 agricultural workers) housed in only137 houses and cottages. These figures indicate that each house contained eight and a half persons and one and a half families, providing evidence of the house shortage and overcrowding at that time. Such figures appear to be more applicable to London than a remote rural village and yet may provide a contemporary insight with regard to the efficiency of the patriarchal system itself. Cobbett passed through Rolvenden in the 1820's on one of his 'Rural Rides' and was pleased with the appearance of the village which he described as 'Pretty cottage gardens gay with flowers running down the road'. A picture painted about 1840 confirms his view, as contemporary evidence of social order maintained even during the period of particular economic adversity. That the community itself was not allowed to degenerate despite acute overcrowding and economic difficulties probably owes much to the traditions laid down by the organizers of the patriarchal system during the late seventeenth century.

Period III 1841-1980

A significant loss of population due to emigration appears to have been actively encouraged by parish representatives due to the increase in work opportunities at local levels. As this policy applied to most Wealden parishes some change in the genetic constitution of the region may have resulted at this time. The region also lacked an agricultural entrepreneur of the calibre of Coke of Norfolk who in theoretical terms at least could have increased returns from the land resources and created employment. Indeed as far as Rolvenden was concerned it was most unfortunate that the monetary resources were squandered by two of the major land-holders during this period. A degree of instability was created which may have affected the demographic structure of the parish considerably. Certainly after 1901 a gradual increase in population followed the return of the land to more settled ownership. As a high proportion, some 69.7% in 1810, were agricultural workers, this is hardly surprising.

Over-population and the lack of local long-term opportunities appears to have caused some agricultural workers to emigrate to America or the Colonies and to settle with the intention of farming. This was in fact actively encouraged by various parishes and paid passages for migrant workers and families were offered to relieve the acute overcrowding. Naturally this resulted in a permanent loss of genes, particularly of more enterprising families, and must have resulted in some modification of the regional gene-pool. This tendency may have been further intensified by the reckless attitude to

parish problems adopted by one leading landowner.

Having inherited over a thousand acres of land, nearly all the northern part of the parish, this landowner chose to ignore the fact that the depression had impoverished even greater landowners, and embarked upon costly renovations to an ancient manor house and landscaping features. About the same period another branch of the family became involved in a costly lawsuit over ownership of considerably more of the parish which impoverished the eventual winner of the lawsuit. The period of recovery associated with the 'Golden Age' of agriculture proved insufficient in terms of financial recovery and the land was mortgaged and eventually sold. Just how great an influence this had on the local population is uncertain, but it must have created a period of unease somewhat alien to the traditions kept within the parish. Some degree of migration may have been attributable, as well as some decrease in living standards as finances were channelled towards unproductive ends.

The building, during the 1840's and 50's, of the main railways made little difference to Rolvenden. It was not until the Kent and East Sussex Railway opened in 1900 that the district got into close touch with the rest of the country. Rolvenden station itself was situated nearer to Tenterden, the nearest market town, than the village itself, and by its existence the village became linked to the national rail network, ending the isolation of the community to some extent. The rail network created some additional employment, both at the time of construction and in permanent staffing,

until the Beeching Axe period. Some influence may be detected with regard to increased marriage distance etc; but this is examined in connection with migration trends.

A re-housing policy introduced in the 1930's and extended into the 1950's may have had a significant influence on improved living standards; many of the poorer dwellings built during the Victorian era were demolished and the established population re-housed. At the local level there may be some atavistic significance in the fact that families from Rolvenden Layne tended to move back to that community as and when opportunity permitted. There does appear to be some intangible affinity associated with such an orientation. It may not be unique to the Wealden people, but it may be of particular importance in terms of local demographic trends. The extension of the housing policy led to the settlement of families from outside within the last few decades. Rolvenden however escaped the re-settlement of much of London's overspill which would have introduced considerable bias into the genetic structure of the local population.

Today the land remains important, creating considerable employment within the villages and enabling the parish to retain its own peculiar qualities. Though orientated towards attracting the tourist trade with its fourteenth century church, eighteenth century weatherboarded cottages etc; it retains a timeless atmosphere. Change may prove inevitable in this and other Wealden villages. The established gene pool may

become increasingly diluted as more and more of 'defurriners' settle within the Weald,but at the present time the population appears to retain many of its long established characteristics, making further research worthwhile on a wider scale than was at present possible.

Chapter IV

Material and Methods

There are many potential sources of data for research into historical demography and these include wills, muster rolls, hearth tax returns and parish registers. Individually most of these throw light on only a small section of the population such as property owners or men eligible for military service. The Anglican parish registers, although by no means perfect, provide a fuller picture of the past than any other single source. In the case of Rolvenden the overseers' accounts from 1699-1835 provided invaluable insight, and were particularly valuable for cross checking the accuracy of the method of analysis adopted. Families and individuals who appeared to have left the parish, or were causing problems with the attempted analysis, were found to be documented in the bi-annual accounts.

The Quality and Detail of the Rolvenden Registers.

As a rule baptism entries contain only the minimum of detail; the father of the child is identified but hardly ever the wife, particularly in the earliest registers. Later the wife's Christian name is usually entered, especially during the eighteenth century. Often several wives were involved during the family-building period; re-marriage by the widower within a few weeks or months was common, particularly during the domestic industry period. There are examples of the father still baptising children at the same time as an elder son, often both with the same Christian name. In such cases the

incumbent made the necessary distinction between Thomas Fowle Snr. and Thomas Jnr. etc. which helped considerably in arranging the data into family units. Occupation of the father is not usually given in the baptism registers at any period before the nineteenth century, entries being simply:-

19th February 1571 Bartholomew son of William Evernden

15th March 1618 Richard son of Daniell Beeching

6th February 1791 John son of Isaac White and Hannah

Illegitimate children are usually entered as son or daughter of e.g.,

15th October 1609 Mary Freeman illegitimate child of May and Edward Couchman

or in the case of doubt over paternity:-

22nd March 1607 Annes Payne ill. child of Richard Keene and/or Abraham Hope.

Marriages

Until the Hardwicke Marriage Act of 1753 the content of the Rolvenden registers remained much the same. Generally the full name of both partners and their places of residence were given. Their previous marriage status and occupations were usually given. For most of the period studied, the names of the parents and ages of the couple were rarely if ever given and had therefore to be individually traced as far as possible.

18th January 1615 Edmund Steed (Gent) and Susan Henden widow of Peter of Benenden.

1st December 1653 Thomas Barber and Elizabeth Lucas both of Rolvenden - by Robert Gibbon J.P.

A marked increase in the number of marriages during the Commonwealth period may be attributed to the resident J.P. ; most local villages had marriages contracted in Rolvenden about this time. The incumbent Thomas Higginson had been ejected for failure to keep proper records by 1641. Examples of outsiders married in Rolvenden are as follows:-

20th April 1655 Wm. Springett of Stone and Elizabeth Grygsby widow of Stone

28th August 1655 Thomas Gilbard of Bethersden, widow and Mary Harvey of Smarden, widow.

There were in fact some 67 marriages in Rolvenden during 1655 and 1656, about five times the normal rate; most of which were probably deferred marriages resulting from this unsettled period.

Considerably more success was achieved in tracing details of marriage partners during the 18th century than earlier due to various inconsistences which made the operation time consuming.

Burials

The quality of the burial registers for some reason is better than for baptisms or marriages with regard to personal details. On the whole the name and place of residence of the deceased were recorded. Information such as 'infant' 'widow' or widower were usually added. The names of the parent or parents of children but not their age at burial were included

in the earlier registers. For some strange reason the incumbents of the eighteenth and early nineteenth century failed to add this detail; as a result a protracted search policy had to be adopted to identify age groups. Typical early examples are:-

6th September 1566	John Hodge husbandman killed by a stack of barley in a cottage where he did dwell.
29th May 1593	Kerstian wife of John Coole bellfounder
11th October 1593	Stephen Neete a harvest labourer coming it is said out of Wiltshire this last harvest living with Elizabeth Goldsteed widow.
16th September 1593	John son of John Cooper (lived at the Myll belonging to Halden Place).

Accidental deaths, murders or suicides appear to have attracted the incumbents' attention and comments. The first of the above entries is the most curious of various references to accidental death.

Methods of Analysis of the Rolvenden Registers.

The Rolvenden registers were obtained by several means. Three typed volumes of transcribed records provided information from 1558 to 1840. These included extra entries or variations recorded from the Bishop's Transcripts etc. As far as possible reference was made to the original registers as it was found that some of the entries in the transcripts were rather ambiguous. Mistranslation of some Christian

names could quite easily be detected as all families were subjected to close scrutiny and became increasingly familiar as research continued. Extensive use was made of the wealth of detail available in the parish registers after 1699, particularly the Overseers' bi-annual records which enabled one to cross-check dubious Anglican parish register entries or omissions.

Each registration entry was copied on to a separate record card. The baptism entries were given identity numbers as it was considered at the time that this would be of assistance in distinguishing between similar entries occurring within a short space of time. The marriage records were identified in a similar manner, but this proved unnecessary as there were fewer entries and sufficient information was present to prevent any confusion.

The demographic information relevant to individual families was then transferred to a master card system, filed in alphabetical and chronological order. An example is given below:-

BOOCHER Robart (householder) dec. 11.3.1577

MARRIAGE (20) 23.10.1560 R.B. & Catheryn Walter (maiden)

Baptisms	Burials
11. Robart 27.8.1561	13.Robart 27.8.1561
51. Joane 11.4.1563	62.Joane 29.4.1563
85. Jarvys 7.5.1565	95.Jarvys 14.5.1565
	100. John 7.7.1564
130.Elizabeth 16.12.1565	163. Elizabeth 8.7.1566
239.John 5.3.1570	281 John 15.1.1570/1
335. Clement 4.4.1574	SURVIVED

All cards were then subjected to re-analysis to record ages between baptism and burial, size of completed families, numbers of singleton families etc; and information so derived was later used to compile data for various cohorts and their breeding success. This represented an enormous investment in time, but a system had to be devised to combat deficiencies with regard to age at burial etc. In their original form the registers appeared to be of limited value for comparative use with other studies, particularly regarding age specific mortality rates. As further work is envisaged, part of the time invested may be regarded as having long-term value with regard to family constitution. For the purpose of the present study few types of link were attempted in the context of the surrounding villages.

Marriages were grouped rather differently. Within specified periods of ten years such as 1561-70 and 1571-80, they were arranged in alphabetical order of the husbands' name. At a later stage this simplified the process of linking various records. There always remained a proportion of marriages that appear childless, or the names do not appear later even as burials. Some members of families naturally appear to have married in other parishes and returned to live within the extended family unit; this may however not have seriously affected the exogamous marriage distance patterns to any great extent. Further work is however envisaged with regard to tracing and documenting these particular aspects.

Broadly speaking, there are two ways of analysing parish register material known as aggregative analysis and family reconstitution. These have been fully described by

Eversley (1966) and Wrigley (1966).

Aggregative analysis is concerned with major changes in vital events, and the types of data required consist basically of annual figures of baptisms, marriages and burials. Once the records have been collected and filed in the manner described above, it is possible to calculate information such as male/female baptism ratios and family size. In aggregative analysis, the data are generally grouped into five or ten year periods to overcome minor annual fluctuations caused by possible registration deficiencies. In small parishes, in particular, the annual variation in the number of entries is sometimes considerable and single year figures tend to mask the underlying trend. A period of ten years was chosen for Tolvenden, close attention being paid to the potential influences imposed by socio-economic or historical events. Cohort analysis was devised to define siblings born within each decase and those dying then, and extended over subsequent decades, tracing demographic trends as far as possible at this stage.

Another method of revealing major trends is the use of the moving average. In the case of the parish register material it involves taking the total number of baptisms (or marriage or burial) over a period of years and calculating the mean per annum for this period. This figure is then allocated to the middle year. As many previous researchers had opted for a twenty-five year moving average this standard was applied to all data derived from the Rolvenden registers to enable some comparisons to be made.

For the 18th century serious attempts were made to link baptisms of males and females and age at first marriage. Such data though insufficient to be of statistical importance were pursued out of interest. Similarly the rates for prenuptual conceptions and illegitimacy rates were investigated for comparison with the Otmoor study. With regard to marriages the chronological grouping of the same, and the cross referencing of marriages and baptisms proved useful. The actual procedure used was to study the marriages for each period and then to trace the baptism of either the bride or groom, or both as the case may be. This method has of course been adopted by Challands (1978) and others. As far as the present study is concerned the numbers traced made it of limited value but there would appear to be considerable potential in extending this investigation.

Problems

As no comparative local study of a Wealden parish is known to exist this thesis was basically intended to investigate the possible problems likely to be encountered. The registers in their original form appear to lack much basic detail and considerable cross referencing of all possible material was required to provide workable data. Every effort was made to reduce bias to a minimum and it was particularly worrying to observe inordinately high rates consistently for infant burials. The burial dates are calculated from the date of baptism in the registers of course, and the child could have been weeks or even months old, but this is felt unlikely after

study was made of the chronological birth order by calendar dates of some completed families.

One of the most serious problems encountered was the burial of named children with no appropriate baptism entry. Various approaches were tried, to assume all died at or about the time of birth would have increased burial rates enormously. A small proportion was traced and found to be infants, and those remaining were alloted to three categories; infant (under 12 months) aged 1-5 and 5 to 15 years. The method adopted was to count all child burials for the 1561-1630 period whose age at burial had been determined and to calculate the percentage of infant burials from this. Some 62.5% were in fact found to fall within the infant age group and this figure was then used as a basis for determining the numbers to be added to each age category from these remaining child burials. It was felt that this criterion could probably be applied on a wider scale in future.

The problem appears to have arisen through a Wealden tradition which empowered the midwives to baptise newborn infants, particularly if they though them unlikely to survive. Any serious discrepancy only appears to have arisen during the 1561-70 decade when the quality of the registers may themselves be suspect. At all periods there must have been some degree of leakage from the registers. Several workers have encountered problems, or suspected under-registration, particularly with regard to child burials. No ages at burial are given in the Anglican registers but the method adopted was found to be accurate when checked against the Overseers'

Accounts for the 1699-1835 period where surprisingly more detail is found. Every effort was made to eliminate errors in age-calculation from 1561-1812 and the findings are believed to be accurate for the purpose of calculation and comparison.

CHAPTER V

Mortality

Over most of human evolution it seems probable that factors determining mortality were primarily responsible for the regulation of human population size and growth. Certainly this observation would appear to apply to the Rolvenden data derived from the parish registers where mortality appears to have acted as a particularly significant variable, affecting natural increase and the introduction of new genes to the parish by migrants. The predominant factor involved here may be the incidence of tuberculosis, identified by Creighton (1965) and others as the major killer disease within the Weald. Here, of course, one is more concerned with the debility of those individuals suffering from the disease and their ability to survive unrelated epidemics. Infant mortality is that fraction of mortality which is particularly sensitive to environmental influences and its value can probably be taken as an indicator of the magnitude of selection pressures arising from mortality. The factors through which selection operates include biological differences and also socio-economic conditions, particularly the amount of nutrition and the likelihood of disease. As the parish registers indicate that Rolvenden parish had an infant mortality rate comparable with the worst London figures suggested by Creighton (1965) a detailed investigation with regard to probable cause and effect of both infant and adult mortality was made. The following hypothesis is based on evidence derived from exhaustive research on the

Rolvenden data. As the burial registers do not give age at death until 1813 some possible bias may have been introduced in calculating individuals true ages between baptism and burial though every effort was made to eliminate this, each individual entry being checked for accuracy (see Discussion of Problems).

Tuberculosis

Evidence derived from skeletal remains recovered from the Otford Saxon cemetery suggests that a high incidence of tuberculosis may have been present in the ancestral Germanic population. High mortality rates and acute disease may therefore have resulted in the surviving Romano-British population, due to this exposure to tuberculosis, with the survival of those individuals who were genetically resistant. What may be of particular significance to the present study however is Motulsky's observations (1960).

'In contrast to the acute rapidly growing caseous type of tuberculosis with regional lymph node involvement and the high rate of tuberculosis meningitis during early exposure of a population, to tuberculosis, populations with a history of contact over many generations develop a more chronic, fibrous tuberculosis, as seen now in Europe.'

It is felt therefore that the development of a metabolic polymorphism by the Wealden population may have resulted from the exposure,and many generations acquired a relative resistance to this disease. These observations probably applied to the pre-sixteenth century population in particular

and may to some extent have been affected by mortality resulting from the Black Death period. The increase in population in the wake of the enormous loss of life created stresses on the social and physical environment. By the mid-sixteenth century severe overcrowding and increasing diversity of occupations mainly associated with the woollen industry introduced further potential variables not encountered during the earlier period of settlement. A situation appears to have been created where population density far exceeded that of the natural carrying capacity of the agricultural resources. The prevailing socio-economic conditions probably enhanced the magnitude of selection pressures arising from mortality due to epidemics following in the wake of successive harvest failures, particularly those which coincided with depressions associated with the wool trade itself. A population maintained at an artificially high level would be faced with starvation under such circumstances and this would have led to natural selection acting through the agency of environmental conditions, principally those of nutrition and disease to redress the balance.

Unfortunately there is little quantitative information about periods of adversity in the Weald whether due to harvest failure or epidemics. It is felt however that a cautious comparison may be made with the findings of Dubos and Dubos (1952) with regard to the Ashkenazi Jewish population of Warsaw during World War II. They suggest that genetically acquired relative resistance to tuberculosis

could be rapidly overcome in conditions of extreme over-crowding and starvation. Though separated by four centuries in time both populations appear to have an ancestral history of tuberculosis. In both cases a radical change in circumstances introduced stresses leading to an apparent breakdown in relative resistance to tuberculosis gradually acquired over generations. Such a comparison can only be tentative at this stage but it may explain a possible reason for the high incidence of mortality at certain periods within the Rolvenden Hundred.

Though Creighton (1965) identifies tuberculosis as the main 'killer' disease within the Weald it may be more significant still by indirectly causing high levels of mortality. The debilitating effects of tuberculosis may have influenced inter-family variability with regard to infant and adolescent mortality and have introduced significant change within the genetic structure of the local population over time. Certainly the breeding success of many families appears to have been nullified, particularly during periods of crisis mortality. As socio-economic circumstances ameliorated the incidence of tuberculosis mortality may have been reduced to re-appear again during the nineteenth century and some social stigma is still detectable within the Wealden attitude to this disease. Medical advances may have reduced the incidence of the disease but emphasis needs to be placed on the underlying long-term significance at local levels.

'Crisis' Mortality

An excess of burials over baptisms is characteristic of the earlier Rolvenden registers and may be indicative of periods of adversity due to harvest failure or epidemics. Unfortunately there is little quantitative information about periods of adversity due to harvest failure in the High Weald area though J.M.Stratton's Agricultural Records - A.D. 220-1977 (1978) provided useful insight for cautious interpretation. As infant mortality is that fraction of mortality which is particularly sensitive to environmental influences it may be surmized that the peaks in infant mortality occurred during times of crisis. Analysis of mortality data therefore attempts to establish positive links between the incidence of infectious disease cycles - Creighton (1965) and Stratton's findings. A systematic age-specific analysis of age at burial for siblings who were buried within one year, one to five years and five to fifteen years after baptism was made as far as the records allowed for the earlier period. A further analysis of burials of siblings and adults for possibility that some degree of infanticide may have been involved. Child labour resources however appear to have a positive economic contribution (Chalklin 1961) to a joint family income. Infanticide appears to be counter-productive and natural selective pressures acting through the agency of environmental conditions appears the more likely solution.

Though harvest failures are not a feature of the 1560's

(Stratton 1977) the decade produced the highest rate for infant burials, and, indeed for child burials in general. Numerous harvest failures and associated high loss of life are indicated by the same author for the 1540's and 1550's and even earlier. As many potential parents of the 1560's cohort must have been subject to this cycle of malnutrition and adversity they probably suffered a considerably weakened constitution as a result. Unfortunately no burial figures exist for Rolvenden before 1558; it is assumed however that a high loss of life was involved eliminating many potential parents from the gene pool. The weakened constitution of the remaining population possibly reduced the resistance to tuberculosis attack and further debilitating and eventually fatal weakening of the constitution of many members of the breeding cohorts. It is felt that infants born to such parents would have far less chance of eventual survival and would be eliminated by natural selection, leading eventually to the survival of those genetically resistant. Overcrowded and insanitary housing conditions and a dusty ill-ventilated atmosphere appear to have added to the problems associated with consequences of harvest failure and were ideal for the spread of epidemic disease.

Unfortunately the diseases affecting infants do not appear to have attracted much attention before the early seventeenth century (Creighton 1965). Smallpox, usually fatal to all infants, did not become prominent before the Stuart period. Stresses imposed upon nursing mothers, impossible to quantify, together with gastro-enteritis and

respiratory diseases, leading to pneumonia may have caused many deaths in young infants as well as older children. The presence of other infectious diseases of childhood is suspected, though it is felt that the abnormally high death rate should be seen as indicative of tuberculosis affecting the parents of this and subsequent generations. Certainly the death rate was at its highest in the first month/year from 1561-1630 was also made to indicate possible burials resulting from epidemic dealt with by Creighton. Though costly in time and extremely laborious this investment of effort was thought to be necessary in order to come to terms with the interpretation of high mortality rates found within the parish.

Infant Mortality

Burial rates for all periods were calculated using the standard formula of

$$\frac{\text{No. of infant burials} \times 1000 \text{ per decade}}{\text{No. of baptisms}}$$

For the decade 1561-70 a very high infant mortality rate of 398 per 1000 was produced. As this figure was far higher than any other found in recent studies, further systematic checks were undertaken. One possible explanation for the high rate may lie in some level of bias introduced by the true age at baptism of some children. Every attempt however was made to reduce the level of bias to a minimum by methods dealt with in the section dealing with 'problems'; the final figures used as a basis for calculation are derived from

extensive cross-checking. Having established that Rolvenden did produce consistently high infant and young person mortality rates, particularly during the earlier period, an alternative explanation of possible introduced bias was sought. Certainly it is felt that the magnitude of selection pressure arising from mortality, arose from pressures associated with the local social and physical environment. Some degree of differential adaptive response to pressures associated with a market-orientated economy rather than an agricultural/trading basic economy may have influenced the course of natural selective pressures, creating additional stresses upon many family units during this period.

The introduction of the broadcloth trade however created opportunities for child labour resources to be utilized within the domestic units of production. Chalklin (1961) points out that children upwards of the age of four could be gainfully employed and contribute to the joint family income by undertaking minor tasks. An investment in children within the extended family unit was therefore practical as they would not by their presence reduce an already low standard of living for the majority of cloth workers. This point appears important when one considers the generation following an assumed breakdown in the population's resistance to tuberculosis. Infant mortality rates however were found often to be consistently higher than those found for studies elsewhere, probably sustained by the constant immigration of new members of breeding cohorts over time.

It is felt that considerable variability in individual resistance to tuberculosis may be indicated, but this hypothesis would need to be examined in much greater depth. Many newcomers to the parish or even the Weald were probably eliminated over several generations however if they lacked the necessary genetic resistance.

The number of infant burials fell considerably during the 1570's from 398 per 1000 baptisms to 286.5, rising slightly to 291.2 per 1000 baptisms in the 1580's. During the 1590's, a period identified by Stratton (1978) as a period of bad harvests, famine conditions and food riots, the infant mortality rate fell to 246.4 per 1000. At this time there were short-term trade depressions affecting the woollen industry (Chalklin 1971). Some improvement in socio-economic circumstances may have been responsible, perhaps attributable to the broadcloth trade, then well-established. Some slackening of the epidemic cycles and their degree of virulence may also have occurred at the local level. As the rates remained alarmingly high, local sensitivity to disease introduced by incomers and people travelling between London and the ports, particularly Rye, may also have increased mortality. Smallpox in particular perhaps should not be entirely ruled out as Creighton indicates that it was detected in London during the mid-sixteenth century, though it only attracted national attention during the seventeenth century. Plague was certainly endemic within the community and influenced both adolescent and adult mortality, but this

disease often did not directly affect infants. Two child burials for the year 1603/4 are attributed to plague; a five year old boy was buried in November and a girl aged eleven the following March. Creighton (1965) refers to a 'grievous plague in the villages of West Malling, East Malling, Offham and seven other villages in Kent'. It may well be that Rolvenden was one of the other seven villages, or that these two admitted plague deaths were linked to that particular plague outbreak.

During the decade 1601/10 the infant mortality rate again rose to 285.7 per 1000 baptisms with a rate of 351.3 per 1000 for burials of children under five years. The upward trend continued; during the decade 1611/20 an infant rate of 308.6 per 1000 and an increase in burials of under five year olds to 375 per 1000 baptisms is indicated. A marked fall to 153.3 per 1000 baptisms for infants is recorded for the decade 1621/30; the rate for burials of all under five years also falls to 329 per 1000 baptisms. These rises in the level of infant mortality are probably attributable to short term trade depressions within the woollen industry (Chalklin 1961) and to a lesser extent some degree of harvest failure (Stratton 1977). Certainly the severe depression affecting the woollen industry after 1614 appears to be reflected in the upward trend of infant mortality, this particular age group being particularly sensitive to adverse environmental determinants. The marked fall in infant mortality rates from 1621-30 is difficult to

explain as the effects of the trade depression persisted. One possible explanation was that some children were baptised later than usual, but there is also a significant fall in the rate for the under fives; the trend was definitely one of falling mortality for these age specific groups at this time. Perhaps the epidemic cycle had begun to decline again at the local level after the rising level of mortality over the two previous decades. After 1630 the baptism entries fall; the lack of entries at this period may have been due to non-conformity as well as other causes. The lack of adequate data however made further calculation of mortality rates impossible until after the Commonwealth period.

During the 1670/80 period an infant burial rate of 235.6 per 1000 baptisms, and a rate of 277.4 per 1000 for children under five was calculated. During the next two decades significant increases are detectable; the infant rate reached 274.8 per 1000 during the 1680's and a peak of 326 per 1000 baptisms during the 1690's. The corresponding rate for children under five rose to 337.8 per 1000 during the 1680's and a peak of 420 per 1000 baptisms during the 1691/1700 period. Some of this high rate of mortality is perhaps attributable to a virulent smallpox epidemic or a series of epidemics. The disease is specifically mentioned, particularly in the registers compiled about 1700 which in many cases are very detailed in their content. This was also a period of particular adversity for the country as a whole, and burial rates in general appear to have been higher in many other districts. The market economy itself created

occupational disease hazards; close confined domestic labour units of production in ill-ventilated dusty atmospheric conditions probably aided the transmission of infection. It would be particularly interesting to know if the traditional altruistic rural values persisted in the domestic industrial period with its orientation towards a money economy. Sickness was a serious threat to output and it appears that the established families may have been under considerable pressure to maintain production and income; each member of the domestic unit from children of four upwards contributed to output. (Chalklin 1961). Marriages appear to have been working partnerships, and in many cases the death of a spouse resulted in a hasty re-marriage presumably to maintain a standard of output and living. Such adaptive responses are of course totally alien to the acceptive and established view of village life but it is felt that such divisions could have been created by pressures associated with the introduction of market forces. It is doubtful however even if such a situation did exist that had an effect on the incidence or transmissions of infection between families. The newly created semi-industrial lifestyle may however have created its own occupational hazards and epidemic disease cycles.

Occupational Diseases

Though the deadly disease of anthrax is never specifically mentioned with regard to Rolvenden deaths, by tradition it is acknowledged to be associated with the handling of infected

hides or wool. It is even known as 'wool combers disease' presumably from some past association with mortality resulting from workers contracting the disease from working with infected wool. Tuberculosis however may have remained the prominent contributory cause of many deaths, the working conditions associated with domestic industry probably increasing its incidence. Respiratory diseases in general were again probably due to the dusty, ill-ventilated and over-crowded conditions. Typhus fever, later traditionally associated with the textile industries may even have been as serious a threat as plague to Rolvenden and other Wealden villages. The disease could have been introduced by sailors, typhus being also by tradition 'ship fever'. Certainly sailors were later blamed for introducing plague to the village during the disastrous epidemic of 1665/66. The high rates of mortality, particularly for the early years however remain a matter of debate. Creighton provides useful insights, but unfortunately little quantitative information exists as to the nature of epidemics in general. Some evidence for stress-induced psychological problems appears with regard to the incidence of suicide and inter-family murders noted in the registers after 1601. These incidents may be linked to artificial pressures associated with domestic overcrowding and increasing economic distress created by the failure of the established markets. Much further work on other parishes would be needed to see if the pattern exists elsewhere and the present observations

can only apply to the village community itself.

Plague

The Wealden parish registers are remarkably silent as regards the passage of the plague in general, Rolvenden being no exception. During the early stages of undertaking this study one was inclined to believe that the population of the Weald may have survived due to natural resistance. A high incidence of the H antigen was felt to be a real possibility linked to historical settlement patterns within the Weald itself. Further research suggests that high levels of mortality were no less common than elsewhere; the low density of settlement may have tended to attract less attention at national level though losses were proportionately similar. What does emerge from the parish registers entries is that deliberate attempts were made to conceal the presence of plague. The rare references to plague burials are made only for those years when national awareness of the presence of plague was well known. The urgent need to suppress evidence of plague deaths would appear to owe much to trade connections needing to be sustained as far as possible. Undue alarm created by the presence of endemic plague would have been harmful to trade. Creighton (1965) indicates that the Cranbrook registers carry burials numbering 22 marked with a cross thought to signify plague deaths in the 1580's, but no written reference was however made to it. Cranbrook was the main focal point for Rolvenden's trade connections

and a rise in adolescent and adult burials from five in 1581/2 to fifteen in 1582/3, fourteen in 1583/4 and rising to twenty seven in 1584/5 appears to indicate plague was involved and the rate continued high for two more years before falling to seven in 1587/88.

The two child burials attributed to plague during 1603/4 are again associated with years when the burial rates are at least twice the annual average. By no means all deaths were recorded either; a number of householders have no burial entry attributed to them but their widows are buried at a later stage, their families remaining within the village.

One Jarvys Hodge'died of the plague and was buried near his house' in June 1609. In this particular year there were no less than fifty two burials, inclusive of infants, but this failed to excite further comment. Other probably plague periods were about 1625 and during the late 1630's, though again significant rises in rates of mortality provide the only clues available. Unfortunately no records exist for the 1665/6 outbreak of plague which by local tradition led to the destruction of much of the village by deliberate burning of all infected houses. A similar practice appears to have been established elsewhere. Again by tradition the population moved 'a mile away and established a community at Lain Green'. Their move did little to reduce mortality rates which continued to be alarmingly high, though plague was no longer a contributory cause.

Periods of High Mortality not attributable to Plague

The Rolvenden registers from the 1590's onwards to about 1608 contain references to burials of a few soldiers returning from the French wars. One was found dead of wounds, another in 1606 died at Halden Place. The significance of such entries would appear to be that they established a positive link between Creighton's reference to malignant fevers, probably typhus, on the continent of Europe as well as in England. Rolvenden was in many ways sufficiently remote from the rest of the country to avoid much contact with epidemics elsewhere but was situated on one of the main routes to and from the Channel ports. It appears possible therefore that returning troops could have introduced typhus to the village perhaps as early as the 1590's. Burial of adults rises during this decade, though the under fives rate is low. This decade was one of poor harvests and adversity and typhus is the traditional famine fever, not usually attacking the very young.

The decade 1611/20 produces a very high rate of adult mortality and at national level one reads of 'sickly seasons' and high mortality not due to plague in 1612/13 and again later in the decade. As far as Rolvenden was concerned this decade not unnaturally produced high rates of both infant and adult mortality; again it would appear that typhus may have been the predominating cause. During the following decade the rate of adult mortality remained high,

a trend which appears to have continued into the 1630's and beyond, Some plague may have been involved after 1625 and again in the late years of the next decade. All the indications are that epidemics of particular virulence were operating as the main agents of natural selection. Many families seem to have been eliminated before, or during, the last plague period by one disease or another.

The very high rates encountered for the decade 1671/80 for adults may have been due to smallpox or typhus. The infant burial rate however does not appear indicative of smallpox mortality until the next two decades. The high burial rate found for the late 1660's appears to have been due to influenza (Creighton 1965). As the old village had presumably been burnt and settlements concentrated on Rolvenden Layne, a low-lying and unhealthy site close to the marshes, the high mortality may reflect the dubious site chosen by the refugees from the old village. High mortality rates initially affecting adults, and later, children may have been one of the predisposing causes of the developments of very well organised parish relief during the 1701-1840 period. The pressures imposed by natural selection were drastically reducing the population to a level suited to the 'natural' carrying capacity of the land. The last decades are noted as a period of particular hardship and distress and are again typical of the magnitude of pressure imposed by the process of natural selection.

Period II 1701-1840

Infant mortality rates for most of this period were often inordinately high when compared with similar demographic studies. (Glass and Eversley 1965) and ("Kucheman" and Harrison 1972). The social and physical environment which is generally assumed to have had a profound influence on the infant survival rate had in theory at least been artificially ameliorated by the introduction of an efficient system of poor relief within the parish. Nutritional standards do appear to have been maintained, and every effort made by the founders of the patriarchal system to help all who were in difficulties. Families who may otherwise have been obliged to move to the towns in order to survive found themselves assured of at least a minimum standard of living. Some degree of overcrowding of limited house space may provide one possible explanation, particularly with regard to the incidence of infectious disease. When plotted as a twenty five year moving average, baptisms show a marked increase over burials soon after the turn of the seventeenth century which appears to indicate a recovery period syndrome after periods of earlier heavy mortality. In general, apart from minor fluctuations, burial rates appear to have fallen after 1695 until about 1750 when they rose in response to a period of rising fertility levels. From about 1770 until 1810 the moving average indicates that mortality rates stabilised and then gradually declined, this tendency being more marked with infant mortality which only rose

again to a significant extent during the 1820's. Adolescent and adult burial rates however rose significantly after 1810 possibly indicating age specific disease, perhaps related to tuberculosis associated with severe overcrowding and increasing strains imposed upon the system of parish relief.The efficiency of this system, once well established, may account for the marked decrease in 'crisis mortality' after 1720, and be further reflected, perhaps in conjunction with a decline in the virulence of certain epidemic cycles after 1770 when mortality rates failed to keep pace with the rise in baptisms. The rapid increase in population levels owes much to this marked decline in mortality, though this tendency appears to be reflected at a national level also. Certainly the chances of survival into adulthood were better after 1701 than in the earlier period, despite smallpox and other epidemics. It is also interesting however to speculate regarding the social and physical environment and its overall effect on the decrease in mortality levels. In terms of natural selection the patriarchal system imposed an artificial determinant of minimum living standards, made medical attention available to all who needed it, and probably ensured the survival of the parish itself. It is felt that this development may have contributed considerably to the demographic trends indicated by the twenty-five year moving average graph by ameliorating the worst effects of pressures associated with the forces of natural selection.

Infant Mortality

It seems that, even as late as the eighteenth century, there were three periods (1708-10, 1725-29 and 1739-42) when bad weather led to poor harvests with resulting widespread food shortages all over the country (Ashton 1961). However, as far as Rolvenden was concerned smallpox may have been responsible for many deaths. The rate per 1000 baptisms for 1701/10 was 275.1 with a rate of 315.4 for all children under five years, a rate which appears inordinately high when compared with the Otmoor and other studies. Contemporary records for the parish confirm that several adults died from smallpox during the first decades suggesting that the disease was endemic, or frequently re-introduced by sailors etc. All infants or children living within the parish were presumably at risk and many deaths may be attributed to smallpox but Creighton (1965) provides a possible solution. He suggests that abnormally high mortality rates were often found in children of poor constitution and this appears to be a logical conclusion. He also suggests that children born to parents who had during their formative years been subject to adversity were at risk; the high death rates encountered may therefore in the main be attributed to pressures of natural selection.

There would appear to be no link between years of high infant mortality in London, though various child diseases could have been introduced from the local ports. The trade in various contraband goods brought Rolvenden into close

contact with Rye and other ports, and with London at this time. What Creighton describes as the 'spirit drinking mania' caused high child mortalities in London but one has no contemporary evidence for Rolvenden. Harvest failures particularly for the period 1739-42 are similarly disregarded in contemporary local records and this one feels may owe much to the profits from contraband. During the first few decades smallpox may have been primarily responsible for many infant deaths, the majority of child burials being in this category. The debilitating effects of tuberculosis in parents born during the crisis period 1670-1770 could also be particularly significant. After 1730 the infant and child mortality rates fell significantly until the late 1750's and it is interesting to note that Creighton identifies this as a period when deaths from smallpox are known to have declined at a national level.

The year was one of particularly high infant mortality and in the Otmoor study there was a similar high mortality rate for this year but the authors were unable to associate it with any particular epidemic. Rolvenden at this time appears to have been subject to increasing pressures in demographic terms1 overcrowding of limited housing accommodation and stresses placed on the parents may all have contributed. Smallpox also appears to attract attention again at a national level about this time. The mortality rates for infants and adolescents rose significantly from the late 1750's until about 1795 but failed to check the rapid rise in baptisms. Apart from

minor fluctuations the infant mortality rate remained low until the particular period of adversity during the mid-1820's, a trend which continued until about 1840. Both adult and adolescent mortality rates indicate a rising trend about 1810 which suggests age specific mortality was again involved. Though it would be possible to speculate further as to the cause of infant deaths, a number of serious child diseases could well have been involved and no single disease is identifiable. Certainly the virulence of various diseases appears to have considerably ameliorated by about 1770, allowing a well established 'period of recovery syndrome' to develop that was no longer subject to positive checks in the Malthusian sense.

Adolescent and Adult Mortality

The major diseases discussed by Creighton (1965) were probably in the main responsible for most adult deaths during the eighteenth century. Smallpox is frequently mentioned during the first three decades, and out of interest such burials were considered in association with the rateable value of property held by the deceased. Most show a decline in rateable value of land held, presumably due to declining health of the said individual who ultimately died of smallpox. Such burials are typical examples of adult deaths attributed to smallpox. Creighton (1965) indicates similar findings and all possible were traced out of interest. Typhus, particularly from contact with ports is another possibility, about the 1720-70 period, though there is a marked decline in all mortality rates from the mid-1730's

until after 1750, probably due to a general slackening of epidemic cycles.

After 1770 a fall in nutritional standards took place with potatoes increasingly providing the staple diet of the poorer people, grain prices being on the increase. This particular period appears to provide a particularly good example of epidemics acting as the main vehicle of natural selection. The magnitude of selection pressures imposed upon the population at this time appear to be reflected in the burial rates for the under fives.

Differential Mortality

One avenue of investigation resulting from in-depth analysis of the parish registers considered the degree of differential mortality between male and female siblings born to members of breeding cohorts arranged in chronological order from 1561/70 to 1621/30 and 1671/1700. Creighton indicates that some epidemics proved particularly fatal to one sex or age group which it was felt could have introduced changes within the local gene pool, if a case for differential mortality could be proven. In actual fact the limited study undertaken suggested a selective advantage slightly in favour of males. Apart from minor fluctuations a natural balanced ratio between the sexes appears to have been maintained. Considerably more males were baptised than females, but a higher wastage of males from infancy to adulthood redressed the balance almost exactly over a period of time. The estimates provide only very rough figures and could be subject to considerable bias. They are based on baptisms,

not births, and more emphasis may have been given to baptising males than females. However, the survival to adulthood figures appear to be broadly in line with other findings at a national level, producing no marked deviation from the normal pattern. After this period however females marrying entered a high risk period associated with child-bearing; at least five per cent of adult burials were so associated, indicating a reversal from males at high risk in formative years and females as they entered adulthood and marriage.

Adolescent and Adult Mortality

The predisposing cause of high rates of adult mortality appears to follow the established pattern of epidemic cycles following in the wake of harvest failure or other periods of adversity. After the mid-sixteenth century however the influence of market forces replaced many traditional rural values and the stresses involved in, as well as, the necessary adaptive responses involved could have had some influence. Population levels continued to rise rapidly perhaps encouraged by the artificial level of support due to the patriarchal system system and as a result severe overcrowding of available accommodation resulted. The 1801 census indicates that each house in the parish contained 8.5 people, a rate of 1.5 families per house and this surely provided ideal opportunities for the transmission of epidemic diseases. Rather surprisingly the infant mortality rate remained low until the 'crisis' year, 1826 which one assumed to be typhoid. Creighton (1965) however

indicates severe smallpox mortality in London in 1825, and the doubling of mortality figures for Rolvenden in 1826 may have been because adolescents and adults had not contracted the disease in childhood and had developed natural resistance. The possibility of country children contracting the milder cowpox by association with the many farms in their formative years does not appear to be a valid assumption. The Weald has never been a traditional dairy farming area but if this had been so the twice daily milking of substantial herds of cows may have increased the degree of physical contact between children and cows so aiding the contracting of 'cowpox'.

Conclusions

Harvest failures do not appear to be a significant feature of the 1701-1840 period, though the period of adversity experienced during the 1670-1700 period does seem to have materially affected the course of natural selection. The patriarchal system appears to have done much to alleviate many problems until at last the pressures became too great following a marked population expansion from 1770-1840. No accurate figures can be given for the income from clandestine activities which provided an alternative source of income and presumably helped maintain living standards. One may assume that it was of vital importance for as population grew rival factions subjected the region to a reign of terror that led to Government intervention and a military presence. This may simply have been the result of increasing pressures of population threatening what was a lucrative but limited market in

contraband which could only maintain living standards to a certain extent. The rising mortality rates indicated by a twenty-five year moving average are indicative of changes and age-specific mortality. Creighton suggests that adolescents and adults died of fevers and children of smallpox. The heavy mortality of 1826 appears to be the result of the failure of the old patriarchal system to support by agriculture alone a vastly increased population that had become established by past policies. The forces of natural selection appear to have been particularly active from 1825-32 where burials closely approach the baptism levels and again towards 1840. Again Creighton suggests smallpox was responsible, though typhus, typhoid, etc. together with the ever-present tuberculosis appear to have operated to reduce the abnormally high levels of population.

Period III 1841-1980

Apart from minor fluctuations the twenty five year moving average indicates a downward trend in mortality rates. Infant mortality rates however do not demonstrate such a marked decline, deaths in infancy remained at an estimated 15 per 1000 about the turn of the century. This high rate is in marked contrast to the Otmoor study where rates by 1900 had fallen to 2-3 per 1000; this matter is further investigated. Another curious fact was the recording of considerable numbers of stillborn children during the late 1870-80 period; here the Rhesus factor may well be involved, at least in part. Diseases of the chest, particularly those associated with chronic tuberculosis seem to have been a peculiar problem

affecting the Wealden population (Creighton 1965). References to sub-standard housing resulting from Victorian building schemes, later systematically removed and replaced by modern development may provide a possible explanation in conjunction with hereditary chronic tuberculosis. Advances in medical science have now brought most of the old killer diseases under control and mortality rates today do not differ markedly from national levels.

Infant and Adolescent Mortality

A considerable number of both infants and adolescents may have died due to inherited congenital defects and debility in their parents. This was long past the period associated with harvest failure but living standards were probably lower following the removal of the artificial level of protection enjoyed during the 1701-1835 period.

Certainly both diptheria and scarlet fever combined to make considerable inroads during the autumn and winter of 1870 and 1871. This caused heavy loss of life and both epidemics appear to have been particularly virulent. Diptheria, a comparatively new disease had appeared at Ash in Kent in November 1856 (Creighton 1965) and epidemics from various areas of the country, including Kent, are mentioned for the year 1858. It is probable that some infant and adolescent mortality may have been attributable to both scarlet fever and diptheria between 1856 and 1870. Perhaps it was due to the unusual level of mortality that the incumbent chose to make specific mention of the cause

of death in the epidemic of 1870 and not earlier.

Apart from recording the stillborn children he gave no plausible explanation or comment upon the unusual number buried during the 1878-1880's period. Some may be attributable to the Rhesus factor, then unknown, two were twin children and may have died due to complications.

Stillborn Children

Between May and October 1874 the burial registers record an unusually high incidence of stillbirths. Some of these may be associated with the Rhesus factor, particularly where successive births during the 1875-1882 period involve the same women. The incumbent made no comment regarding this phenomenon, though one feels the high rate did in part reflect a fall in midwifery or medical standards. Eight stillbirths occurred during this six month period alone, some earlier entries may have been omitted but it appears to have been standard practice since the registers begin to record stillborn children. This phenomenon appears to coincide with the period of marked population decline and may be associated with some local crisis of which no contemporary record now appears to exist.

High rates of infant mortality when compared with the Otmoor study.

By 1900 the infant mortality rates found for the fifteen Otmoor parishes had fallen to about the national average of 2-3 per 1000 baptisms. Rolvenden's infant burial rate on the contrary was much slower to respond and rates at the

turn of the century remained as high as 55 per 1000 baptisms. One possible solution appears to be a decline in the standard of housing, a Victorian house building project producing a quantity of sub-standard houses, by Rolvenden standards. A modern housing programme instigated between the wars replaced the sub-standard accommodation and may have significantly reduced the age specific mortality rates as a result.

A medical correspondent to the press recently commented on the abnormally high rates of infant mortality found today in areas of poor and sub-standard housing conditions. Rates of 15-18 were quoted for the present day. This appears to indicate that inadequate housing and sanitary standards about the turn of the century may have been responsible for the abnormally high rate of infant deaths. The benefit of advances in medical science came later to Rolvenden than areas like Otmoor.

It also appears probable that the indiginous population's predisposition to chronic tuberculosis (Creighton, 1965), common to the Weald in general, may also be a contributory factor about this period. The association of tuberculosis with poor housing conditions may also have contributed to inter-related contributory predeterminants of debility in the parent generation and increased risk of mortality in infant and adolescent children. The stillbirths of the 1870-80 period may even be a harbinger of increasing short term age-specific mortality.

Adult Mortality

Tuberculosis and associated chronic diseases of the chest appear to have continually influenced mortality in adulthood. Creighton (1965) and others identified tuberculosis as the main 'killer' disease associated with the Wealden populace as a whole. The Benenden Chest Hospital situated near the Cranbrook to Tenterden road appears to have been specifically designed to cater for such patients. Modern medical science has done much to eradicate the problem, though there are still cases reported of deaths due to tuberculosis. A certain social stigma remains however, tuberculosis attacks remaining associated with poor standards of housing and poor nutrition. Modern housing development and improved standards of living may, in association with medical science, have eliminated much of the problem but the psychological aspects remain. The older generations influenced in formative years by first hand experience retain an aversion to this past killer disease.

A number of members of long established Rolvenden families fell during the two World Wars. As a direct consequence some old established families had no surviving direct heir and changes in landholding resulted. During the Second War a V.1 flying bomb fell on the old farmstead of Pookwell causing two deaths attributed in the burial register to 'enemy action'.

Improved standards of living, particular better housing and sanitary arrangements appear to have done much to reduce mortality rates. The introduction of mains water supply

may again be significant in reducing water-borne infections such as typhoid and cholera. It may be that improvements in London, fifty miles away, also reduced the level of risk by seasonal hop pickers who may have transmitted diseases, though there is no direct evidence. The influenza pandemic following the First World War may again have particular significance in association with the slight rise in mortality indicated by the twenty five year moving average. Following this rise rates fell gradually into line with those of the national average.

Conclusions

The benefits of medical science appear to have come later to Rolvenden than elsewhere. Infants and adolescents continued to be peculiarly at risk as an age group. The stillborn children are an enigmatic problem, though they are concentrated during a marked population decline period, presumably associated with local stress. Major 'killer' diseases are now fairly well controlled by medical science but advances in medical technique need to be seen in association with vast improvements in housing, sanitation and basic amenities not previously available.

Chapter VI

Aspects of Historical Demography

In looking for an explanation of present day local gene frequency variation it is useful to investigate not only the existing population but also their ancestors since the results of previous migrational, selective or drift events may have persisted to the present day. For the purpose of the following discussion the population of the Rolvenden Hundred is assumed to comprise a sub-population within a more extensive Mendelian population, the past geographical boundaries of which may have been determined by socio-cultural and topographical influences. When viewed in this context a definable inter-relationship of events appears to have determined the course of historical demography.

Witney (1976) quoting Jolliffe, suggests that the land divisions known as 'lathes' lay at the very foundation of the Jutish Kingsom. Of interest here is the population who occupied the Lathe of Lyminge, of which Rolvenden parish originally formed a very small part. Witney suggests that the populations of the lathes settled originally on the open and fertile land, individual units of population divided from each other by wooded downs, forest tracks and estuaries and undrained marshes. This raises the question of spatial genetic isolation after these migrants arrived as settlers and perhaps mingled with the surviving Romano-British population. In its historical context, at so remote a distance in time this event appears to be merely a continuation of the accepted theory regarding invasion and settlement in

the south-east. The present approach adopts a more radical viewpoint, using an accepted approach in terms of historical demography to link a series of inter-related events in their historical context to probable influences on the modern gene pool.

There is much academic argument regarding the origin of this major wave of settlement, and it is possible that one could be dealing eith a number of separate tribal units obliged to migrate and re-establish themselves in Kent as a result of the great surge of tribal movement along the crumbling Roman frontier during the mid-fifth century. If so then socio-cultural differences may have created further barriers to inter-marriage between the lathe settlements in addition to considerations of spatial isolation. Again this would be very difficult to prove or prove and is of only minor significance here.

The system of land use, farming the better soils of the coastal belt and using the Forest of Anderida for swine pannage is however a more significant consideration. Topographical features determined the natural routeways followed by the herds of pigs, and these became an established network of drove routes from the areas of primary settlement into the remote forest areas. These droves now underlie the modern road system and have influenced to a great extent the routes of immigration.

Focal Points

One presumes that the original townships provided primary focal points during the early years of settlement. Later, as populations expanded, some enterprising pioneers began to settle in the remote dens. In order to meet the needs of these secondary settlements the Wealden churches were planted at focal points in the forest convenient to the needs of an exiguous population scattered throughout the dens. It was therefore the droves that dictated their position. In the High Weald they were built at the junction of main droves emerging from the various commons, as at Cranbrook, or at smaller focal points along the droves such as Rolvenden and Benenden.

The role of the church was particularly important during the Middle Ages as the churches were the centre of community life to which the prople came on secular as well as religious occasions, and at Feasts which were both. In Rolvenden's case the church continued to exert a major influence at least until the early nineteenth century and in this role can be seen as a focal point of considerable significance, despite the ease of access to the market town of Tenterden situated some three miles away.

In terms of ongoing importance these focal points are seen as significant meeting points for potential marriage partners. In the initial instance the main focal point was the new-founded settlements,subject to some degree of spatial genetic isolation and by topographical barriers to ease of communication. There would appear to be some

possibility that local lathe population became to some extent inbred, or maintained inter-tribal differences in their genetic constitution if cultural barriers interposed with regard to exogamous unions.

Generations later, their descendants began to settle in the less attractive areas, moving out along the established drove roads, establishing a network of small units of population in the dens, later to grow into the modern parishes. The orientations of these secondary units of population towards focal points within the lathes, determined by ease of access may have pre-determined the pattern of exogamous marriage and maintained some degree of genetic isolation between the lathes maintaining some considerable degree of heterogeneity.

Consanguineous unions.

Considering the problems associated with secondary settlement land development discussed in Chapter 2 the possibility of cultural determinants of preferred marriage ties may be significant. Consanguineous unions within the extended family unit would appear to have ensured as far as was humanly possible that investment in time and effort by pioneering kinsfolk remained essentially an ongoing development. The consequences of a marked increase of inbreeding may have resulted in some increase in genetically determined marker traits within a patchwork of local gene pools. There are similarities with much later preferred marriage customs in the Balkans for example.

However, to expect to demonstrate conclusive evidence of heterogenity among subsamples of the present population would be optimistic indeed.

Mendelian Populations

For the present purposes a Mendelian population is defined as a spatial-temporal group of interbreeding individuals sharing a common gene pool. Mendelian populations vary in size, between the lower limit of size, which is the nuclear biological family, and the upper limit of the entire species. There would appear to be some possibility that the populations of individual lathes did in the past closely approach being closed systems. Of course much further work is needed in order to confirm this suggestion, but the potential exchange of genes by inter-parish exogamous marriage movement between communities situated within the geographical boundaries of the ancient lathes appears significant. Rolven parish registers indicate a considerable gene migration between it and other parishes within the old Lathe of Lyminge. The pattern and orientation of subsequent generational gene flow between sub-populations within a probable early established Mendelian population is believed to be of considerable local significance.

Marriage distance and orientation

Harrison and Boyce (1972) indicate that the distance and direction in which an individual travels to find a mate is generally limited by the range he covers in his normal everyday activities. In this study marriage distance is

taken as the shortest distance by road or footpath between the partners' places of residence. The greatest contribution of spouses for all time periods examined was from the local market town of Tenterden, an important focal point in terms of orientation of inter-parish communication. The limited data available may not be strictly comparable with other studies and if so this may have resulted from historical socio-economic determinants which affected Kent.

Parish endogamous marriages

The term 'parish endogamy' is applied to marriage between two residents of the same parish. During the time periods it was possible to analyse between 1576 and 1975 considerable variations in the percentage of such marriages were encountered. During the 1576 - 1825 period the average rate remained fairly high at 79.7% falling significantly to an average rate of 49.5 from 1826 - 1975.

The highest percentage 94.4% was derived from the 1576-1600 analysis at this time the woollen trade prospered, mortality rates were high and house and potential work space appears to have been at a premium. Where one partner died a hasty re-marriage to restore a working partnership appears to have been normal practice. It may be that uncertainties and depression within the industry are linked to the marked fall to 74.1% from 1601-25, and then to rise again during the period of partial recovery from 1626-50.

The artificially created socio-economic circumstances which prevailed during the 1751 - 1825 period may have

encouraged a high degree of 'espousal' as Laslett (1971) points out. An engaged couple lived together before marriage and perhaps so qualified as true residents. Certainly the incidence of endogamous marriages falls significantly after 1826, but the degree of isolation of Kent parishes also decreased as Kent became more involved with and influenced by outside influences.

Marriage distance and orientation 1576 - 1975

The orientation of extra-parochial marriage movement may have been influenced by both cultural and socio-economic barriers affecting immigration. By tradition the population of Kent was suspicious of strangers and successive generations were content to live out their lives behind high-hedged lanes. This alone may have made successful immigration difficult and an acute shortage of house space persisting well into the nineteenth century may have strongly influenced potential migration. The very limited amount of data at present available is of course quite inadequate for drawing firm conclusions.

The nearby market town of Tenterden has at all periods provided the greatest number of extra parochial spouses. The adjoining large village of Benenden made the second most significant contribution for the time periods studied. Cranbrook though a market town and focal point made less contribution; this may be because even today is by indirect routes.

In the past even some neighbouring small parishes which made smaller contributions may have been subject to winter

flooding, Wittersham and Stone, for example. It is felt that Tenterden's role as a market town was vital to the orientation of many individual travels, and inter-parish communication.

The marriage distance tables were arranged to give some indication of the contribution made by neighbouring parishes, those from Kent as a whole, London parishes and neighbouring counties etc. The data was then re-arranged to consider the possible influence of the rural network on mate seeking behaviour within the same time periods.

One feels that the past history of settlement and socio-economic determinants suggests that much of the present population may have evolved due to natural increase from the surviving post-Conquest population. If so there may be significant levels of long term genetic survival persisting in such rural communities.

It is interesting to note that most long distance contributions to the marriage distance tables were made by exogamous grooms. As most couples appear to have settled outside the parish, perhaps in the groom's home area a significant loss of genes by migration is represented, rather than a dilution of the local gene pool by sustained immigration and settlement.

Before 1825 contact with the London parishes appears to have been confined to the established landowning families who had business and social contacts there. After this date a limited increase in the incidence of exogamous marriages,

usually involving males presumably working in London is noted. The birthplace of such people could of course vary considerably from the parish of residence at marriage.

Most of the marital contributions seem to come from nearby parishes at all times. This seems to be the case in other studies such as those of Dobson and Roberts (1971) and the Otmoor study. Of more importance may be the high incidence of marriages at all times within Kent. Even after 1825 the average rate is 85.5% which may be particularly significant.

If in fact there remains any local genetic differentiation that may have evolved as a result of the Germanic settlement then Kent's cultural rather than geographical isolation may be particularly significant. The problem would be in establishing reliable net migration figures and population sizes to calculate net migration rates. It is felt that however the limited evidence at present available provides some insight into this particular problem.

The Rural Network

The rural network of communications has probably always remained another significant factor in terms of migration. Today the employment potential of the area remains basically agricultural and in the case of Rolvenden some sixty per cent of the working population are so employed. Before the introduction of a main line railway link during the early twentieth century the district itself remained isolated, and this would also appear to have influenced the rural

communications network. Sogner (1963) suggests that migrants to parishes probably gave false information regarding parish of origin in order to avoid the Settlement Laws at an earlier period. His argument is further examined from the point of view of the rural network and the probability that most migration was opportunistic rather than random.

Rolvenden like many other rural districts had, and still has considerable potential for local employment. In addition to agriculture and associated service industries there were also trade opportunities throughout many centuries. One is here concerned with agriculture creating its own need for specialists, stockmen, ploughman etc. as well as the ubiquitous rural 'labourer' who in truth possessed a multiplicity of skills and adaptive responses which were, and still are, invaluable. Such people made an enormous economic contribution at a national level which generally remains unrecognised by economic historians.

As far as the rural network is concerned however one needs to consider the pooled knowledge of the community, indigenous population and all settled migrants. The geographical boundaries of such a network extended to the most distant parish migrants had arrived from. Any social or business contacts maintained would maintain a constantly revised updating of information and the transmission of news of potential work opportunities. Most migrants would therefore be of the opportunistic short distance variety, inter-parish and inter-generational moves rather than long

distance random migrants. The exception here of course remains 'travellers' who were passage migrants and seasonal harvest labourers. Both categories would probably be subject to intense suspicion by the local population Chalklin (1961) and others.

Sogner's (1963) argument would be applicable to towns, but probably not rural areas, and not Kent where 'de furriner' was not encouraged. It is interesting to note that the 'Accounts for the Constable of the Hundred of Rolvenden' contain a protracted account regarding two children returned by stage coach to the village from Sussex under the Settlement Laws. As non-Rolvenden residents they were promptly returned accompanied by the Constable and duly handed over to the original parish Constable. Some months later they arrived back in Rolvenden having travelled through several counties and parishes. Mounting claims by the Constable of the Hundred for expenses incurred in repeatedly returning these children to various parishes eventually led to their being 'placed on a coach bound for Yorkshire'.

Rural networks remained important until the 1914-18 War and then began a gradual decline. Change became inevitable; the 1939-45 conflict escalated the decline. Agriculture is now so capital intensive, geared to greater and more efficient production, there can be no going back. The village craftsman along with traditions have suffered from 'progress' and machines now simplify many agricultural undertakings. Even so land remains, the problems remain

despite scientific aids, and the rural labour force remains important, though it has dwindled considerably. C. Henry Warren (1946) wrote of such changes and other observations of rural networks are based on contact with many friends of the old school.

Rolvenden has responded remarkably well, retaining strong rural links, as have other parishes in Kent and elsewhere. There is not enough statistical material available at the moment regarding the present study to discuss the influence of urban orientated values upon potential marriage partners. Today however some 60% of the workforce is still employed in agriculture, here a sense of atavism may dominate and impose its own determinants in terms of adaptive response. The land requires specialists with aptitude unsuited to those of non-rural origins. C. Henry Warren remarked on the increasing alienation of rural and urban concepts, and his views could perhaps be further researched. One is aware of an insular attitude within the local community, a possible barrier to further research by sections of the long established communities of Kent. The rural network in its present form may provide a means of penetrating such barriers.

Social and Inter-Generational Mobility

Though this aspect was investigated the present study does not provide sufficient statistical material for any valid comparisons to be drawn. The impression gained however is that a considerable degree of gene loss may be

attributed to females marrying out and settling elsewhere. This area needs to be further investigated on a broader scale using additional material not at present available due to lack of time. One here is particularly interested in the adaptive behavioural response of individual families within the community, those with strong atavistic ties to the Weald, and those more recent migrants. There does, from superficial investigation appear to be a tendency for inter-marriage between certain sections of communities and this may have arisen from a variety of causes.

Increased educational opportunities and exposure to urban values and concepts coupled with opportunities for travel have increased the drift from the land. A loss of potential marraige partners results, those remaining appearing to have married locally and if this trend continues will lead to increasing interrelationships of the rural sub-community. This may eventually produce some interesting genetic results, particularly if the urban-rural divisions persist. The land requires a specialist work force, preferably recruited at the local level and is totally unsuited to those of non-rural origin. Some further dwindling of the work force, and some increase in settlement by non-rural migrants may increase the divisions leading to an increasing isolation of the rural indigenous population.

This appears to be an important trend, and is not purely a philosophical argument of academic interest only. The urban commuter represents an increasingly intrusive element, though

contributing economically to individual parishes, valuable house space is lost and many young couples may be obliged to move out in search of living accommodation. Rolvenden achieves its stability simply because many houses are owned by the leading landowners to house a necessary workforce, but this still provides only limited opportunities and remains subject to the vagaries of future agricultural demands.

Social and inter-generational mobility may therefore to some extent be determined by opportunities for employment and housing. One is also acutely aware of strong atavistic affinities, people appearing to move back if the opportunity arises. Rolvenden Layne in particular provides peculiarly strong ties for long-established families as do other parishes, Wittersham and Stone for example. There appears to be indefinable atavistic affinities present, perhaps strong enough to pre-determine the course of social and inter-generational mobility though much further work will be needed to confirm this hypothesis.

Conclusions

The last significant period of invasion and settlement from Europe directly affecting Kent took place during the Anglo-Saxon period. The isolated and inhospitable Weald appears to have provided an area of refuge for earlier established settlers who perhaps later integrated with the newly arrived population. Academic opinion differs regarding the probable origin of these Germanic migrants,

Witney (1976) suggests they may be Franks from the Middle Rhine. This is interesting in theory as re-settlement of an established Mendelian population of European descent could be involved. Others believe the Kentish settlers may have been of diverse origins, comprising small units of population displaced by the great wave of folk movement taking place along the crumbling Roman frontier.

There may, however, have been no marked difference in the genetic constitution of the whole Anglo-Saxon population as they appear to have shared in an ancestral European gene pool, discussed in Chapter 1. Some elements of the wider population however may have possessed even at a low level balanced polymorphisms which conferred a selective advantage predetermined by earlier population contacts. It is here that Witney (1976) raises an interesting suggestion regarding the Franks suggesting they ideally suited to the pioneering life of the forest. Earlier in their ancestry they had 'met and mingled with the forest peoples and adapted to life in forest clearings'. Pioneering agriculture and settlement of the Weald itself began about the eighth century and continued up to the Norman Conquest.

Here one is dealing with a particularly arduous phase, enormous inputs of energy requiring high degrees of physical and presumably genetic fitness. Genes which conferred a potential selective advantage would appear to be at a premium. Evidence derived from an archeological dig at the Otford Anglo-Saxon cemetery suggests that tuberculosis

caused considerable mortality and that two thirds of the population died before the age of fifteen years, only a tiny minority of adults living to be forty years of age. The Otford cemetery may be atypical, and is not a 'Jutish' cemetery, containing no Frankish cultural affinities, but such evidence appears important in the context of conferred selective advantage in the form of possible balanced polymorphisms that could potentially increase in the minority of each generation reaching adulthood. Successive generations may have had some level of potentially increased genetic fitness to survive and adapt to pioneering the Weald.

The Norman Conquest, and the possibility that many Wealden folk were amont the battle dead at Hastings or victims of subsequent reprisals, suggests that the growth of population was again seriously checked. The leading families were it appears eliminated, but the peasants survived, probably seeking refuge in the forest, later to return to their villages. A considerable population expansion from the Conquest period to the Black Death of 1348/49 is known to have taken place (Witney, 1976). At a national level at least one third, and possibly as many as half the population was wiped out and there is no reason to suppose that the Wealden population suffered any fewer casualities. The later parish registers remain silent regarding the passage of the plague

in general, though one suspects that trade considerations regarding the woollen trade may have been significant here. There is however no contemporary evidence for this.

The parameters of the present study did not allow time to be devoted to the influence of the Flemish settlers in Cranbrook, Biddenden and elsewhere, though some surnames found in Rolvenden appear to be Norman French in origin. It is felt that further research ought to be concentrated on the degree of their influence and their survivability in terms of applied genetic fitness. They appear to have settled within an area whose population had long been subject to chronic tuberculosis and may therefore have as a population been at considerable risk, unless they had earlier been exposed to the disease.

Considerable time and space in this study has been devoted to the question of mortality rates simply because it became increasingly apparent from examination of the Rolvenden registers that epidemics appear to have long operated as the main vehicle of natural selection. Quite alarming rates of infant mortality remained a feature of the Rolvenden study well into the present century, this in itself is in marked contrast to similar studies. It is now hoped that more time can be devoted to a broader study of this phenomena, using parish register material from both local parishes and towns such as Cranbrook and Tenterden for comparison with the present study. The statistical importance of the Rolvenden study is of

limited importance studied in isolation, but for present purposes is compared with the Otmoor study in particular. Later, the present work is envisaged as forming part of a much broader area of research developed from personal interest in this particular area.

Rolvenden itself has adapted remarkably well to changes, particularly with regard to agriculture, though this remains basically the most important source of local employment. The parish may consider itself fortunate to lie outside the main line rail network, and to have escaped the commuter belt to a large extent. Beddoe (1885) recognised only too well the threat to long established gene pools imposed by the ease of travel, and a modern equivalent and perhaps a more alarming development is the dormitory estates imposed upon previous agricultural communities. Their character is destroyed forever, at a stroke, wiping out what are probably long established gene pools of particular interest to present and future research. Increasing urbanisation in the name of 'progress' appears to have become an economic necessity and agriculture alone could not hope to employ all and other sources of income are necessary to all rural communities if they are to survive. It is however the piecemeal re-settlement of London's overspill population with its urban orientated values that now threatens the stability of local populations and creates new problems regarding adaptive strategies for the remaining rural inhabitants.

As an agriculturalist one's sense of tradition and values are naturally biased towards the land and sympathies lie firmly with the rural population. One needs to be aware of this potentially biased opinion but it does have a practical application in terms of the present study. The land will remain, succeeding generations virtually hold it in trust for future generations and have done since the pioneering days. As regards the Weald what one particularly admires is the enormous investment of labour involved in developing the land for agriculture as a potential investment for future generations. No individual could hope to gain a significant economic return in his lifetime and they must have been men of vision thinking in terms of generations to come. Such thinking led to the adoption of the preferred marriage hypothesis and extended kin ties to land ownership which as far as was humanely possible would have ensured the continuation of landholdings and a return on investment over generations. Population expansion and unthought of calamities like the Black Death imposed problems, but it appears that the descendants of the original pioneers maintained their traditions.

There is much scope for further investigation, the parameters of this study are of necessity limited and it was intended primarily as a means of examining the feasibility of further areas of potential research. Some potential areas have been identified and briefly discussed and other probably avenues of investigation also need to be considered.

Situated as it is in the Lowland Zone the Weald is an unusual area to seek for long term genetic continuity, even from the Neolithic period, as Professor Fleure suggested. However, as the population appears to have derived from a European gene pool which provided successive waves of immigrants and richly diversified source of genetic material. Populations probably with ancestral contact in the European heartland could have intermingled in Kent and elsewhere later. Any genes with a potential selective advantage would therefore have been at a premium when subjected to the forces of natural selection. The land made its own peculiar demands and enormous mortality rates appear to have been involved leading presumably to quite rapid changes in the genetic constitution at a local level.

Since the parish registers began there have been considerable demands made on the population in terms of adaptive response, particularly within the three periods 1561 to 1700, 1701-1840 and 1841 to the present. Each demarcated period required peculiar adaptive responses; the 1701-1840 period however appears to have approached an equilibrium, man and the land working in harmony, until economic and political change created further crisis situations.

Adaptive responses to current changes are difficult to evaluate, Rolvenden has needed to adapt in order to survive, yet the parish has retained its identity and a sense of harmony within the community. Some sixty per cent of the present workforce are still actively employed

in agriculture and despite adaptive response to market changes a demand for such a workforce is likely to continue. Therefore as a model for comparison with other parishes Rolvenden is probably about the ideal, though other local parishes retain their atavistic affinities and an established rural community.

The Wealden parishes today may in fact still retain a significant level of population descended from the earlier migrant populations. As such therefore this small geographical area may provide important information regarding the genetic constitution of the local population, and perhaps the persistence of some marker traits. The physical type alluded to by Professor Fleure J.R.A.I. (1916) certainly appears to persist today in the area. There is every indication therefore that further extensive fieldwork could provide some particularly interesting results.

MARRIAGE DISTANCES PERIOD I 1576-1825

Parish	County	1576-1600	1601-1625	1626-1650	1751-1775	1776-1800	1801-1825	Total
Appledore	K	-	-	-	1	-	-	1
Ash	K	-	-	-	-	1	-	1
Beckley Heath	K	-	-	1	1	-	-	2
Benenden	K	1	7	2	6	4	5	25
Berwick	E.S	-	-	-	1	-	-	1
Bexhill	E.S	-	1	1	-	-	-	2
Biddenden	K	1	3	1	-	-	-	5
Brede	E.S	-	-	-	-	-	3	3
Broughton Matherbee	K	-	-	-	-	1	-	1
Canterbury	K	-	1	-	-	-	-	1
Christ-church	D	-	-	-	-	-	1	1
Cranbrook	K	3	3	1	-	1	4	12
Dover	K	-	1	-	-	-	-	1
Dymchurch	K	-	-	-	-	-	1	1
Etchingham	E.S	-	-	-	-	-	1	1
Ewhurst	E.S.	-	-	-	-	1	-	1
Farleigh	K	-	-	-	1	-	-	1
Frittenden	K	-	-	-	-	-	1	1
Goudhurst	K	-	-	-	-	-	1	1
Great Chart	K	-	-	1	-	-	-	1
Hastings	E.S	-	-	1	-	-	-	1
Hadlow	K	-	-	-	-	-	1	1
Hawkhurst	K	-	1	2	1	-	3	7
High Halden	K	-	-	-	1	-	-	1
Holborn	Mx	-	-	-	1	-	-	1
Hurstman-ceu	E.S.	-	-	-	-	1	-	1
Hythe	K	-	-	-	-	-	1	1
Iden Green	K	-	-	1	-	-	-	1
Ivychurch	K	-	1	-	-	-	-	1
Lambeth	L	-	-	-	-	-	1	1

Parish	County	1576-1600	1601-1625	1626-1650	1751-1775	1776-1800	1801 1825	Total
Lee Green	K	-	1	-	-	-	-	1
Lydd	K	-	1	-	-	-	-	1
Lyminge	K	-	1	-	-	-	-	1
Maidstone	K	-	1	-	-	-	2	3
Marden	K	-	-	-	-	-	1	1
Mersham	K	-	-	-	1	-	-	1
Newenden	K	-	1	-	1	1	2	5
Northam	E.S	-	-	1	3	1	-	5
Norwich Barracks	N	-	-	-	-	1	-	1
Old Romney	K	-	-	-	-	1	-	1
Peasmarsh	E.S	-	1	1	-	-	-	2
Rochester	K	1	-	-	-	-	-	1
Rye	E.S.	1	2	-				3
Salehurst	E.S.	-	1	-	-	-	1	2
Sandhurst	K	2	3	1	1	4	4	15
Seddles-combe	E.S.	-	-	-	-	-	1	1
Shorne-cliffe	K	-	-	-	-	1	-	1
Smallhythe	K	-	-	-	1	-	-	1
Smarden	K	-	-	2	-	-	-	2
Staple-hurst	K	-	-	-	1	-	-	1
St. Jame's	L	-	-	-	1	-	-	1
Stone	K	-	-	1	-	-	-	1
Stroud	K	-	1	-	-	-	-	1
Tenterden	K	1	7	6	7	7	13	41
Westminster	L	-	-	-	1	-	-	1
Wittersham	K	-	-	-	2	-	2	4

MARRIAGE DISTANCE FIGURES PERIOD II 1826-1975

Parish	County	1826-1850	1851-75	1875-1900	1901-1925	1926-50	1951-75	Total
Alverstoke	Hants	-	1	-	-	-	-	1
Appledore	K	-	-	-	-	-	1	1
Ashford	K	-	1	1	-	1	1	4
Ashton-u-Lyme	Lancs	-	-	-	1	-	-	1
Badbrook	W	-	-	-	1	-	-	1
Bargoed	Wales	-	-	-	-	-	1	1
Barming Heath	K	-	-	-	-	1	1	2
Battle	E.S.	-	-	-	1	-	1	2
Beaminster	D	-	1	-	-	-	-	1
Bearstead	K	-	-	-	1	-	-	1
Beckenham	K	-	-	1	-	-	-	1
Beckley Heath	K	1		2	-	3	1	7
Benenden	K	2	12	5	2	7	5	33
Bethersden	K	-	1	-	-	-	-	1
Biddenden	K	2	-	-	-	1	4	7
Birmingham	Warwk	-	-	-	-	1	-	1
Brede	E.S.	2	-	-	-	-	-	2
Brenchley	K	-	1	-	-	-	-	1
Brightling	Sx	-	-	-	-	-	1	1
Brighton	S	-	-	2	-	-	-	2
Bromley	K	-	-	-	1	1	-	2
Broughton Materbee	K	-	1	-	-	-	-	1
Burwash	Sx	-	-	-	-	-	1	1
Camberwell	L	1	1	-	-	-	-	2
Cambridge	C	-	-	-	-	1	-	1
Canterbury	K	-	-	-	-	1	-	1
Chalfont St.Giles	Bucks	-	-	-	-	-	1	1
Challock	K	-	-	-	-	-	1	1
Charing	K	-	-	1	-	-	1	2
Charlton	L	-	-	-	1	-	1	2
Charminster	D	-	-	-	2	-	-	2
Chartham	K	-	-	1	-	-	-	1
Chatham	K	-	-	1	-	-	1	2

MARRIAGE DISTANCE FIGURES PERIOD II 1826-1975

Parish	County	1826-1850	1851-75	1875-1900	1901-1925	1926-50	1951-75	Total
Chester	C	-	-	-	-	1	-	1
Chichester	S	-	-	1	-	-	-	1
China	China	-	-	-	1	-	-	1
Chipstead	S	-	-	-	-	-	1	1
Collumpton	Devon	-	-	-	-	-	1	1
Cranbrook	K	4	1	1	2	3	3	3
Croydon	S	-	-	1	2	-	-	3
Cuckfield	W.S.	-	-	-		1	-	1
Devonport	Devon	-	-	-	-	-	1	1
Disley	C	-	-	-	1	-	-	1
Dorking	S	-	-	-	-	-	1	1
Dorset	D	1	-	-	-	-	-	1
Dover	K	-	-	1	1	-	-	2
Egerton	K	-	-	-	1	-	1	2
Fairseat	K	-	-	-	-	1	-	1
Fettercairn	Scot.	-	-	-	-	1	-	1
Folkestone	K	-	1	-	1	2	-	4
Frittenden	K	-	-	1	-	-	-	1
Fulham	L	-	-	1	-	-	-	1
Gillingham	K	-	-	-	-	1	-	1
Godmersham	K	-	-	-	-	1	-	1
Goudhurst	K	-	-	-	1	-	-	1
Gravesend	K	1	-	-	-	-	-	1
Hardy Ferry	RAF	-	-	-	-	1	-	1
Harrietsham	K	-	-	-	-	1	-	1
Haslemere	S	-	-	-	-	-	1	-
Hastings	Sx	-	-	3	-	3	1	7
Hawkhurst	K	1	1	3	-	1	1	7
Hildenborough	K	-	-	-	-	1	-	1
Headcorn	K	-	-	-	1	-	-	1
High Halden	K	-	1	1	-	2	1	5
Higham	K	-	-	-	1	-	-	1
Hitchin	Herts	-	-	-	-	-	1	1
Hook	Sy	-	-	-	-	1	-	1
H.M.S.	HMS	-	-	-	-	3	-	3

MARRIAGE DISTANCE FIGURES PERIOD II Contd.1826-1975

Parish	County	1826-1850	1851-75	1876-1900	1901-1925	1926-1950	1951-75	Total
Horsmorden	K	-	-	1	-	-	-	1
Hothfield	K	-	-	-	-	1	-	1
Hove	Sx	-	-	-	-	1	-	1
Hull	Yks	-	-	-	-	1	-	1
Iden Green	K	-	1	2	-	-	-	3
Ilford	Esx	-	-	-	1	-	-	1
Jersey	C.I	1	-	-	-	-	-	1
Keithley	Yks	-	1	-	-	-	-	1
Kenardington	K	-	-	1	-	-	1	2
Kempstone	Beds	-	-	-	-	1	-	1
Kilndown	K	-	-	1	-	1	-	2
Kingston-u-Thames	Sy	-	-	-	1	-	-	1
Lancing	Sx	-	-	-	-	-	1	1
Lee	K	-	-	-	1	-	-	1
Leighton	Ldn	-	-	-	1	1	-	2
Lenham	K	-	-	-	-	-	1	1
Lewisham	Ldn	-	-	1	-	-	-	1
Leysdown	Isle of Sheppy	-	-	-	1	-	-	1
Loddington	N.Hants	-	-	1	-	-	-	1
London	Ldn	1	-	1	2	3	4	11
Loughton	Esx	-	-	-	2	-	-	2
Luton	Beds	-	-	-	-	1	-	1
Lydd	K	-	-	-	-	2	-	2
Lymphne	K	-	1	-	-	2	-	3
Maidenhead	Brks	-	-	-	1	-	-	1
Maidstone	K	-	1	1	1	1	3	7
Marden	K	-	1	-	-	-	-	1
Margate	K	-	-	-	-	-	1	1
Matfield	K	-	-	-	-	1	-	1
Milton	Hants	-	-	-	-	-	1	1
Mitcham	Sy	-	-	1	-	-	-	1
Monkton	K	-	-	-	1	-	-	1
Newcastle-u-Lyme	Lancs	-	-	-	-	-	1	1
Newchurch	K	-	1	-	-	-	-	1
Newenden	K	-	3	1	-	-	2	6

MARRIAGE DISTANCES PERIOD II Contd. 1826-1975.

Parish	County	1826-1850	1851-1875	1876-1900	1901-1925	1926-1950	1951-1975	Total
New Romney	K	-	1	-	-	-	-	1
North Cray	K	-	-	1	-	-	-	1
Norfolk Virginia	USA	-	-	-	-	1	-	1
North Holmwood	Sy	-	-	-	1	-	-	1
Northiam	Sx	-	1	2	1	3	-	7
Nottingham	Notts	-	-	-	-	-	1	1
Nuneaton	Wks	-	-	-	-	1	-	1
Oxford	Oxfs	-	1	-	-	-	-	1
Paddington	Ldn	-	1	-	-	-	-	1
Plaistow	Ldn	-	-	-	1	-	-	1
Playden	Sx	-	-	-	-	1	-	1
Plumstead	Ldn	-	-	1	-	-	-	1
Portsmouth	Hants	-	-	1	-	1	-	2
Postling	Sx	-	-	1	-	-	-	1
Probus	Cornwall	-	-	-	-	1	-	1
Rye	Sx	1	-	-	-	-	3	4
Salcombe	Devon	-	-	-	-	-	1	1
Salehurst	Sx	-	2	1	-	1	-	4
Sandhurst	K	3	1	1	-	5	1	11
Sandwich	K	-	-	1	-	-	-	1
Seaford	Sx	-	-	-	-	1	-	1
Seal	K	-	1	-	-	-	-	1
Sellindge	K	-	-	-	-	-	1	1
Sheffield	Yks	-	-	-	-	-	1	1
Shorncliffe	K	-	1	-	-	-	-	1
Shortlands	K	-	-	-	-	1	-	1
Sidley	Sx	-	-	-	-	1	-	1
Sissinghurst	K	-	-	-	1	2	1	4
Smallhythe	K	-	-	-	1	-	-	1
Smarden	K	-	-	-	-	2	-	2
Southend	Ex	-	-	-	-	1	-	1
Speldhurst	K	2	-	-	-	-	-	2
St.Albans	Hts	-	-	-	-	1	1	2
St.Brivals	Glos.	-	-	-	-	-	1	1

MARRIAGE DISTANCES PERIOD II Contd. 1826-1975

Parish	County	1826-1850	1851-1875	1876-1900	1901-1925	1926-1950	1951-1975	Total
St.Leonards	Sx	1	-	1	-	-	1	3
St.Michael's	K	-	1	-	-	1	2	4
Stoke	Ches.	-	1	-	-	-	-	1
Stone	K	-	-	-	-	1	-	1
Stroud	K	-	-	1	-	-	-	1
Suffolk	Sfk	-	-	-	-	-	1	1
Telford	Shrops	-	-	-	-	-	1	1
Tenterden	K	10	7	5	8	10	19	59
Thanet	K	-	-	1	-	-	-	1
Tonbridge	K	-	1	1	-	-	-	2
T. Wells	K	-	1	-	-	1	-	2
Tonypandy	Wales	-	-	-	-	1	-	1
Trinidad	Barbds	-	-	-	-	-	1	1
Udimore	Sx	-	1	-	-	-	-	1
Ulcombe	K	-	-	-	-	1	-	1
Wandsworth	Ldn	-	-	-	-	-	1	1
Watford	Herts	1	-	-	-	-	-	1
Westfields	Sx	1	-	-	-	-	-	1
W.Malling	K	-	-	-	1	-	-	1
Westminster	Ldn	-	-	-	1	-	-	1
Willesborough	K	-	-	-	1	-	-	1
Winchester	Sx	-	-	-	1	-	-	1
Withyham	Sx	-	1	-	-	-	-	1
Wittersham	K	3	1	-	1	1	3	7
Woodchurch	K	1	1	-	1	1	2	6
Woolwich	Ldn	-	2	-	1	-	-	3

LIST OF FIGURES

Fig 1a. 25 Year moving average of baptisms, burials and marriages Period I 1573-1700

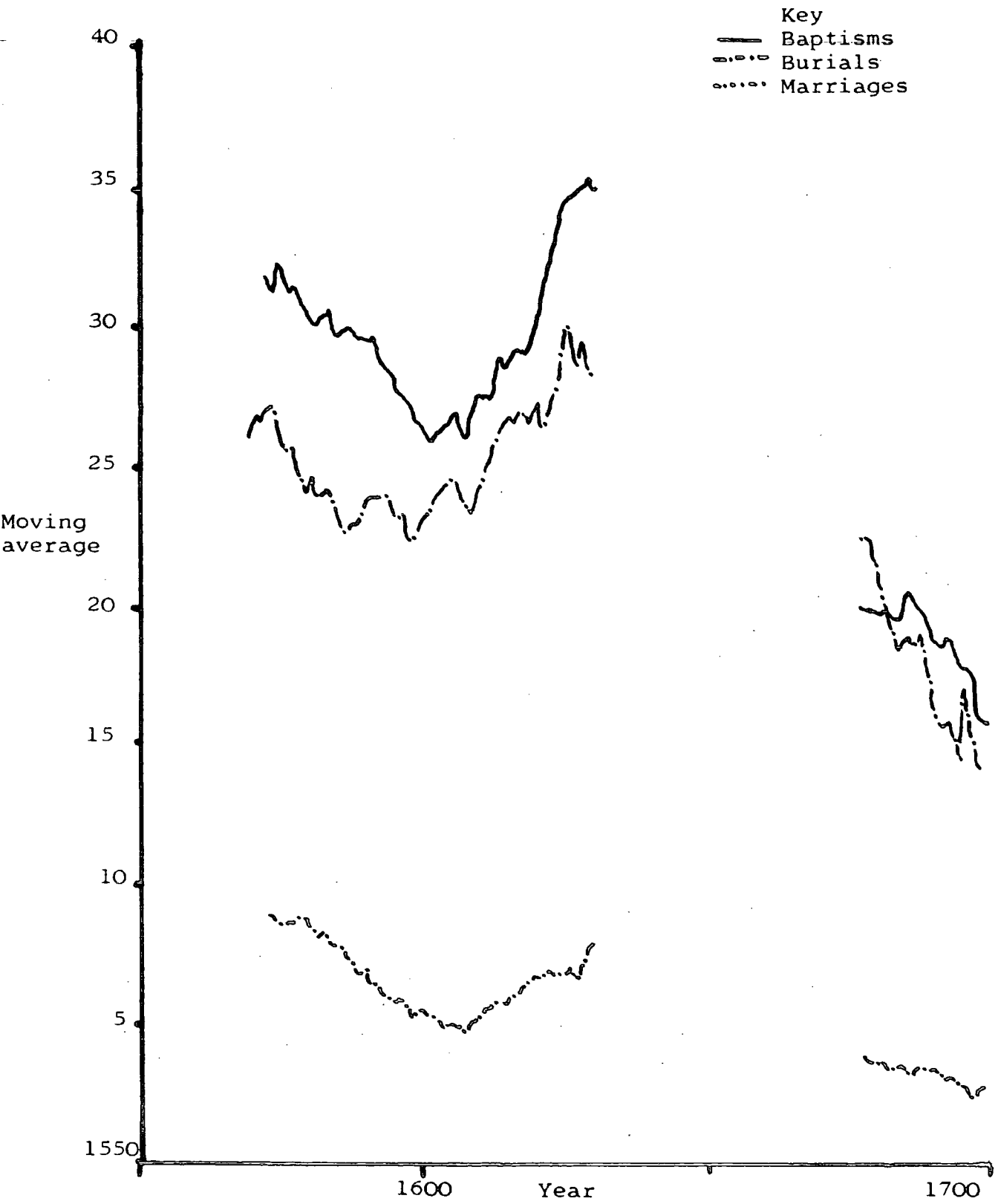


Fig. 1b 25 Year moving average of Baptisms, Burials and Marriages Period II 1701-1840

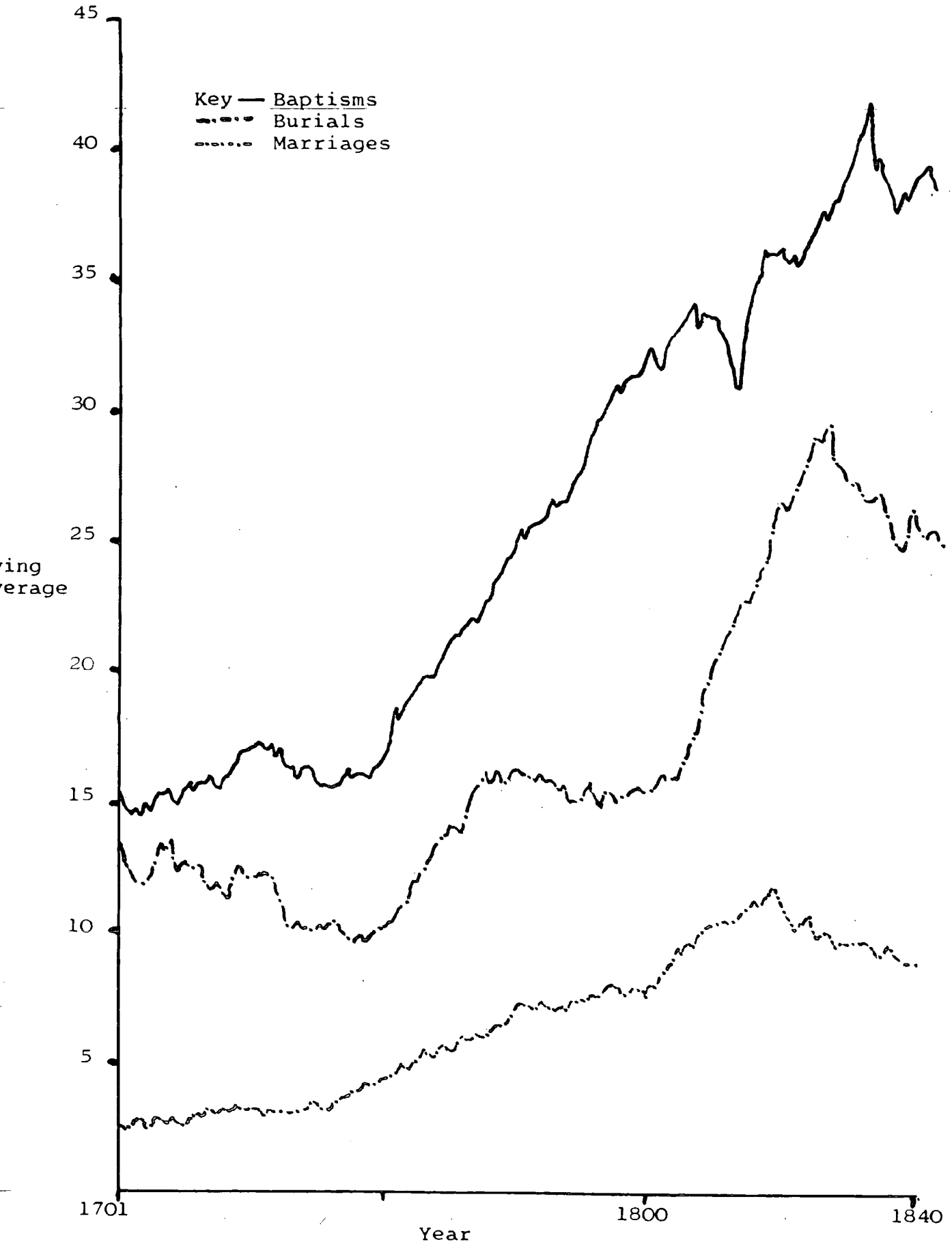


Fig.1c 25 Year moving average of Baptisms, Burials and Marriages Period III - 1841-1970

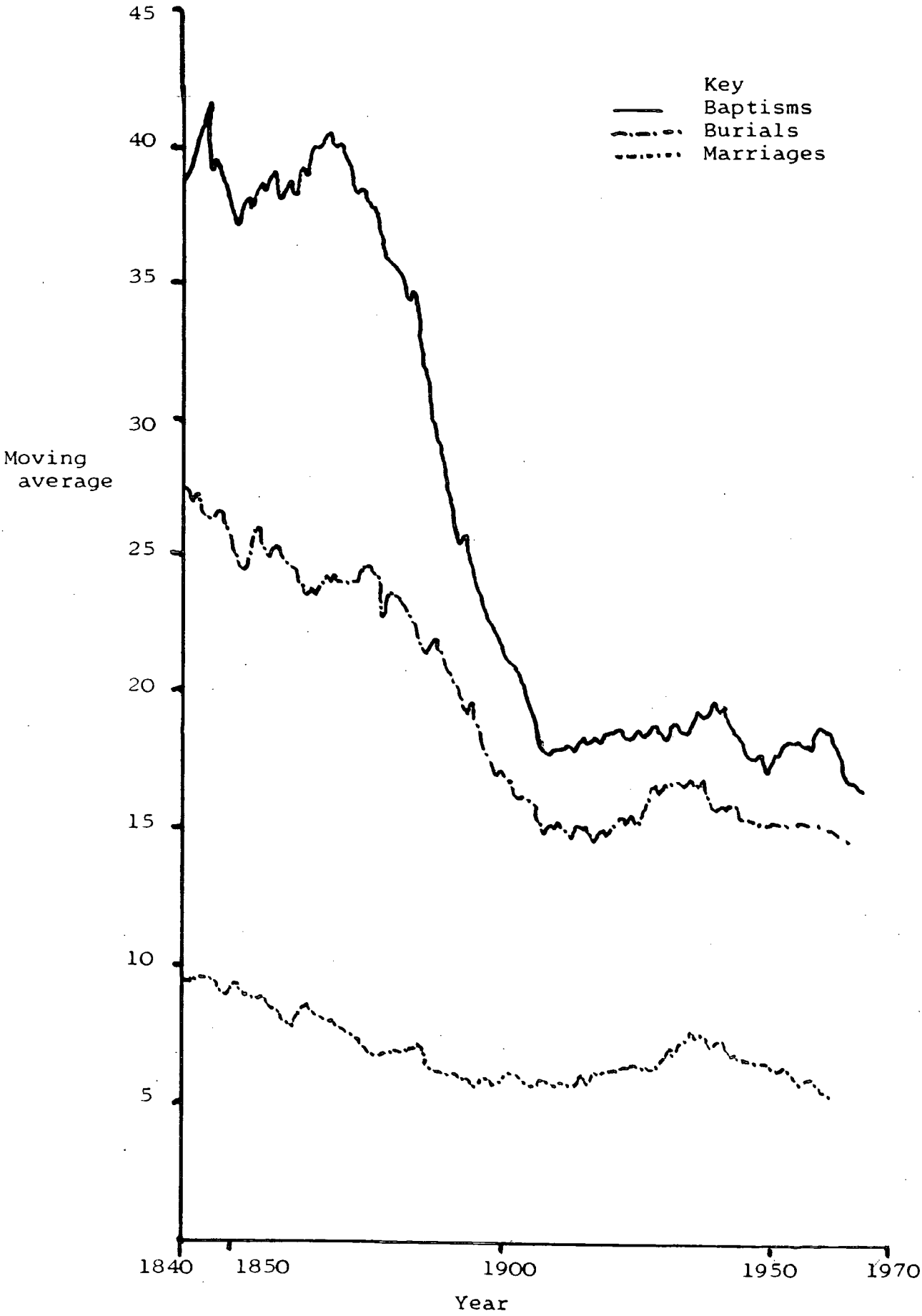
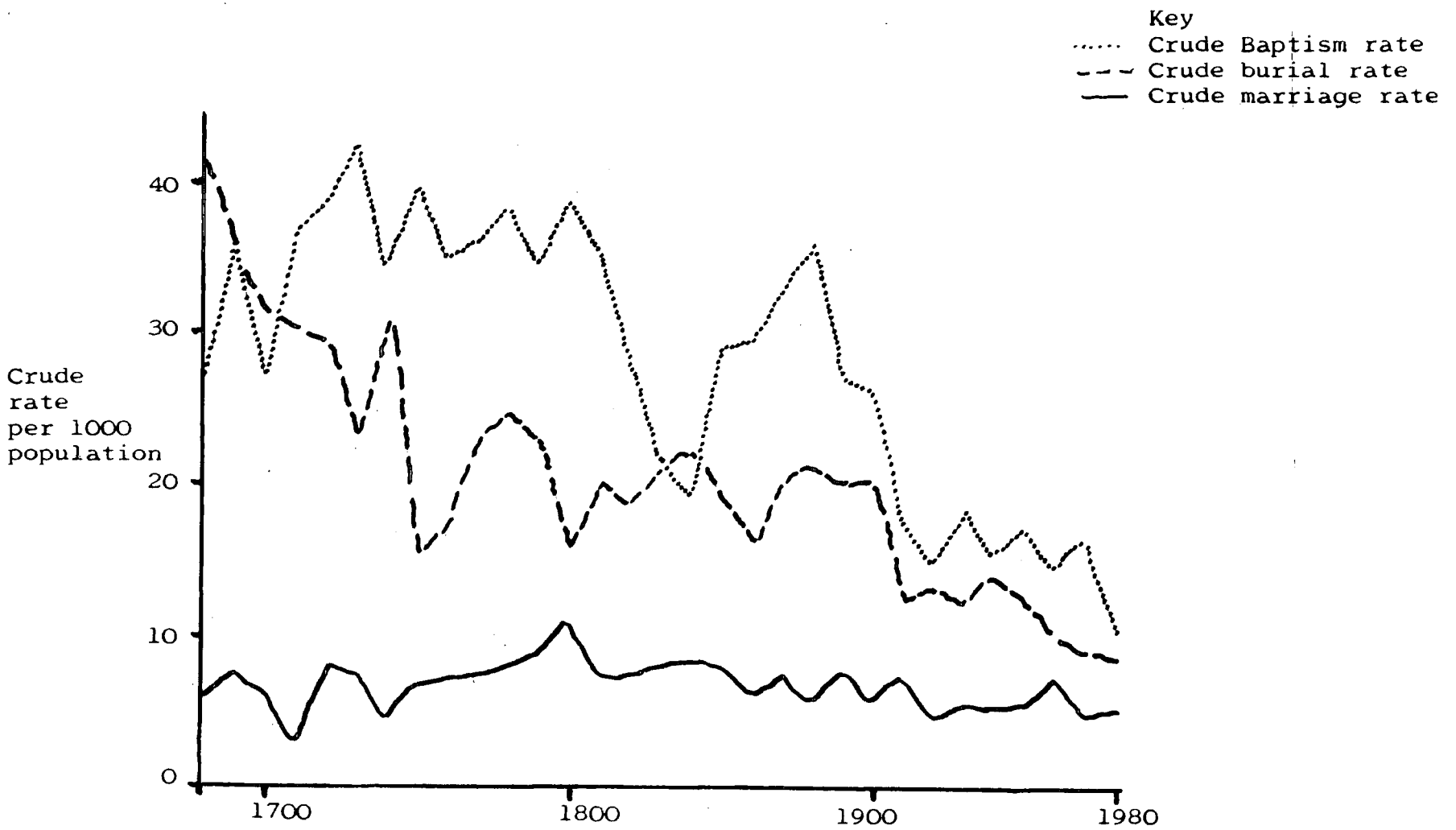


Fig.2. Crude Baptism, Burial and Marriage Rate 1680-1980



POPULATION FIGURES FOR ROLVENDEN CP (1801-1971)

CENSUS YEAR	TOTAL POPULATION	MALES	FEMALES
1971	1305	610	695
1961	1288	627	661
1951	1276	592	684
1931	1292	631	661
1921	1194	574	620
1911	1287	633	654
1901	1065	-	-
1891	1194	-	-
1881	1286	-	-
1871	1388	-	-
1861	1483	745	738
1851	1483	725	758
1841	1411	712	699
1831	1507	-	-
1821	1403	702	701
1811	1130	530	600
1801	889	453	436

Fig.3 Population Growth from Census Data 1801-1871

N.B.Anticipated growth 1701-1801 based on family reconstitution data and estimate of population growth.

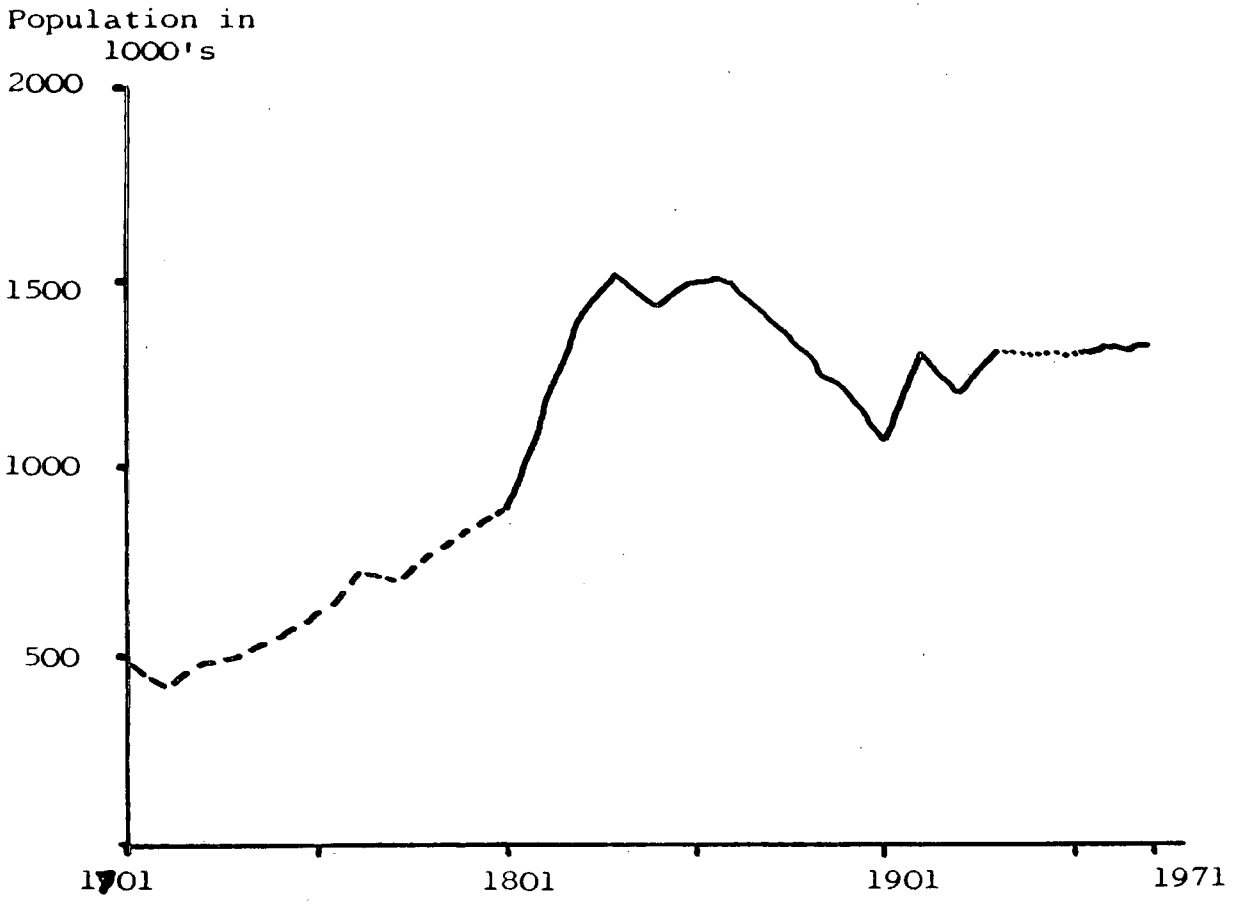


Fig.4a. 25 Year moving average of age specific mortality for children aged under 5 years or from 5-15 years at burial.

Period I 1573-1700

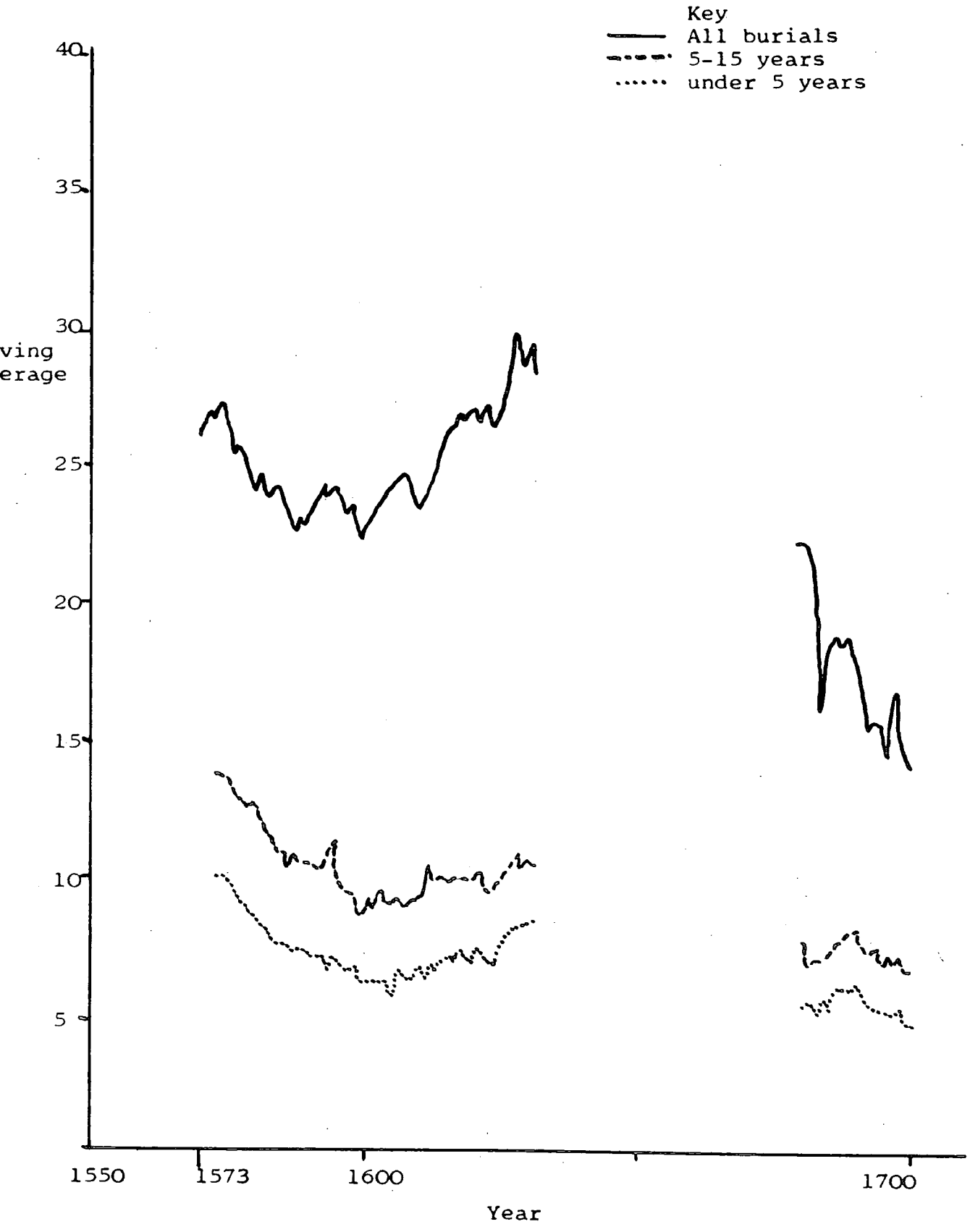


Fig.4b 25 year moving average of age specific mortality for children aged under five years or from 5-15 years at burial 1701-1900

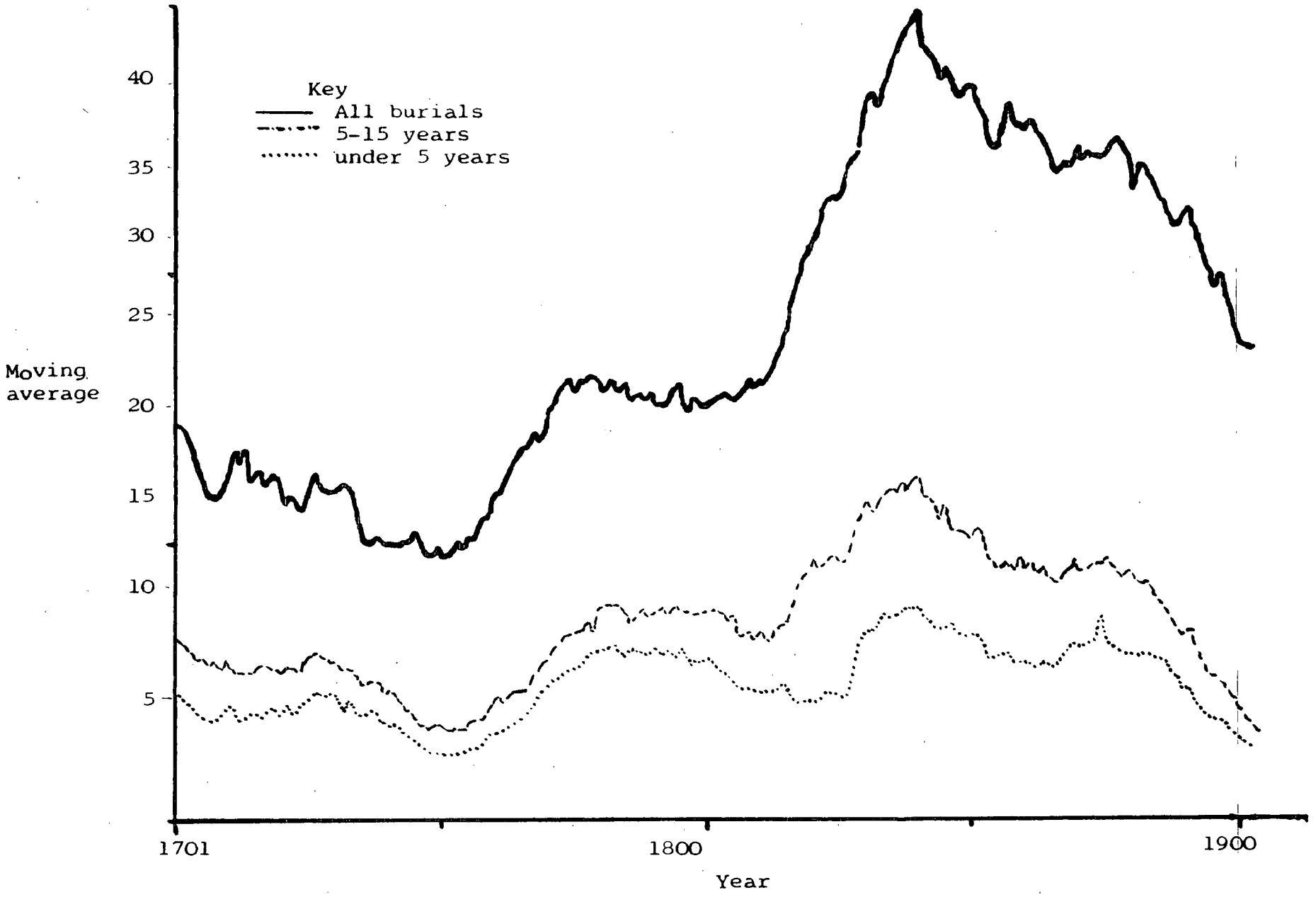
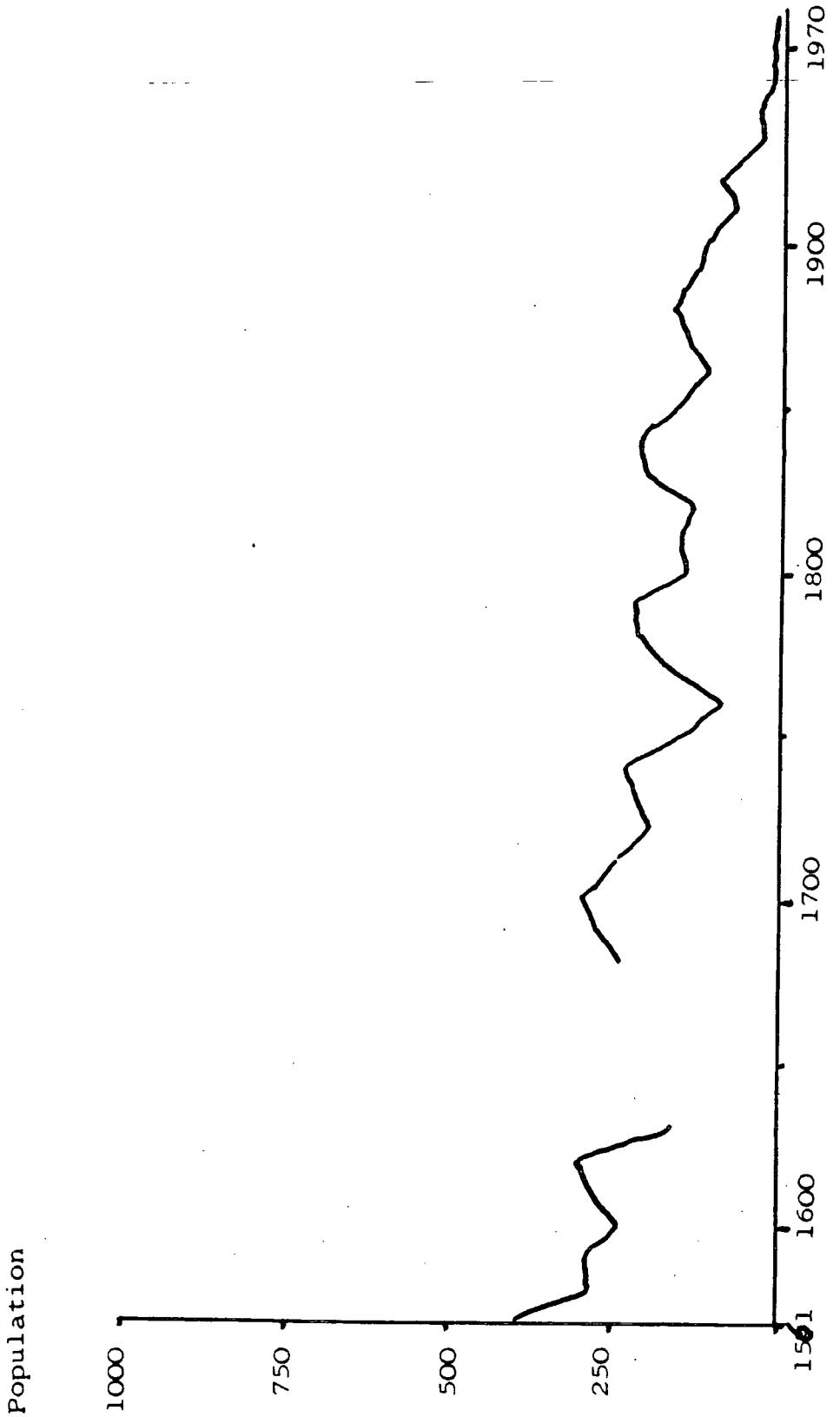


Fig.5. Infant mortality rate per 100 population 1561/70 - 1961/70

N.B. Rates plotted at end of each decade.



LIST OF TABLES

Possible evidence for "espousal" during the period 1701-1850

Couples known to have baptised their first child within eight months of marriage. N.B. rates are plotted at end of each decade.

Decade	Total Marriages	Baptism within 8 months	% of total marriages
1701-10	17	1	5.9
1711-20	35	None	None
1721-30	35	5	14.3
1731-40	23	1	4.3
1741-50	35	6	17.1
1751-60	49	8	16.3
1761-70	51	9	17.6
1771-80	62	16	25.8
1781-90	84	23	27.3
1791-1800	61	22	36.0
1801-1810	84	15	17.8
1811-1820	103	17	16.5
1821-1830	116	16	13.7
1831-1840	107	12	11.2
1841-1850	85	18	21.2

Average age at first marriage for ten year periods 1701-1850

N.B. Calculations are based on spouses positively linked to baptism entries in the Rolvenden registers.

Decade	Males	Females
1701-10	25.2	26.6
1711-20	26.2	25.2
1721-30	29.3	22.6
1731-40	28.6	22.5
1741-50	27.0	24.4
1751-60	27.2	24.2
1761-70	30.1	26.2
1771-80	26.3	25.9
1781-90	25.7	24.0
1791-1800	24.7	22.6
1801-1810	26.9	24.6
1811-1820	26.1	24.1
1821-1830	24.8	21.8
1831-1840	23.9	22.7
1841-1850	25.9	23.4

Cohorts formed by couples baptising their first child in Rolvenden 1561-70 - 1691-1700

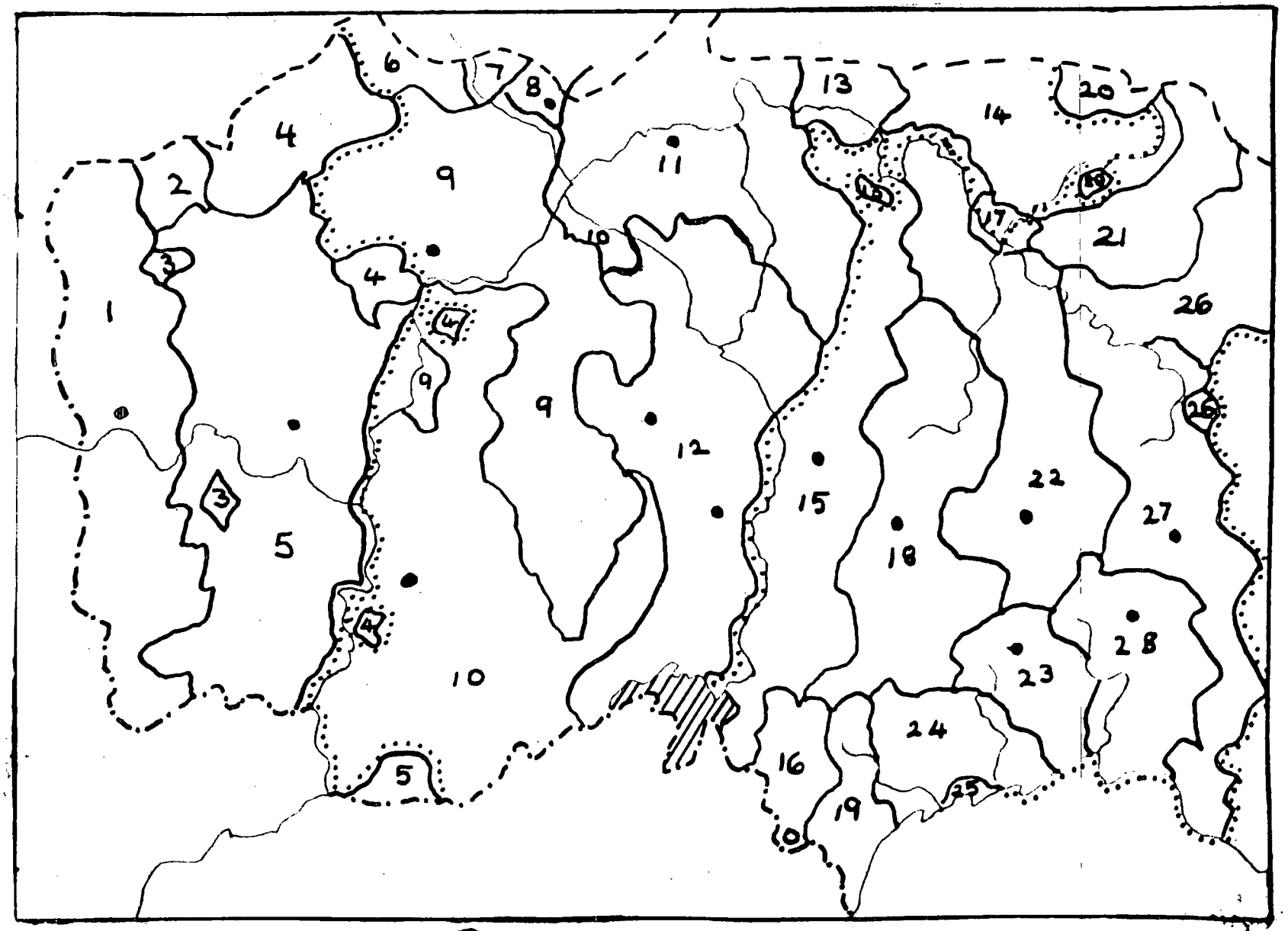
Cohort	Families 2+	Families S	Estimated ave. family sizes 2+	Estimated ave. family sizes with S	No. born/baptised M	No. born/baptised F	Ratio M: F	No.buried before reaching adulthood M	No.buried before reaching adulthood F	No.surviving into adulthood M	No.surviving into adulthood F	Survival rate all families
1561-70	93	47	3.1	2.4	174	166	1.04: 1	111	92	63	74	0.97
1571-80	57	20	4.8	3.9	160	143	1.12: 1	73	52	87	91	2.1
1581-90	57	29	4.6	3.3	147	146	1.02: 1	58	59	90	85	2.0
1591-1600	43	27	4.3	3.0	118	93	1.28: 1	48	40	69	51	1.8
1601-1610	41	25	4.3	2.9	110	96	1.11: 1	46	44	60	51	1.7
1611-1620	52	27	4.4	3.3	139	118	1.18: 1	56	52	83	66	1.9
1621-30	52	29	3.7	2.8	120	110	1.1 : 1	50	40	70	70	1.8
1671-80	23	11	4	3	56	43	1.3 : 1	34	26	22	17	1.2
1681-90	45		6.2	4.9	148	144	1.02: 1	58	59	90	85	2.9
1691-1700	19	11	4.5	3.2	43	54	1: 1.2	17	27	26	27	1.9

Percentage of Illegitimate baptisms 1681-90 - 1831-40

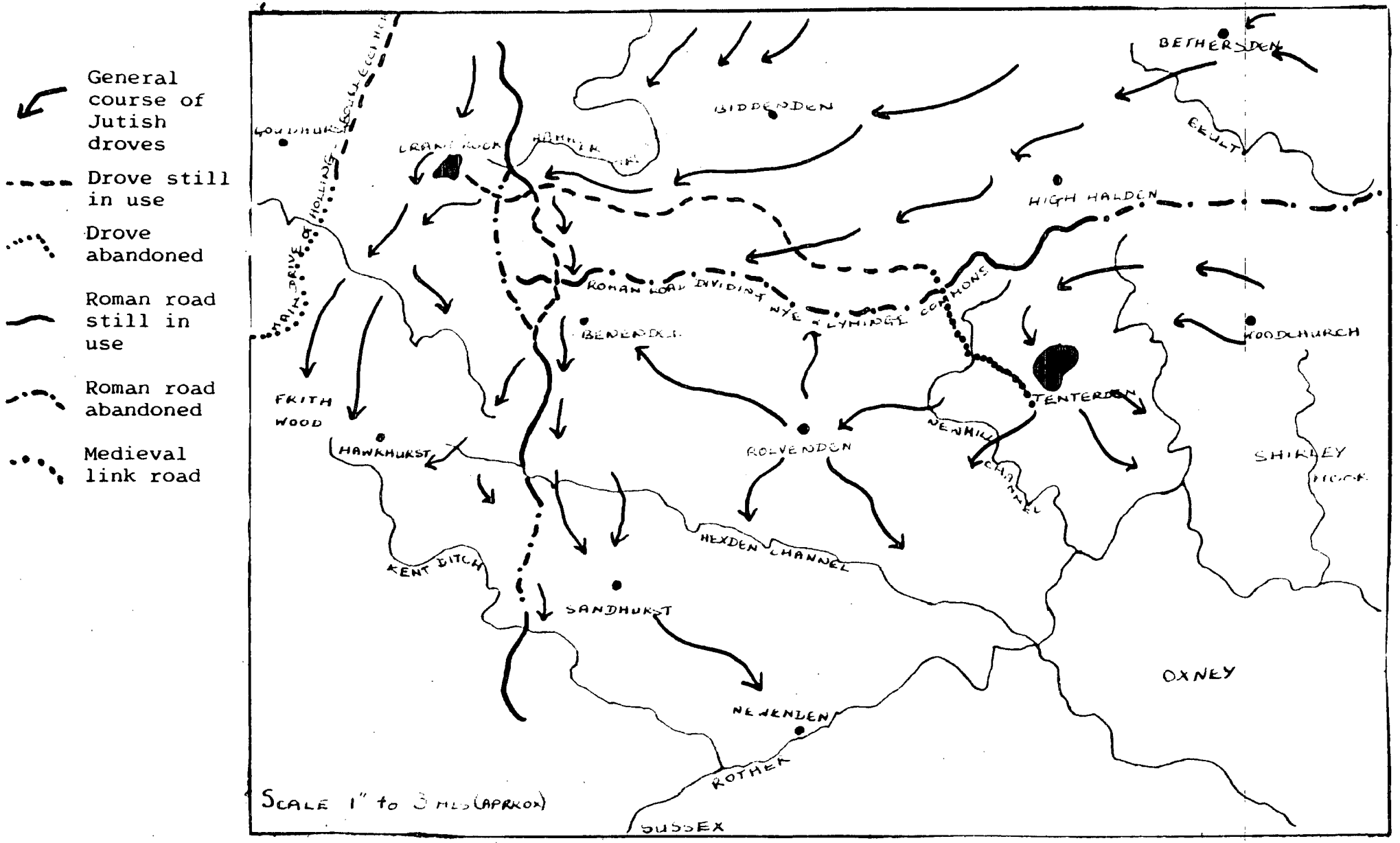
Decade	Total baptisms	Total illegitimate	% of total
1681-90	166	1	0.6%
1691-1700	117	4	3.4%
1701-1710	119	Nil	Nil
1711-1720	171	1	0.6%
1721-1730	152	3	1.9%
1731-1740	131	5	3.8%
1741-1750	138	7	5.0%
1751-1760	170	6	3.5%
1761-1770	208	16	7.7%
1771-1780	210	20	9.5%
1781-1790	247	42	17.0%
1791-1800	284	26	9.1%
1801-1810	346	33	9.5%
1811-1820	379	25	6.6%
1821-1830	319	12	3.8%
1831-1840	396	22	5.5%

The Complete Hundred Structure of the Weald

1. Westerham & Edenbridge
2. Brasted vill
3. Ruxley (fragments)
4. Codsheath
5. Somerden
6. Wrotham
7. Hoo (fragments)
8. Littlefield
9. Lowy of Tonbridge
10. Wachlingstone
11. Twyford
12. Brenchley/ Horsmonden
13. Maidstone
14. Eythorne
15. Marden
16. West Barnfield
17. Teynham (fragments)
18. Cranbrook
19. East Barnfield
20. Faversham (fragments)
21. Calehill
22. Barclay
23. ROLVENDEN
24. Selbrittenden
25. Newenden
26. Chart
27. Blackborne
28. Tenterden



Present County boundary
Scarp of Chart Hills
Part of Sussex
Boundary of Lathe
Boundary of Hundred
Hundred Meeting Place
Ditto assumed



Modifications of road system around Cranbrook and Tenterden.

BIBLIOGRAPHY

ASHTON, T.S. (1961) An Economic History of England: The 18th Century. Methuen and Co.Ltd. London

BEDDOE, J. (1885) The Races of Britain. Arrowsmith Bristol

BOWEN, H.T. (1939) Rolvenden, A Parish and Hundred of The Weald of Kent. Rolvenden Community Council.

BRASS, W. ed. (1971) Biological Aspects of Demography Taylor and Francis,Ltd. London.

CHALKLIN, C.W.(1965) Seventeenth Century Kent. Longmans.

CHALLANDS, H. (1978) A Demographic Study of Crosthwaite Parish: some Genetic Implications.

CHAMBERS, D.J. and MINGAY G.E. (1966) The Agricultural Revolution 1750-1880 Batsford.

COLLINGWOOD, R.G.and MYRES,J.N.L. (1956) Roman Britain and The English Settlements. 2nd ed. Oxford University Press.

COX, E.S. (1910) The Parish Records. Antiquary Books.

COX, J.C. (1927) Kent (revised by P.M.Johnston) (Methuen)

CREIGHTON, C. (1965) A History of Epidemics in Britain,Vols I and II. Frank Cass and Co.,Ltd. London.

FLINN,M.W. (1970) British Population Growth, 1700-1850 Macmillan and Co.Ltd. London

GALE, A.H. (1959) Epidemic Diseases. Penguin Books Ltd. Middlesex.

GARRARD G.H. (1954) A Survey of The Agriculture of Kent

GLASS, D.C. and EVERSLEY, D.E.C. eds., (1965) Population In History: Essays in Historical Demography. Edward Arnold Ltd. London.

HARRISON, G.A. and BOYCE, A.J.eds(1972) The Structure of Human Populations. Oxford University Press.

HARRISON G.A. and KUCHERMAN (1972) Historical Demography In Relation to Human Biology. DYN Vol.2. P.1-22.

HENRY WARREN C. (1947) Adam was a Ploughman. Eyre and Spottiswoode.

HOLLINGSWORTH, T.H. (1969) Historical Demography. Hodder and Stoughton, Ltd. London.

LASLETT, P. (1971) The World we have Lost. Methuen and Co.Ltd. London

MACKIE, E. (1977) The Megalith Builders. Phaidon, Oxford.

MORRIS,L.N. (1972) Human Populations, Genetic Variation and Evolution. Intertext Books,London.

ROBERTS D.F.and SUNDERLAND,E. eds. (1973) Genetic Variation in Britain. Taylor and Francis Ltd.London.

STANTON, F.M. (1971) Anglo Saxon England. 3rd ed. Oxford University Press.

STRATTON,J.M. (1978) Agricultural Records A.D. 220-1977

WITNEY, K.P. (1976) The Jutish Forest

WRIGLEY,E.A.ed(1966) An Introduction to English Historical Demography. Weidersfeld and Nicholson, London.

Archives of Rolvenden Parish

A. Assessments for Poor relief and accounts of the Overseers of the Parish (in 11 volumes 1699-1835.

B. Assessments and Accounts of the Constable of the Hundred of Rolvenden (in 2 volumes) 1693-1727 and 1761-1776.

C. Burial in Woollen certificates 1726-1785

D. Survey of the Parish of Rolvenden (1828) by John Adams of Tenterden.

E. The Rolvenden Anglican Parish registers from 1558 to the present.