'Working-Class Diet and Health in Nottingham, 1850-1939'

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Abstract

The rise in population together with industrialisation in the first half of the nineteenth century presented central government and local authorities with new challenges. Large numbers of people crowded together in poorly constructed homes with very limited sanitation facilities and created the perfect breeding ground for infectious diseases. The endemic nature of many of these diseases affected the most vulnerable members of society and the reduction in the high death-rates was an important consideration for the authorities.

The Public Health Act 1848 was the first serious attempt by Westminster to tackle the problems of urban health which had been identified in several reports published in the 1840s. During the second half of the century public health policy was hesitantly developed and concentrated on cleaning up the environment in the expectation of bringing about a reduction in deaths. At the same time, rising living standards and improved food supplies to the towns brought about slight improvements in the dietary levels of the urban poor. A combination of factors brought about a rapid decline in death-rates by the end of the nineteenth century, and a further fall mainly attributable to changes in the pattern of infant mortality in the early period of the twentieth century.

This thesis tests the general pattern of change in the context of Nottingham, one of Britain's largest provincial cities. It assesses the relative roles played by improvements in the areas of public health and housing and their contribution to the reduction in deaths. It then examines the issue of the improvements in food and nutrition, particularly at the beginning of the twentieth century, by assessing how accessible a more balanced and nutritional diet was available to the working-classes. It then assesses the changes in health during the period 1850-1939 and concludes that the improvements in the environment were minimal until 1920 and had little to do with the reduction in the death rate. The suggestion is that a better diet together with gradual improvements in the environment brought about the decline in deaths from certain diseases.

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Abbreviations

ARMOH	Annual Report of the Medical Officer of Health for Nottingham, 1872-1939
ARSMON	Annual Report of the School Medical Officer of Health for Nottingham, 1909-40
ARMOHPC	Annual Report of the Medical Officer to the Privy Council, 1860-99
ARMOHLGB	Annual Report of the Medical Officer to the Local Government Board, 1899-1919
BMA	British Medical Association
LAO	Leicestershire Archives Office
NAO	Nottinghamshire Archives Office
NBR	*Records of the Borough Council 1836-1900*, IX, (Bernard Quanlich, London; Thomas Foreman, Nottingham, 1882)
NLSL	Nottingham Local Studies Library
PRO	Public Records Office
SCR	Annual Report of the Sanitary Committee for Nottingham, 1850-70

Introduction

The unprecedented growth of towns from the early nineteenth century created problems for the Victorians. Many towns contained a substantial number of poor quality houses, built with scant regard to sanitation, comfort or decency resulting in an increased risk of infection and contagious diseases for the new urban dwellers of the nineteenth century. By the 1840s it was clear that death-rates were spiralling out of control and the Victorians concentrated their improvement efforts on what they considered to be the key problem, the transmission of disease by poor air quality, a theory known as miasma. To combat high death-rates, they sought to improve all aspects of public health through better sanitation, sewers, drains, water and housing and this interpretation of public health had been accepted by historians until about thirty years ago. However, in 1976, Thomas McKeown argued that the rise in population growth based on European, particularly the British experience, since about 1700, was due to the "decline of mortality due essentially to a reduction of deaths from infectious disease."[1] He argued "the large reduction of mortality and the growth in population which preceded advances in hygiene was due to an improvement in nutrition."[2]

McKeown created a stir because in his view the growth of early human population was restricted by high levels of mortality, determined by a lack of food. However, as more abundant supplies of food became available populations increased and when they began to congregate in groups of a substantial size, the relationship between man and micro-organisms evolved and although it is not to the advantage of the organism to kill its host, during the early period of adaptation disease or death may occur and this is particularly so in poverty-stricken populations, which are generally undernourished. McKeown suggested that there was 'no doubt that malnourished

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1. Thomas McKeown, *The modern rise of population* (1976), p. 152
2. *ibid* p. 153

populations have higher infection rates and are more likely to die when infected.'[3] Although it is impossible to replicate nineteenth century conditions of poverty in twentieth century developing countries, many of their problems would have been similar to those experienced in the nineteenth century. The World Health Organisation has suggested that malnutrition is the most serious health problem among developing countries and therefore to bring about a general improvement in health there has to be an improvement in nutrition.[4] Malnutrition does not necessarily have to be of the overt type, such as rickets, beriberi or kwashiorkor and is more often to be found in the form of the chronic variety, compounding other diseases.

McKeown considered the improvement in the supply of food in Victorian England to be offset by the deteriorating environmental conditions brought about by industrialisation. Public health measures which were instigated in mid-century, such as a clean water supply, safe sewage disposal and food hygiene should have had a positive effect on food and water-borne diseases, such as typhoid and diarrhoea, but would have had little impact on airborne diseases such as tuberculosis, measles and whooping cough, which were rife in the concentrated and cramped conditions of Victorian houses and factories.[5] McKeown noted that a crucial influence on disease was the standard of nutrition of the host, and '...the nutritional state is critical in determining the frequency and outcome of the infections.'[6] McKeown concluded that improvements in nutrition, which followed the advances in agriculture in the eighteenth century, led to the decline of infectious diseases and to a reduction in mortality. In addition, but quite separately, the reduction of exposure to infectious diseases, particularly intestinal infections, resulted from improvements in the quality of water and food.[7] McKeown later went on to reiterate this conclusion and argued "...

3. McKeown, *Modern Rise*, p.135
4. *ibid* p. 158
5. T McKeown and R G Record, "Reasons for the decline of mortality in England and Wales during the nineteenth century, *Population Studies*, XVI (1963) p. 120
6. McKeown, *Modern rise,* p. 160
7. *ibid.* p 163

the slow growth of the human population before the eighteenth century was due mainly to lack of food and the rapid increase from that time resulted largely from improved nutrition. The influence of food on population size in the historical period was determined essentially by the relation between nutritional state and response to infectious disease."[8] McKeown had rejected other explanations, for example, the input of the medical profession on the principle enunciated by Sherlock Holmes; eliminate the impossible and what remains must be the truth.

The 'McKeown thesis' has been re-examined and challenged by Simon Szreter.[9] Szreter subjected McKeown's thesis to critical scrutiny and then offered an alternative explanation suggesting that 'the public health movement working through local government, rather than nutritional improvements through rising living standards, should be seen as the true moving force behind the decline of mortality in this period.'[10] One of Szreter's arguments was that the decrease in airborne diseases was not significantly higher than that of water- and food-borne diseases. Consequently, 'it is no longer the decline of airborne diseases...but rather the classic sanitation and hygiene diseases', which were the dominant reason for the change in mortality figures.[11] According to Szreter, "Sanitarians contributed by convincing public opinion of the need for strategic measures to improve the urban environment..." [12] He argued that most of the significant improvements had been achieved during the last thirty years of the nineteenth century. This was the period following the inception of the Local Government Board in 1871 when the focus of responsibility for public health shifted from central government out to the provinces and the municipalities. He went on to say,

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8. McKeown "Food, infection and population", in R I Rotberg and T K Rabb ed., *Hunger and history* (Cambridge, 1985), p. 29
9. Simon Szreter, 'The importance of Social Intervention in Britain's mortality decline c. 1850-1914: A re-interpretation of the role of Public health', *Social History of Medicine,* 1, 1 (April, 1988) 1-37
10. *ibid* p. 2
11. *ibid* p.18
12. *ibid* p. 21

"With the essential machinery of unambiguous local accountability in place, effective take-up of public health measures began to gather pace...The resulting implementation of preventative measures of municipal sanitation and regulation of the urban environment and food market actually arrived on the ground...during the last third of the nineteenth century and the first decade of the twentieth."[13]

The debate between McKeown and Szreter has subsequently involved historians, nutritionists and social scientists but despite this, there still remains controversy over crucial issues relating to the link between diet and health. The intention of this thesis is to examine the original claims and later counter-arguments posed by McKeown and Szreter, principally the conflict as to whether nutrition through diet or social intervention had the more dramatic effect on health. By focusing on Nottingham, one of the ten major provincial towns of late Victorian England, created a city in 1897,[14] it is hoped to test the arguments and see if either argument is more applicable to Nottingham. The study of the arguments in relation to Nottingham 1850-1939, will contribute to, and widen the base of the on-going debate regarding nutrition and social intervention. The period is a convenient one for research, including as it does the very beginnings of public health, and the change from public environmental health care to the more private domestic health care in the twentieth century.

It must be appreciated that within this relatively narrow time frame there are subjects which this thesis cannot address. Public health care provision has been excluded and only those diseases which had an effect on the gut or respiratory state through nutrition have been examined. Diseases, such as diphtheria, which are affected by environmental conditions but are not directly influenced by nutrition have generally been omitted.

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13. *ibid.* pp. 24 and 26
14. John V Beckett, *A Centenary history of Nottingham* (Manchester, 1997), p. 280

Chapter one will set out the main issues of this thesis which are the initial problems facing the Victorians and their strong belief in the miasma theory, the latter being the force which drove Edwin Chadwick in his attempts to clean up the environment during the 1840s. Although the germ theory was beginning to be accepted by the late nineteenth century, many still clung to the miasma theory. Until the 1970s the idea was still maintained that improvements in public health were mainly responsible for the decline in deaths. The historiographical debate over public health and diet was triggered off by McKeown's assertions about nutrition and is discussed here. There is a brief description of the town's growth from a borough to a city and of the changes in employment from the singular textile industry to the expansion of the tobacco, cycle and pharmacy trades. The literature which has been consulted is also discussed in this chapter.

Chapter two examines the improvements to public health in the post-1848 period. The introduction of legislation, although sporadic until the 1870s, did force local authorities to act against the unprecedented rise in health problems within towns. Nottingham was probably no worse than many other towns, but the prevalence of certain diseases and the poor state of substantial areas in the town are described. The appointment of a Medical Officer of Health was a decisive move as it was only after Edward Seaton, the first holder of this post, undertook a systematic survey of the town in 1873, that the true extent of the problems was revealed.

Chapter three examines the housing situation in Nottingham from the beginning of the nineteenth century until 1939. Housing was a crucial factor in the later problems of the town when the town was essentially split into a new and old town. The chapter will investigate problems such as the absence of house-building regulations before 1845, the slow speed with which central government introduced legislation on housing and Nottingham council's response to legislation, the question of demolition and the failure to replace poor quality housing both before and after the

First World War. It will also show the enforced change of attitude of the corporation which later resulted in the hectic activity of building on greenfield sites around the city during the 1920s, and 1930s.

Chapters four and five consider the town's food supply and nutrition. The chapter on food looks at the supply, which can give an empirical view of what was consumed, especially if it is used in conjunction with contemporary dietary tables which are to be found in chapter five. As well as looking at the availability of food, food adulteration is also discussed but again there is only limited material on this subject and the evidence from the Medical Officer of Health only relates to unsound food which was seized by the inspectors. This chapter seeks to show the food available to the housewife, both in terms of what was on offer and what could be purchased in the working-class districts.

In chapter five there is a brief description on the background to the development of nutrition and the effect poverty and education have on upon it. The few remaining diets are considered together with diets from the institutions such as the workhouse and prison to enable a fuller picture to emerge. From these diets we can contemplate their nutritional value and gauge their effect on the nutritional status of the consumers. Where we have better information concerning diet is with the feeding of schoolchildren through the introduction of schoolmeals after 1908 and schoolmilk in the early 1930s. The advent of the medical examination of schoolchildren after 1908 is also discussed within this section because it highlights the insidious ill-health among schoolchildren in poorer-class schools. There is a brief look at how the inter-war Depression affected Nottingham in terms of the nutrition of schoolchildren included in this chapter.

Chapters six, seven and eight bring together the human side of this thesis, as they look at the diseases and illnesses which caused the devastation amongst the poor.

Chapter six pinpoints the loci of the diseases and with this information it is possible to study the diseases, housing and sanitary conditions altogether. Predictably, diseases were more prominent in the areas of the town containing insanitary conditions and poor housing. Chapters seven and eight examine infant and maternal mortality respectively, the former causing the Victorians great frustration and the latter being debated throughout the 1920s and 1930s. Nottingham recorded one of the highest rates of infant mortality from the end of the nineteenth century until 1914, when the figures began to fall, confounding the Victorian's theory that improvements in sanitation would improve all death figures. Maternal mortality was of minor importance compared to infant mortality in Nottingham but the reasons why it was so prevalent in the period have been studied in view of the debate concerning poor nutrition and maternal deaths.[15] Childbirth deaths which occurred in the inter-war period in Nottingham have been largely ignored and may be an area which calls for further investigation.[16]

The conclusion to this thesis is that the examination of an individual town reveals a great deal more than a national survey is able. Nottingham appeared to be a typical provincial town with all the associated problems of dirt, housing, poverty and industrialisation experienced in other towns but on closer examination the evidence scrutinised against evidence from other urban areas shows variations and even contradictions with national thinking.

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15. Charles Webster, "Healthy or Hungry Thirties?", *History Workshop Journal,* 13 (Spring, 1982), 110-128. Madelaine Mayhew, "The 1930s Nutrition Controversy", *Journal of Contemporary History*, 23 (1988), 445-464. Margaret Mitchell, "The effects of unemployment on the social condition of women and children in the 1930s", *History Workshop Journal*, 19 (1985), 105-127 and J M Winter, 'Infant mortality, maternal mortality and public health in Britain in the 1930s', *Journal of European Economic History*, 8 (1979), 439-462
16. Documents from Midwives held at the NAO for the period are still closed.

Chapter 1

Health and Diet in the Industrial City, 1850-1939

Introduction

The nineteenth century witnessed great changes in population and urban living conditions. The Victorians were faced with a public health problem that was novel both in its form and magnitude. It was believed that improvements to public health and with it a decline in the death rate, required good sanitation, regular supplies of clean water and well-built houses with amenities. In 1976 Thomas McKeown[1] suggested that the significant decline in death rates was due to nutritional improvements, a view becoming sufficiently influential to stimulate debate.[2] Simon Szreter responded that the improvements were more to do with social intervention.[3] The McKeown-Szreter debate provides the context of historical debate for this thesis with Nottingham as the chosen case study. The thesis examines how the Victorians, faced with a rising death rate, sought to reverse the trend by improving public health and asks what role social intervention or nutritional improvement played in bringing down the death rates.

The issues

The initial response of the Victorians to the high death rates (see Table 1-1) was based on the miasma theory - the spread of contagion by polluted air. Chadwick's 1842 report focused on environmental conditions, citing the visible miasmic haze as

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1. Thomas McKeown, *The modern rise of population* (1976)
2. R I Rotberg and T K Rabb, eds. *Hunger and History: The impact of changing food production and consumption on society* (Cambridge, 1985)
3. Sumit Guha, 'The importance of social intervention in England's mortality decline: The evidence reviewed', *Social History of Medicine*, 7, 1 (April, 1994), 89-113

the enemy.[4] The early Victorians believed that if they removed the accumulated heaps of waste material and demolished the most insanitary housing, pure air would be allowed to circulate, and this would curtail the spread of disease. Until the 1870s the energies of the local authorities were directed towards cleaning up the courts and alleys around housing, demolishing poor quality houses and cleaning up the rivers and canals which provided the water for drinking and washing in other words improving sanitary conditions. The achievement of this was the responsibility of individual towns.

Table 1-1: General and infant death-rates, in England and Wales and Nottingham

Year	England and Wales		Nottingham	
	infant deaths	general deaths	infant deaths	general deaths
1856-1860	153	22.2	209	27.2
1866-1870	159	22.4	200	23.8
1876-1880	144	20.8	175	21.7
1881-1885	139	19.3	174	20.9
1895	161	18.7	189	18.5
1900	154	18.3	178	19.2
1905	128	15.2	165	16.5
1910	106	13.4	128	14.2
1915	110	14.8	130	15.1
1920	80	12.4	96	13
1925	75	12.2	96	13.8
1929	74	13.4	96	15.3
1935	81	11.7	81	12.5

Source: Figures from the Registrar-General reproduced in the Annual Health Reports 1909 and 1938.

4. Edwin Chadwick, *Report on the sanitary conditions of the labouring population of Great Britain, 1842*, edited by M W Flinn (Edinburgh, 1965)

In the early decades of the twentieth century, the discussion about diets and nutrition increased with the discovery of vitamins in 1912, followed by the Newer Knowledge of Nutrition movement in the 1920s and involved a great many scientists, departments and investigations concerning the relationship between ill health and diet. During the 1920s and 1930s the Medical Research Council undertook a number of enquiries concerning the link between poor health and diet, which are considered in later chapters. Perhaps one of the most probing independent enquiries was J Boyd Orr's Food, Health and Income, published in 1937. Boyd Orr's findings refuted the rhetoric of the government that the 1930's Depression was having little affect on the health of the nation.

Public health became an issue towards the end of the eighteenth century when an increase in population and industrial output were creating stresses and strains seldom experienced by a previously predominantly rural population.[5] Apart from London, there were very few towns of any notable size. Following industrialisation the greater concentrations of people in urban areas created different and unacceptable living conditions which needed to be checked unless they were to escalate. Such was just the case in 1831, when Britain was gripped by the spectre of cholera. Chadwick led the campaign which finally brought about an organised approach to improving public health. The campaign began in 1838 with Reports by the Poor Law Commissioners, trying to secure the right of Poor Law Guardians to deal with nuisances i.e. health hazards. In 1839 the government set up an enquiry in regard to the health of the working population in England and Wales,[6] the subsequent findings forming the basis for Chadwick's 1842 *Report.*

In his Report, Chadwick argued that the spread of disease was the result of a 'miasmic haze' emanating from the piles of filth which surrounded the houses in

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5. W M Frazer, *History of English public health 1834-1939* (1950), p. 50
6. *ibid.* p. 17

densely populated areas. The remedy was to be found in its removal through public-funded drainage, clean water supply and removal of refuse from the vicinity of houses.[7] Chadwick recommended preventative measures, on a much wider scale than the domestic sphere, urging the need for qualified sanitary engineers and the implementation of the "arterial system" which was an integrated plan for the removal of filth through the use of water, drains and sewers. In 1843 a Royal Commission was set up to examine the State of large towns and populous districts,[8] generating two Reports, in 1844 and 1845, stressing the importance of a clean environment and highlighting the failure of local authorities to introduce sanitary measures. These reports moved the Public Health debate in the direction of municipal engineering and the cleansing of public space.

For the Victorians, the debate concentrated on the spontaneous generation of organisms, a miasmic haze rising from putrefying matter which contaminated the atmosphere causing disease. They believed the remedy lay in the removal of the piles of dirt around dwellings and the demolition of sub-standard housing to allow the free-flow of air. This belief continued into the first years of the twentieth century being upheld by medical men, such as Sir John Simon, Medical Officer to the Privy Council (1858-1871), and many of the general public. However, by the 1870s the new science of bacteriology began to gain credence. Pasteur's work to discredit the miasma theory and replace it with the germ theory gathered momentum, as did his experiments into vaccines. In 1882 Koch discovered the tubercle bacillus which was an important breakthrough in the fight against phthisis. Both of these discoveries came at an important time when the death rates from typhoid fever and phthisis were reaching their peak. The poor housing and the survival of pail closets, together with crowded work places were seen as the source of typhoid, infantile diarrhoea and tuberculosis.

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7. *ibid.* p. 19
8. *Royal Commission on the State of Large Towns and Populous Districts*, First and Second Reports, PP.1844, 602 (XVII) and PP.1845, 610 (XVIII)

Despite these advances in bacteriology the emphasis of local authorities and central government continued to focus on cleaning up the outside environment.[9] This was particularly noticeable with regard to housing, where demolition was still seen as the best means of removing the problem. The working class housing improvement acts of Torrens and Cross, 1868 and 1875, allowed and encouraged the demolition of homes but without a re-housing programme, the pressure on the remaining housing increased.[10] The Royal Commission on Housing in 1885[11] advocated that the control of building standards, water supplies and sewage disposal systems were to be undertaken by the local authority so that conditions of housing would improve the health of the townsfolk. Throughout the 1880s attempts were made to bring in new public health legislation relating to housing, culminating in the Housing of the Working Classes Act of 1890.[12] This act consolidated all previous Housing Acts but failed to make provision for new houses to be built by the local authorities.

The 1870s saw a change in central government's policy as they became more involved in a far greater range of public health issues than ever before. This all came about through the Royal Sanitary Commission of 1869-71 which considered the need to unify and simplify public health legislation, leading to the introduction of the Local Government Board Act 1871and creating a specific department to deal with public health at local government level. The Public Health Act 1872, was also made possible and aimed to simplify the previous plethora of public health legislation. The Act made it compulsory for each sanitary area to appoint a Medical Officer of Health whose duty was to be an adviser and executive officer of his local authority in connection with

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9. Anne Hardy, *The Epidemic Streets. Infectious disease and the rise of preventative medicine, 1865-1900* (Oxford 1993), p.6
10. Enid Gauldie, *Cruel habitations. A history of working-class housing, 1780-1918* (1974), p. 267
11. *Report of the Royal Commission inquiring into the housing of working-classes*, First Report, PP.1884-5, C4402 (XXX)
12. Gauldie, *Cruel habitations,* pp. 293-4

epidemics and with sanitation and also to report any factors which would have a detrimental effect on health in the community.[13]

Perhaps the critical era in public health came after the Public Health Act, 1875 because it was a far reaching piece of legislation for its age and much of its progress was down to the forward thinking legislators. Apart from establishing the professional requirements for the Medical Officer of Health, the act accelerated progress in areas of sanitation, the inspection of food, the supply of water, smoke pollution and legislation involving the working with harmful materials. Nottingham appointed its first Medical Officer, Edward Seaton in 1873 and this was reflected in a more structured approach to public health in the town from this point onwards.

As the nineteenth century drew to a close and the general death-rate was beginning to fall, there was a certain amount of satisfaction amongst public health officials. The death rates for typhoid and tuberculosis, which were considered to be influenced by the environment, began to decline both nationally and at the local level. Better water supplies, better excrement removal and street cleaning with proper sewers instead of using the canals and rivers,[14] together with the removal of poor housing were all considered to have been responsible for these reductions. Nevertheless, there was little cause for complacency because although the general death rate was declining, a more worrying pattern was emerging in infant deaths. For the decade after 1895 the infant mortality rate showed a particularly high figure. (See Table 1-1.)

By the beginning of the twentieth century public health entered a new era. Before 1900, the nutritional intake of the labouring class had been virtually ignored but this situation began to change quite dramatically in the new century. Firstly, the

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13. Frazer, *Public health*, p. 121

14. A S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), pp. 238-9 and J V Beckett, ed. *A Centenary history of Nottingham* (Manchester, 1997), p. 244

publication of Booth and Rowntree's studies of the poverty in London and York[15] showed how many families had to survive on very poor wages. Secondly, the humiliation of defeat at the hands of farmers in the Boer War was compounded by the concern that too many of the enlisted soldiers were physically unfit and thirdly, the declining birth rate, and a rising infant mortality rate were all in spite of the great steps made in sanitary improvements.

The diets of working-class families were examined and found to be wanting in almost every aspect[16]. During the nineteenth century there had been only a few studies made of individual diets and without the knowledge of nutritional values, their use for the Victorians was limited. A typical example was Dr Thomas Oliver's "The Diet of Toil."[17] The diets of the labourers were high in carbohydrates and fats and considered to be energy-producing, the most important factor, for a manual worker. This was also reflected in the workhouse diets which were high in fat and carbohydrates but lacked protein and vegetables, the small amount of vegetables used tended to be in the pulse form with a high starch content.

In order to allay fears about the possible physical deterioration of the race, the Balfour government reluctantly appointed a committee to investigate the matter. The investigation and subsequent publication of the findings[18] revealed that poverty and poor diet were endemic among the lower classes and although the environment was still a significant part of public health, it was felt that a more personal approach was now appropriate. The report, repeated much of what Booth and Rowntree had written about; poverty, malnutrition and disease. How to address these problems without

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15. William Booth, *Life and labour of the people of London*, First Series (1902) and Seebohm B Rowntree, *Poverty: A study of town life* (1902)
16. During the late nineteenth century men like Booth and Rowntree examined and published the diets of the poor working-class. Other dietaries examined in this thesis show how poor – both quality and quantity – these were.
17. Thomas Oliver, 'The Diet of Toil', *The Lancet*, (29 June, 1895), 1629-35
18. *Report of the Inter-Departmental Committee on Physical Deterioration,* PP.1904, CD2175 (XXXII)

appearing to condone pauperism or indeed to increase taxation, created difficulties for the government. A solution was offered through education by allowing local authorities to feed school children, thus enabling the children to benefit from the education process. The decision to improve the situation for the next generation by targeting the very young was reached partly through the introduction of the Education (Provision of Meals) Act, 1906, which allowed Local Education Authorities to provide schoolmeals and thus acknowledging that many children had an insufficient as well as inefficient diet. It was stressed that the provision was based on the educational needs rather than pauperism and similarly the provision of medical inspection of schoolchildren was also seen in educational terms.

The main fact to emerge from the implementation of this legislation was that many of the children entering school were suffering from illnesses connected to a poor diet, for example poor teeth, deformities such as rickets and skin disorders. With the recent findings of the Physical Deterioration Committee fresh in their mind and the increasingly worrying high infant death rates, local authorities developed schemes for the protection of infant life. Based on the original French idea of the *goutte de lait* a milk depot was set up in 1899 in St Helens followed by a number of other schemes around the country.[19] The Mother and Babies' Welcomes were established providing information and help on the upbringing up babies, and some towns such as Nottingham, also provided meals for the mother. At first the organisation of these welfare services was voluntary and, as a result, were less definite and precise as the School Medical Services but nevertheless they provided a much needed service within communities.

George Newman's enquiry into infant mortality[20] which had focused on the environmental dimension was to later conclude that it was not the external

19. Carol Dyhouse, 'Working-class mothers and infant mortality in England, 1895-1914', *Journal of Social History*, 12 (1978), 248-267
20. George Newman, *Infant mortality. A social problem* (1906)

environment which affected the mortality rates, but that the problem was the failure of parental obligations, especially in respect of the choice and preparation of food. By the beginning of the twentieth century, infant deaths had begun to decline suggesting that improved home conditions and the work of the Mother and Baby clinics were contributing to the decline in deaths.

At the same time as the introduction of the mother and child welfare services, there was a growing awareness of the problems caused by poverty and this was reflected in the introduction of the National Health Insurance Scheme, 1911, whereby those who were not able to find work should receive a small state benefit. A new and significantly important feature of the scheme was allocation of funds for medical research, the work carried out during the second decade of the twentieth century advancing knowledge with regard to the supply and purity of food and into the causation of food-borne outbreaks of epidemic disease.[21]

In 1912, the discovery of vitamins was an important breakthrough in the fight against poor health opening up a whole new avenue of ideas concerning improving nutrition and health. Investigations relating to infant deaths and the causation of rickets before 1920 were just two examples which considered the effects of nutrition on health.

It is clear that by the end of the first decade of the twentieth century, a different approach to health was emerging. The *public health* with its reliance on cleaning up the environment was being superseded by the *private,* which paid more attention to the health of children through improving facilities for mothers such as better maternal care and education concerning child rearing and what constituted a good diet. By the eve of the war it was recognised that an adequate diet should contain substances such as proteins and vitamins found in fruit and vegetables as well as carbohydrates and fats.

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21. Frazer, *Public health*, p. 312

This contrasted sharply with the previous view that the latter ingredients provided the main constituents of a diet.

The end of hostilities saw more improvements in *private* health care and a more extensive knowledge as to the importance of nutrition. The birth rate fell to its all time low immediately after the war so there was a need for the preservation of those being born and the Midwives Act 1918 went some way to further improving conditions at birth. The development of the Ministry of Health, 1919, further advanced the "Newer Knowledge of Nutrition". A specific obligation of the Ministry was to advance preventative health, which half a century previously had been concerned with improving the environment, but was now focused on an individual's health.[22]

The importance of diet was slowly recognised as being one of the key factors in improving health and is reflected in the results of the medical inspection of school children. However, there was still some disagreement over what constituted a good diet and how much it influenced ill-health. After various investigations concerning diet were undertaken by the Medical Research Council during the 1920s,[23] it became increasingly obvious that certain sectors of the population were not receiving an adequate diet through a combination of a lack of money and a lack of education.

This combination was dramatically highlighted during the 1930s. The stance that the government took throughout these years of economic hardship was that no one was suffering ill-health because of unemployment but this was challenged both at the

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22. E Petty, 'The Impact of the Newer Knowledge of Nutrition: Nutrition science and nutrition policy 1900-1939', (University of London, PhD thesis, 1987)
23. H Corry Mann, 'Rickets: the relative importance of environment and diet as factors in causation', *Medical Research Committee, (Special Report Series),* 68, (1922). M Bruce Murray, 'The effect of maternal conditions and nutrition upon birth-weight and birth-length', *Medical Research Committee, (Special Report Series),* 81, (1924). D Noel Paton, Leonard Findlay, 'Poverty, nutrition and growth: Studies of childlife in cities and rural districts of Scotland', *Medical Research Committee, (Special Report Series)*, 101, (1926). H Corry Mann, 'Diets for boys during school age', *Medical Research Committee, (Special Report Series)*, 105, (1926)

time and more recently.[24] During this period conflicting reports were prepared by the Ministry and by the Nutrition Committee of the BMA over the cost of a nutritional diet. The diet recommended by the Ministry's committee revealed not only a diet lower than the one prepared by the British Medical Association in calorific terms, but also in cash terms. Financial considerations determined economic and social policies and the government was desperate to disprove links between malnutrition, ill-health and low income.[25] The introduction of free school milk and nutritional supplements during the 1930s did little to ease the problems and according to Webster, were either insufficient in scale or benefited those with less need.[26] The later report by Boyd Orr in 1936[27] which revealed that about fifty per cent of the population, many of whom were children, were suffering from inadequate diets, did little to help the government's position. On the eve of the Second World War, the government recognised that they had to have a nutritional policy if adequate health was to be maintained and it became increasingly clear that just as the nineteenth century government had taken over responsibility for public health, then the twentieth century government needed to take on private health.[28]

To those of us who live in the twenty-first century, the link between food and health is obvious. A survey carried out by Bristol University, as recently as 1999, has revealed that those living in poverty suffer more ill-health than those who have sufficient money.[29] Another survey, carried out by the Save the Children[30], state

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24. Charles Webster, 'Healthy or Hungry Thirties?', *History Workshop Journal,* 13 (Spring, 1982), 110-128. Charles Webster, 'Health, welfare and unemployment during the Depression', *Past and Present,* 109 (1985), 202-230. Margaret Mitchell, 'The effects of unemployment on the social conditions of women and children in the 1930s', *History Workshop Journal*, 19 (Spring, 1985), 105-127. Madelaine Mayhew, 'The 1930s nutrition controversy', *Journal of Contemporary History,* 23 (1988), 445-464
25. Mayhew, 'The 1930s nutrition controversy', p. 452
26. Webster 'Healthy and hungry', p. 125
27. John Boyd Orr, *Food, health and income: report of a survey of adequacy of diet in relation to income*, Second Edition (1937), p. 27
28. John Burnett, *Plenty and Want. A social history of diet in England from 1815 to the present* Third Edition (1989), pp. 284-6
29. C Pantazis and David Gordon, eds. *Tackling Inequalities* (Bristol, 1999)
30. Becky Owens, *Out of the Frying Pan* (Save the Children, 1997)

children in poor families in the UK may not often have too little to eat, but it is now clear they eat too little of the right foods and too much of the wrong foods. Similarly a report by the National Food Alliance, stated that poor people suffer from greater health risks throughout their lives, and the chance of suffering from ...illnesses is greatly increased by an inadequate diet.[31] The Child Poverty Action Group suggested that mortality data are relatively poor indicators of health status among young people as death is comparatively rare in this age group but that it is becoming increasingly apparent that the risk of many important illnesses in adulthood is influenced by events in earlier life.[32]

Such thoughts were not unknown during the nineteenth century as the following quote suggests,

"The greatest foe to health and long life is poverty. Not only do all epidemic visitations fall with tenfold severity upon the poorer classes of society, but all descriptions of disease find in them their chief victims."[33]

This view was the exception rather than the norm and for much of the nineteenth century the link between poverty, poor health and diet was not made. In fact, food and diet had been ignored by many historians until the 1970s with the publication of Drummond and Wilbraham's The Englishman's Food and Barker, Yudkin and McKenzie's surveys on food.[34] For the most part diet and its central place in man's life, had been relegated to the periphery of such debates as the living standards of the working-classes.[35] The dearth of such information caused one social

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31. National Food Alliance, *Poverty, Health and Choice* (1997), p. 1
32. Anne Dennehy, Lee Smith and Paul Harker, *Not to be ignored. Young people, poverty and health* (1997), pp. 50 and 75
33. Dr George Gregory, *The Lancet,* (1 April, 1843) p. 9
34. J C Drummond and Anne Wilbraham, *The Englishman's Food. a history of five centuries of English diet*, new revised edition, (1958). J Yudkin and J C McKenzie, *Changing food habits* (1964). T C Barker, J C McKenzie and J Yudkin, *Our changing fare* (1966)

scientist to comment that, "It is incredible that economic historians, whose work is concerned so much with standards of living have done so little to study the history of food, the most basic of human needs."[36] In the 1970s this omission had begun to be rectified with the publication of Derek Oddy's "Working-class diets in late nineteenth century Britain"[37] and progressed to more specific literature being written on food consumption, changing food habits, the science and culture of nutrition, as well as more general tracts which include details of foods consumed, preferred and available.[38]

By far the most comprehensive work on food history is John Burnett's Plenty and Want,[39] which traces the social history of food from 1815 until 1985. As well as dealing with diets he examines the problems of feeding families in the growing urban areas during the late nineteenth century, highlighting such problems as ignorance, inadequate money, adulteration and lack of facilities.

The study of food covers far more than just what we eat; there are underlying customs in the consumption of food and it is not just keeping the body alive, it has to incorporate ideas such as the food available, dietary tastes and trends in food. The most recent studies of these views are The Science and Culture of Nutrition, 1840-1940[40] and David Smith's Nutrition in Britain.[41] These books have taken the science of

35. E J Hobsbawn, 'The British Standard of Living', *Economic History Review*, Series 2, 10 (1957-8), 46-68 and R M Hartwell, 'The standard of living in England, 1800-1850', *Economic History Review*, Second Series, 13 (1960-1), 397-416
36. Barker ed. *Our changing fare*, p. 150
37. Derek Oddy, 'Working-class diets in late nineteenth-century Britain', *Economic History Review,* Second Series, 23 (1970), 314-322
38. Burnett, *Plenty and Want. A social history of diet in England from 1815- to the present day,* First Edition (1966); Roger Scola, *Feeding the Victorian City. The food supply of Manchester 1770-1870* (Manchester, 1992); Ellen Ross, *Love and Toil: motherhood in outcast London, 1870-1918* (Oxford, 1993) and Anna Davin, *Growing up Poor: home, school and street. London, 1870-1914* (1996)
39. Burnett, *Plenty and Want,* Third Edition
40. H Kamminga and A Cunningham eds. *The science and culture of nutrition, 1840-1940* (Amsterdam, 1995)
41. David F Smith ed. *Nutrition in Britain. Science, scientists and politics in the twentieth century* (1997)

nutrition and examined what influence politics, religion, fads and fancies have upon what is consumed and why.

The investigation of local and specific circumstances of death and disease in towns in the nineteenth and early twentieth century has been largely neglected.[42] Most existing accounts of the nineteenth-century tend to consider, as did the Victorians, sanitary reform as envisaged by Chadwick.[43] Hardy noted that the contributions of epidemiology and the diseases themselves have for the most part been ignored.[44] In her book, Hardy described the historical behaviour of diseases and assessed the relative contributions of different factors to their prevalence and fatality. One of those factors is the impact of nutrition on certain diseases.

This thesis aims to bring the subjects of sanitary reform and nutrition together and at the same time test the McKeown/Szreter debate at the local level. McKeown's work was the first which brought together ideas of nutrition and health. The material used in McKeown's work is from a wide range of sources and only gives a overall view of the complex issues raised from a combination of the two. It is hoped that by examining Nottingham, it is possible to test McKeown's theory and Szreter's re-assessment and at the same time to move the debate further by studying health and nutrition together, not as two separate entities.

Nottingham 1850-1939

The ancient borough of Nottingham, at the beginning of the nineteenth century, was of a modest size - the 1801 census records the population of the town at around 28,000. The town enjoyed a south-facing aspect with an elevated situation. The town's

42. R E Woods and J Woodward, eds. *Urban disease and mortality in nineteenth century England* (1984)
43. Wohl, *Endangered lives*. Frazer, *Public health*, this is a encyclopaedia of Public Health from 1834-1939
44. Anne Hardy, *The Epidemic Streets. Infectious disease and the rise of preventative medicine, 1856-1900* (Oxford, 1993), p. 3

market-place was its centre piece, unrivalled in the whole of England, "When the traveller enters the town by way of Chapel Bar he is highly charmed with a view of the finest market place in England..." It was abundantly supplied with every article of food, brought in from the Vale of Belvoir, as well as the productive gardens on the banks of the Trent as far as Newark.[45]

Nottingham, together with other East Midlands towns, had grown in the eighteenth century in importance as a framework knitting centre. The growth of the industry was largely due to the inventiveness of the framework knitters who had developed the trade into fancy hosiery and lace-nets, especially in times of depression. In 1812, Blackner calculated that well over half of the occupied working population of Nottingham were working to produce hosiery or lace; in addition many others were employed in allied occupations.[46] Lured by the prospect of work, large numbers of people were attracted to Nottingham. They were not only seeking work, they also wanted housing, and because of the domestic organisation of the hosiery and lace industries the labouring classes looked for dwellings which combined both workplace and residence under one roof.

Table 1-2: Population of Nottingham, 1801-1931

Year	Population
1801	28,861
1831	50,220
1851	57,401
1861	74,693
1871	86,621
1881	186,575
1901	239,743
1911	259,901

45. John Blackner, *A history of Nottingham* (Nottingham,1816), p. 61
46. *ibid.* pp. 45-7

Table 1-2: Population of Nottingham, 1801-1931

Year	Population
1921	262,624
1931	276,189

Source: A Centenary History of Nottingham, pp. 192-3 and 436

Unfortunately, Nottingham failed in its attempts to ensure that the town successfully emerged from a market to a manufacturing centre. The increasing demand for housing and the restricted supply of land in the town created a profitable situation for landlords who owned properties within its boundaries. In-filling of spaces frequently occurred and the meanest of dwellings were erected with a network of back-to-back houses being built around courts. The unique problem which confronted Nottingham was that whilst growing rapidly in population, the town remained spatially confined. Although there had been some modest developments towards what is now Canning Circus and York Street and towards the village of Sneinton, there was still a belt of common land to the north, south and west, which encircled the town prohibiting expansion, so by 1851, the population which had risen to nearly 58,000, twice the number at the beginning of the century was still occupying a site little larger than that of a century earlier.

A limited enclosure was made in 1839 to allow the development of a railway at West and Eastcroft, which would suggest that there was a certain amount of favour for enclosure, provided there was pecuniary profit involved. The failure to enclose land until 1845, suggests that those holding the land would not receive a large enough profit from allowing enclosure. The Nottingham Enclosure Act, 1845 was designed as an instrument of social, moral, commercial and agricultural reform but despite the honourable intentions behind it, the actual implementation proved contentious and it took twenty years to complete the work. Nottingham effectively became two separate areas, the old town and the new enclosed areas surrounding the old town. The two, although geographically connected were separate, there was no connection between

the development in the new town and that of the old. The recently released land had certain building restrictions placed upon it; each house had to have three distinct bedrooms with means of ventilation, no back-to-backs; each dwelling must have a garden or yard thirty feet in length; no privy or ashpit or offensive building could be erected within fifteen feet of a house or workshop; cellar dwellings were prohibited and water and drainage were compulsory.[47]

The expectation was that the labouring classes would move out of the old town slums into the new houses, relieving pressure on the centre of the town, but the predicted abandonment of the old town slums failed to happen. The problem lay in the cost of building such properties which the labouring classes could afford to rent. Out of 2,101 houses built only 845 were let for 3s 6d or less per week i.e. a rent within the affordable means of a labouring family.[48] The new properties were occupied by migrants looking for work in Nottingham, many of whom were members of the labour aristocracy. The old town slums were still mainly occupied by the poorest inhabitants and for those who could not move, they remained their place of abode.

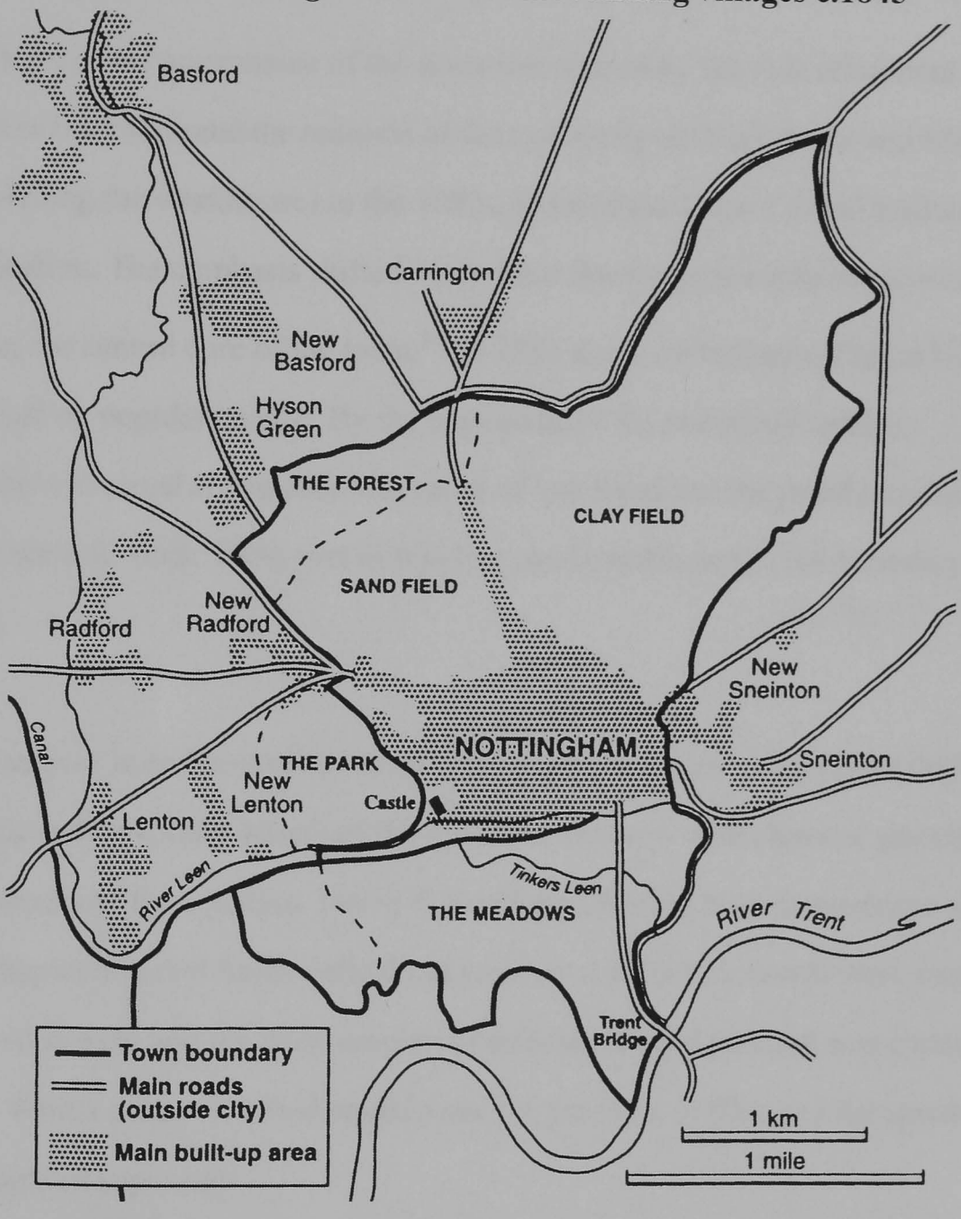
From the map of Nottingham and the surrounding villages c.1845, Figure 1-1, it can be seen that the central core of Nottingham was the most densely populated area and the Sand and Clayfields, together with the Meadows remained open spaces.

As a result of the division of the enclosed lands, a mis-match of buildings were erected in these open spaces. As well as the densely populated areas in the centre of Nottingham, the close proximity of industrial premises to the residential dwellings compounded the environmental problems. It was, therefore, proposed that in future industrial and residential buildings should be separated so factories were to be restricted to the Meadows area whereas the Sand and Clayfields were for residential

47. M O Tarbotton, "Recent sanitary operations and town improvements", in *Allen's illustrated hand-book of Nottingham* (Nottingham, 1866) p. 90
48. Beckett, *Centenary,* p. 241, see footnote 73

building only. Nevertheless, workshops and factories were built on the Sand and Clayfields and houses were built in the Meadows with serious consequences of flooding because many were built without proper footings and were below the flood-plain level.

Figure 1-1: Nottingham and its surrounding villages c.1845



Source: JV Beckett, ed. A Centenary History of Nottingham, (Manchester, 1997).

A landmark in Nottingham's development was the borough extension in 1877, amalgamating the town with the five adjacent parishes of Sneinton, Lenton, Radford, Basford and Bulwell creating a Greater Nottingham. These parishes had essentially become suburbs of Nottingham. The town grew from 2,000 acres to almost 11,000

with an increase in population of one hundred thousand. [49] The problem lay in the fact that many of the parishes which were absorbed into Greater Nottingham, already possessed poor housing and living conditions, so for those who lived in the meanest of streets in the old town, there was no solution in moving out, and in any case, travel would have been out of the question.

The physical appearance of the town was altered by the redevelopment of the Rookeries in the 1880s and the removal of slum property on York Street and Mansfield Road (including the workhouse) in the 1890s, to build the Great Central Railway's Victoria Station. The emphasis shifted away from dwellings towards commercial property in the central core of the town.[50] In 1881 the town ranked eighth in English towns, based on population size. By the beginning of the twentieth century, Nottingham's physical appearance was more or less fixed and the population had risen by almost six-fold since 1800, part of this rise can be attributed to the boundary extension.

Transport in and around the town was a problem. It had always been difficult to negotiate the narrow, hilly streets of the old town, but now with physical growth, distance came into the equation. Horse drawn buses, having been in existence since 1840 had begun to travel further afield but were so slow that demands were made for an improved system and the daily amount of animal faeces deposited was creating problems. Whilst transport relied on animals, the problem of flies and the spread of disease would always exist.

Between the borough extension, 1877 and the First World War, the town remained very much the same. Small pockets of poor housing were demolished, such

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49. Beckett, *Centenary,* p. 260 and R L Silburn, 'People in their Places', *One hundred years of Nottingham life.* Centenary Lectures delivered at the University of Nottingham (Nottingham, 1981), p. 21
50. Silburn, 'People in their places', p. 27

as the Parliament Street area but very few houses were built within the existing town to replace them and the reasonable quality housing becoming available in the suburbs was too expensive and too far away from their work place. The housing built immediately after enclosure was now beginning to show signs of deterioration and there still remained a substantial area in the very centre of the town, around Red Lion Street, which pre-dated enclosure and was in a particularly bad state. When the corporation unsuccessfully applied for an extension to the city boundary in 1919, it was revealed that seven areas around the town were designated unhealthy, with a total of 3,814 dwellings, accommodating 12,416 people, being unfit for human habitation.[51] There were also another 3,000 single insanitary houses, which were unfit for habitation. The humiliation of this refusal and the introduction of subsidies for re-housing by the government, spurred the Corporation into a massive housing building scheme. Initially it was a slow process but by the end of the 1920s new estates were built in areas some distance from the city centre. In addition to these houses built on greenfield sites there was strict control over the size, type and area of the new dwellings.

Employment and wages

In respect of factories Nottingham avoided many of the worst excesses of industrialisation. The main problem was the stifled growth of the town up to the Enclosure Act 1845, a large migrant population having added to the already cramped conditions during the boom period of the hosiery trade at the beginning of the nineteenth century. By 1850 the hosiery and lace trades were well-established in Nottingham with the finishing and marketing of lace well established in the area around St Mary's Church, known as the Lace Market. Women were of great importance to the textile trade in general and to the process of lace making in

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51. C J Thomas, 'Geographical aspects of the growth of the residential area of Greater Nottingham in the twentieth century. I', (University of Nottingham, PhD thesis, 1968), pp. 79-80

particular. In 1908 two-thirds of the working women were employed in the lace and hosiery trades.[52] They were employed in the finishing processes which were performed outside the factory, normally in the home, the fluctuating numbers depending on the trade. Following the introduction of the overlocking machine in 1887, a large number of women workers were needed for the job of 'finishing' and the increase in women employed in the textile trade can be seen in the Census returns for 1911 in Table 1-3. Similarly, cut-up work was less costly to produce than fully-fashioned work and women were cheaper to employ. Both trades went through cyclical depressions in the 1880s, but flourished into the twentieth century. It will be seen in later chapters that many of the problems related to the high infant mortality rates were blamed on mothers who worked. For many women there was no other choice but to work to supplement the family's income and it is not surprising that when there was a slump in trade, many families income was drastically reduced. However, the Board of Trade enquiry of 1908, suggested that because of the large number of female workers, the wage-earning power of the average family was high.[53]

Table 1-3: Numbers of males and females employed in certain industries, 1861, 1911 and 1931

Year	Textiles		Food		Cycle man.		Coal mining		Domestic servants[a]	
	M	F	M	F	M	F	M	F	M	F
1861	22,48	6,622	-	-	-	-	25	-	47	1,189
1911	8,925	21,889	7,888	1,991	1,764	-	6,765	-	951	5,703
1931	6,063	12,457	1,905	1,419	232	-	6,809	-	-	-

a.includes laundresses/ indoor servants

Source: 1861 Census; 1911 Census; 1931 Census for England and Wales[54]

During the nineteenth century, other industries, some with long associations with the town continued to flourish, the largest being the brewing industry. In 1900

52. *Report of the Board of Trade into working-class rents, housing and retail prices together with the standard rates of wages of the United Kingdom*, 1908, Cd3864 (CVIII), p. 351
53. *ibid.*

there were seven brewing and malting trades included in Nottingham's major companies.[55] As the town expanded, there were new areas of employment many of these being in the service industries. The introduction of tramways into the town in 1878 brought new opportunities for skilled and unskilled alike. Nonetheless, wages in this type of employment were low, averaging £1.00 per week; driver 24s; conductor 17s 6d; stableman 21s; nightman 21s and a boy 15s.[56]

By the beginning of the twentieth century, there was a growth in the retail trade centred around the market place. Two department stores developed from small family-owned shops; Jessop and Son, and Griffin and Spalding. After the First World War the building of council houses away from the city centre enabled a redevelopment of the Market Place and the new Council House which was opened in May 1929 by the Prince of Wales.

However, the three companies which developed towards the end of the century, Boots, Players and Raleigh, perhaps had the greatest influence on Nottingham. All three companies started from small beginnings. In 1877, Jesse Boot inherited a shop from his father and began selling herbalist in Goose Gate. By extensively promoting his goods, Boot was able to buy other properties and businesses thus enlarging his firm.

Similarly, John Player took over a small tobacco firm, William Wright, which was situated in Broad Marsh in 1877. His success enabled him to buy three factories in Radford employing mainly women. By 1898, with the home market and foreign markets opening up, approximately 1,000 people worked in his three factories.

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54. *Census of Great Britain* 1861, Population and Occupation Tables, Males and Females 10 years and upwards pp. 89-101; *Census for England and Wales* 1911, Occupation and Industry Part I, for males and females of 14 years of age and over; p. 446; *Census for England and Wales*, 1931, Occupational Tables for males and females 20 years and upwards, pp. 314-329
55. Beckett, *Centenary,* p. 482
56. *NBR,* 5 September 1898

The third industry to make an impact on Nottingham and provide a major source of employment was the Raleigh Cycle Company formed in 1889 (Table 1-3). A larger factory had to be found to accommodate the growing production and premises were found on Faraday Road at Lenton. In 1897, Raleigh were employing about 5,000 people at their factory. The Lenton works were extended to keep up with increased productivity and in 1932 Raleigh took over the Coventry based cycle company of Humber, which had begun life in Beeston.[57] The growth of the cycle industry can be seen as a lineal descendant of the framemakers. The supply of skilled mechanics helped to develop the industry into a world renowned business.

For the other two leaders, Boots and Players, they were able to use the abundance of cheap, unskilled, female labour available in the city, especially with the decline of the textile trade, which had previously employed women. There had always been a disproportionate number of females to men in Nottingham, exaggerated by the demand for women in the textile trade. In 1890 the population of 211,984 was made up of 114,897 females to 97,087 males.

At the turn of the twentieth century, the lace industry was at its peak but, two decades later, this changed because lace was loosing its popularity. Other textile industries such as hosiery and knitwear should have fared better but for a variety of reasons, failed to take up the challenge.[58] The decline of the textile industry was fortunately cushioned by the rise of the three new industries. Several of the older textile firms managed to adjust to the new fashions but many failed. A survey in 1932[59] revealed that the chief manufactories included cotton, silk, merino, hosiery and lace whilst industries included bleaching, dyeing, spinning and twisting of silk, cotton, engineering, brewing and cycle works.

57. Roy Church, *Economic and social change in a midland town. Victorian Nottingham 1815-1900* (1966), p. 243. Beckett, *Centenary,* p. 494
58. S D Chapman, 'Economy, industry and employment', in Beckett, ed. *Centenary*, p. 483
59. PRO MH 66/785, survey of health services in Nottingham, 1932

Wage differentials between the skilled and unskilled worker were quite significant and those between women and men were even wider. It is difficult to compare the wages of men and women because rarely did they carry out the same type of work. Men were usually working on a more skilled process involving machinery whereas the women were working with their hands, finishing off lace or sewing cut-ups. In 1877 the average wage for a *girl*, classed as a mender, varied between 8s and 16s per week whilst the wages of a man occupied as a lace maker was between 25s and 80s per week. Three years later the man's wages had risen by almost fifty per cent whereas the *girl's* earnings had improved only slightly. From Table 1-4 it is quite clear that skilled men, such as those working on the Lever machines, were earning better wages than the labourer and women received even less.

Table 1-4: Rates of pay in certain trades

Trade	**Principal occupation**	**Weekly rates of pay**
Engineering	Fitters and tuners	36s
	Smiths and pattern makers	38s
	Labourers	18s
Lace	Lace maker (Levers branch)	40s-50s
	(Plain net branch)	32s-44s
Hosiery	Female sewing machinist	11s-17s

Source: Report of an enquiry by Board of Trade into working class rents, housing and retail prices together with standard rates of wages. UK 1912 Cd 3864 1908, p. 351

Nottingham suffered from periods of low employment and trade depressions, as in 1905-6 and 1918.[60] During the 1920s and 1930s unemployment was widespread particularly among men, (see Table 1-5*)* many of whom had to leave the city in order to find employment elsewhere. It is interesting to note that the number of unemployed women was not mentioned, although they made up a large proportion of the working population. We can assume that they were either out of work or if still employed,

60. NAO, CACM/19/Distress Committee, 1905-6 and CACM/20/1, Mayors Food Committee

would be on a substantially lower wage. Insufficient income would necessitate reductions in the family expenditure and as will be shown later, less food would be consumed.

Table 1-5: Unemployment figures for Nottingham 1927-32

Year	Number of men unemployed
1927	9,786
1928	7,373
1929	11,754
1930	11,636
1931	19,601
1932	11,150

Source: PRO MH 66/785

Sources

The official reports dealing with the health of the city are to be found in the Annual Reports of the Sanitary Committee and the Medical Officer of Health annual reports. The Sanitary Committee Reports were the first venture into reporting on the health of the town and are a narrative of the conditions existing between 1848-1870. There are some statistical tables, which increase over the period, but for the most part the reports contain graphic descriptions of the state of Nottingham. The Annual Report of the Medical Officer of Health from the 1880s onwards conform to a pattern and contain a great number of statistical tables, but have lost the narrative style of the Sanitary Committee Reports, as the work of the Health Committee became ever more important and was scrutinised both locally and nationally. The exception is Seaton's first report on the state of Nottingham 1873. This is a lengthy document, giving a very descriptive view of the problems awaiting him as the first Medical Officer.

During the office of Seaton and his successor, Arthur Whitelegge, there are several gaps where copies of the Annual Report of the Medical Officer of Health are missing, but it can be seen that from Whitelegge's time the reports begin to take on a standardised format. This is carried on through Boobbyer's period of office and it is during the period of 1889-1929 that there is a complete run of the annual reports, which are enlightening and detailed. They convey a sense of the philosophy of the time, as well as the frustrations of a department using the new science of epidemiology to counter-attack diseases such as typhoid, tuberculosis and infantile diarrhoea, with little help from the Corporation. The reports from 1916-1928 are condensed into one volume, which restricts the amount of information available.

These accounts, used in conjunction with the annual reports of the School Medical Officer, begin to build a fuller picture of ill-health in Nottingham and have been examined in such a way as to draw out the diseases which are influenced by nutrition. Unlike Arblaster or Bosworth's work,[61] curative work carried out by hospitals on the diseases has not been addressed in this thesis.

Other primary sources which have been used are Parliamentary Papers, many of which have an appendix on specific topics, for example the fourth report to the Privy Council, 1861, and the thirty-ninth report to the Local Government Board of 1910 continuing in the forty-second, 1913, are particularly helpful in relation to understanding the problems surrounding infant mortality. Some of the papers have particular references to Nottingham, for example the Royal Commission on the State of Large Towns and Populous Districts, 1844 and 1845 and the fourth report of the Annual Report of the Medical Officer of Health to the Privy Council, 1861. The Inter-Departmental Report on Physical Deterioration[62] is a good source of information

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61. B Arblaster, 'Hospital accommodation for women in Nottingham 1860-1940', (University of Nottingham, MA dissertation, 1985) and E C Bosworth 'Public Healthcare in Nottingham 1750-1911', (University of Nottingham, PhD thesis, 1998)
62. *Physical Deterioration*, PP.1904, 2175 (XXXII)

relating to diets of the poor, not specifically to Nottingham, but it has been used as a gauge to monitor the evidence from Nottingham.

Documents from the Public Record Office, such as MH12, Poor Law Guardian reports contain a whole range of documents from which small pieces of evidence have been drawn. Similarly the Nottinghamshire Archives Office documents are drawn from a range of papers of which some are official documents and some private. The Nottingham Oral History collection is another good source of local evidence and fortunately, the subjects contained therein have been indexed.

Reports by various departments to the Nottingham City Council have been used throughout the thesis and they have been of use to localise a national problem, for example when considering the housing situation at the end of the nineteenth century. The main objective in looking at housing sources was to study the problems which were occurring and when, so that the information could be correlated to that on health and diseases.

Evidence provided by the discussion about food has had to be related to supply and an eclectic range of material such as newspapers, council reports and trade directories has been used. The information gathered tends to coincide with works such as Scola, Burnett and Torode. [63] There is a limited number of sources concerning diets, other than the dietaries for institutions but references to food and diet contained in the Nottingham Oral History collection are an excellent source. One collection of diets are contained in M. Urbain' Guerin's Les Ouvriers Des Deux Mondes, published in 1891, in which a detailed study of the living conditions and diet of a Nottingham tanner and his family, is reproduced.[64] This volume is a particularly rich source of information on

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63. Scola, *Feeding the Victorian City*; John Burnett, *Plenty and Want,* Third Edition, 1989 and A Torode, 'Fruit consumption', in Barker ed. *Our changing fare*
64. M Urbain Guerin, *Les ouvriers des deux mondes,* Second Series (Paris, 1891), 269-324

the living conditions of a cross-section of people throughout Britain and Europe, compiled towards the end of the nineteenth century.

The wide variation of themes occurring during the discussion on nutrition has meant a range of articles to be consulted. These include the School Medical Officer's annual reports, which contain some good information in the early years. The local newspapers also contained reports on school meals etc., but are not particularly controversial. The information contained in these documents was at times at odds with Hirst's article on school medical services[65] and Welshman's more recent discussion of school meals and milk.[66]

The evidence on diseases was for the most part contained in the annual reports of the Medical Officer of Health. Boobbyer has left a wealth of information and study on the diseases of Nottingham. Although the reports are written as official documents and are a testimony to the period, Boobbyer, a man of his time in many respects, was also forward thinking and his writing shows his obvious frustrations. Nottingham suffered from the standard diseases of phthisis, typhoid, whooping cough, measles and infantile diarrhoea the latter two following patterns described in Hardy's, Epidemic Streets[67]. Others like typhoid had their own agenda and the accounts found in Hardy's book and those described by Szreter do not always coincide with the situation in Nottingham.

The discussion of Infant Mortality draws on the Annual Health Reports and Parliamentary Papers. Of particular interest are the Annual Reports of the Medical Officer to the Privy Council and latterly the Local Government Board. These were

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65. J David Hirst, 'The growth of treatment through the school medical service, 1908-18', *Medical History*, 33 (1989), 318-342
66. John Welshman, 'School meals and milk in England and Wales, 1906-45', *Medical History*, 41, 1 (January, 1997), 6-29
67. Anne Hardy, 'The Epidemic Streets. Infectious disease and the rise of preventative medicine 1856-1900' (Oxford, 1993)

contemporary enquiries set up at the time infant mortality rates were at their highest and it is interesting to see that no one particular factor was found to be the cause. More recent researchers have also found it difficult to isolate a single cause.[68]

Despite a high number of deaths the authorities were never so concerned with maternal mortality in Nottingham, unlike the authorities in South Wales. However, it is thought that there were more illegal abortions carried out and were these were suspected of being the cause of some of the maternal deaths in Nottingham. The Annual Health Reports monitored the number of deaths and their causes. Background information on deaths in childbirth is to be found in Jane Lewis's book and Irvine Loudon's investigations of infant and maternal mortality. Two contemporary pieces which were useful are Dame Janet Campbell's work for the Medical Research Council and the study of malnutrition and maternal mortality by Lady Rhys Williams.[69]

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68. P A Watterson, 'Role of the environment in the decline of infant mortality: an analysis of the 1911 census of England and Wales', *Journal of Biosocial Science*, 18 (1986,457-68; P A Watterson, 'Infant Mortality by father's occupation from the 1911 census of England and Wales', *Demography*, 25, 2 (May, 1988), 289-306; R I Woods, P A Watterson and J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921, Part I', *Population Studies*, 42 (1988), 343-365 and R I Woods, P A Watterson and J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921, Part II', *Population Studies*, 43 (1989),113-132; Naomi Williams, 'Death in its season: class, environment and the mortality of infants in nineteenth century Sheffield', *Social History of Medicine,* 5, 1 (April, 1992), 71-94
69. Jane Lewis, *The Politics of Motherhood. Child and Maternal Welfare in England 1900-1939* (1980); Irvine Loudon, 'On maternal and infant mortality, 1900-1960', *Social History of Medicine*, 4, 1 (1991), 29-73; 1. Loudon, *Death in Childbirth. An international study of maternal care and maternal mortality 1800-1950.* (Oxford 1992); Dame Janet M Campbell, 'The Protection of Motherhood', *Reports on Public Health and Medical Subjects,* 48, (1927) and Lady Rhys Williams, 'Malnutrition as a Cause of Maternal Mortality', *Public Health,* (October, 1936), 11-21

Chapter 2

Public Health circa 1845-1875

Introduction

The natural increase in population and the unregulated movement of people from rural areas to the growing urban districts occurred over a period of just a few decades. For example Nottingham's population had grown from 17,200 in 1780 to 28,861 in 1801, a rise of more than 30 per cent.[1] This rapid growth of population and industrialisation created a completely new and worrying scenario for municipal authorities with which to deal. McKeown said, "Hygiene conditions deteriorated in the first half of the nineteenth century as a result of rapid growth of towns, with uncontrolled domestic and industrial conditions."[2] Dirt and smells were an accepted way of life, both in urban and rural areas, but the urban environment was gradually deteriorating and more importantly the impurity of the air was beginning to violate the lives of the wealthy thus creating the necessary spark to motivate the ratepayers into action.

The initial reaction of local authorities was to clear away the rubbish in the towns to allow the free-flow of air around buildings. The popularity of the miasma theory, to the exclusion of any other cause, was widespread among medical men and the general public. To them, the removal of rubbish and the demolition of insanitary buildings would ultimately remove the miasmic haze surrounding the towns.

The miasma theory, which so concentrated the mind of the Victorians, persisted throughout the nineteenth century. Even though it is now know it to be erroneous, the solution began a process which would ultimately benefit towns. As Professor Flinn

1. JV Beckett, ed. *A Centenary history of Nottingham* (Manchester, 1997), p. 192
2. Thomas McKeown, *The modern rise of population* (1976), p. 86

states, "miasma might not actually convey germs from a diseased to a healthy body; but in the absence of an exact and accurate knowledge of the means of infection, it was not a bad guide. The eradication of miasma - not entirely achieved even by the mid-twentieth century- was a sound instinct, and could do nothing but good."[3] Throughout the Medical Officer of Health reports there are references to the importance of allowing pure air to flow. This pre-occupation with the flow of air continued even when the new germ theory began to gain currency.

This chapter is about the initial action taken by Nottingham Corporation to tackle the filth problem, originally sparked off by the Cholera outbreak of 1831-2. The measures taken during the outbreak of cholera were quickly forgotten when the disease had passed and it was only after the report on the state of towns in 1844-5 that the council again made efforts to combat the growing piles of filth. The Nuisances Removal Act 1846 provided for the clearing away of rubbish, cleansing streets and lime-washing insanitary buildings. Although this went some way to improving the environment, it was only scratching the surface and the cost to health as well as expense remained high. The possible intervention from the Central Board of Health, caused the council to react swiftly and a Sanitary Committee was hurriedly formed. This committee was active until the Public Health Act 1872 was passed. Further laws were enacted by central government but as they were often permissive, little was done by Nottingham corporation to make use of them. Only after the 1875 Public Health Act was introduced was there any systematic programme initiated.

This chapter seeks to show that until the 1875 Act Nottingham's town council clung to its independence and was only prepared to combat the problems of dirt in a piecemeal way, very often doing just enough to keep away interference from central government. The chapter will show that the Sanitary Committee dealt with a wide

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3. Edwin Chadwick, *Report on the sanitary condition of the labouring population of Great Britain, 1842*, ed. Professor M W Flinn (Edinburgh, 1965), p. 63

range of problems but was conscious that any measures which would be interpreted as being heavy handed may alert the Central Board of Health so 'moral pressure' was preferred to legal compulsion. [4] Much of the work carried out was small scale and directed at areas which were causing problems at that time. The failure to gain the appointment of a Medical Officer under the 1858 Act, was a blow to the Sanitary Committee. The 1875 Act was the breakthrough and an important step in the fight against filth and disease. Seaton, the first Medical Officer began a systematic approach to cleaning up the town which was carried on by Arthur Whitelegge but more importantly Boobbyer. At the beginning of the twentieth century problem areas such as poor housing, slaughter houses and the use of pail closets remained and despite warnings from the Medical Officer regarding their dangers, the council permitted them to remain.

This chapter finishes at a natural point in 1875 after the appointment of Seaton and the introduction of the great Public Health Act.[5] It is considered that a new era of health began from this point which will be dealt with in chapters 3, 6 and 8. This chapter examines the way the authorities dealt with environmental health problems in the early years of health concern, circa.1847-1875.

The state of public health until 1875

The political and economic philosophy of the day was that of *laissez-faire,* which meant that local authorities were left to sort out their individual problems. There was not a blueprint from which the local authority could work, so they had to learn by their mistakes and in any case, apart from a few local acts there was no statutory legislation to tackle the area of public health. The rivalry between local authorities and central government was a factor preventing legislation as local councils felt very

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4. Roy Church, *Economic and social change in a midland town. Victorian Nottingham, 1815-1900* (1966), p. 195
5. W M Frazer, *History of public health1834-1939* (1950), p. 117

strongly about keeping their independence and viewed any interference from central government as an infringement on their liberty. However, private acts were an option which many towns used ahead of later general legislation from the government. A major obstacle to sanitary reform was the cost with the result that where public health was concerned, local autonomy and low rates were of more importance than sanitary measures. The middle class ratepayers could see no reason to spend money which would show little financial return so were more concerned with keeping rates low than improving sanitary conditions. Wohl has observed that, 'the love of local autonomy and its close identification with low rates were nowhere more apparent than in public health'.[6] Economy was still a key determinant in much of what the corporation actively carried out.[7] One such private act was the Nottingham Enclosure Act 1845, which the Whig council viewed as a cure-all to Nottingham's problems and consequently any further plans for improvement were shelved.

What little was done to improve the environment was piecemeal and usually a knee-jerk reaction to an emergency. This was just the case in 1831, when Britain was gripped by the spectre of cholera. A hurriedly formed Board of Health had to report to the local authority, on the '....the food, clothing, bedding of the poor, the ventilation of their dwellings, space, means of cleanliness, their habits of temperance' - in other words their domestic environment. Nottingham had the worst outbreak in the East Midlands with over 900 cases and 330 deaths.[8] The majority of these deaths were in the back-to-back houses, situated to the south and east around the Marsh areas. The Board of Health proved itself to be very useful during the immediate crisis but as soon as the danger had passed the council became complacent and was reluctant to continue the expense of cleansing the town and therefore dissolved the Board.

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6. Anthony S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), p. 166
7. See John Prest, *Liberty and locality. Parliament, permissive legislation and ratepayers. Democracies in the nineteenth century* (Oxford, 1990), p. 18
8. Martyn A Walker, 'The Nottingham cholera epidemic of 1832', *Transactions of the Thoroton Society of Nottinghamshire*, XCV (1991), p. 67

Nevertheless the link between dirt and disease had been made and a campaign to improve towns began. The enquiries by the Poor Law Commissioners, three medical practitioners, Doctors Kay, Arnott and Southwood-Smith, and the subsequent report by Edwin Chadwick in 1842, followed quickly by two reports of the Royal Commission in 1844 and 1845,[9] revealed an unpleasant deterioration in the conditions of many towns. These reports suggested that the air surrounding the dwellings in the poorer districts in the towns was contaminated by foul and noxious gases. Chadwick's report intimated that the spread of disease was a direct result of the miasmic haze which emanated from the piles of rotting filth found in the courts and alleys and surrounding the houses. As Dicken's wrote of 'Coketown'; 'it lay shrouded in a haze of its own, which appeared impervious to the sun's rays. You only knew the town was there, because you knew there would have been no such sulky blotch upon the prospect without a town.'[10] The miasma theory was upheld by Sir John Simon, Medical Officer to the Privy Council and supported by the General Board of Health and the Privy Council, despite a large amount of evidence already available in favour of the "germ theory".[11] The determined belief in miasma is perhaps expressed by Dr Greenhow commenting on the extent of diarrhoea in Nottingham in 1860;

"...the wind at the time blowing from a quarter which carried the odour from Pott's Square into Smiths Square. Diarrhoea prevailed at that time in only one house in Pott's Square; but, with two exceptions, in every house in Smiths Square. The exceptions were two houses sheltered from the direct current of the effluvia by a low building."[12]

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9. *Royal Commission on the State of Large Towns and Populous Districts,* First Report, PP.1844, 602 (XVII) and *Royal Commission on the State of Large Towns and Populous Districts*, Second Report, PP.1845, 610 (XVIII)
10. Charles Dickens, *Hard Times,* as quoted in A Clayre, ed. *Nature and Industrialisation* (Oxford, 1977), p. 125
11. Frazer, *Public health,* p. 39, Frazer makes the point that Simon in his later years criticised the idea of "epidemic atmosphere"
12. *ARMOHPC*, Second Report, PP.1860, 2736 (XXIX), reference to the diarrhoael districts of England, evidence of Dr Greenhow, p. 130

Chadwick led the campaign against filth bringing about a much more organised approach to improving conditions. He recommended preventative measures, on a much wider scale than the domestic sphere, urging the need for qualified sanitary engineers and the implementation of the 'arterial system' which was an integrated plan for the removal of filth by means of flushing drains and sewers. He used the Poor Law officials up and down the country to obtain his evidence and to show that if conditions were improved in the urban areas, the cost to the Poor Law Authorities could be reduced.

Little was done to follow up the good work of the Board of Health but a survey of Nottingham in 1847 emphasised the folly of leaving sanitation to look after itself, both from the point of view of public health and public expense, [13] and the corporation was persuaded to form a Sanitary Committee whose principal aim was to enforce the Nuisances Removal Act within the town. Nuisances covered a wide variety of problems, from unpaved or undrained streets, pigsties and slaughterhouses. In 1849 the Committee reported that the owners of 34 dwellings over privies and ashpits had been ordered to take them down In 1851, 122 nuisances were dealt with including slaughterhouses, a lack of privies and dwellinghouses being in a filthy state and in 1852 over one hundred complaints were dealt with including the keeping of swine and filthy houses.[14]

Meanwhile, reforms were being undertaken in other towns notably in Liverpool, where Dr William Duncan was appointed as the first Medical Officer of Health. The threat of another cholera epidemic convinced the government into enacting the 1848 Public Health Act. The Bill had a difficult route to the statute book with opposition from all quarters including those who regarded it as intrusive in local affairs and those who considered that their financial interests might be affected. The

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13. Church, *Victorian Nottingham*, p. 194
14. *SCR*, 1849,1851 and 1852

principal difficulty faced by local authorities in their attempts to improve conditions, should they so wish, was that there was no centralised body to advise them. Therefore under the new Act a central department was created, the General Board of Health. The Act did not include London - because its complicated problems needed separate legislation. The Act enabled the rest of England to set up Local Boards of Health whenever either 10 per cent of the ratepayers petitioned for one or, the death rate in the town exceeded 23 per 1,000 per annum. The Local Board of Health could appoint a Medical Officer of Health, who had to be a legally qualified medical practitioner; it was to maintain sewers, provide adequate drainage, cleanse the streets, provide sanitary conveniences for the public, control offensive trades, inspect meat and common lodging houses and control burial grounds. Although the act was permissive in nature, it was the first piece of legislation to tackle the problem of public health and was a cornerstone for the public health movement to build upon.

However, local authorities were under no compulsion to adopt the act if the ratepayers did not demand it and local conditions did not exceed the minimum. The corporation in Nottingham did not feel the need to adopt the 1848 Act or that intervention from the Central Board of Health was warranted as the Sanitary Committee had 'acted under the authority and exercised the powers conferred by the Nuisances Removal Act'.[15] They continued to resist adoption out of fear of 'centralisation' and were satisfied with the Sanitary Committee's work after a second outbreak of cholera caused little damage in the town. The corporation did, however, adopt the 1851 Common Lodging Houses Act and their supervision was passed to the Sanitary Committee. Lodging houses were kept under close scrutiny where some of the 'most depraved members of society' tended to congregate.[16]

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15. *NBR*, 1 October 1849
16. *NBR*, 21 November 1859

Public sanitary reform remained a key concern in Victorian England but the arrangements remained chaotic - as Simon himself later commented, "Little dabs of doctoring (were being) done by several departments of the government."[17] Chadwick resigned in 1853, amidst acrimony, from the General Board of Health. The Act itself was dissolved by Parliament in 1854, and in the same session an Act was passed continuing the 1848 Act on the basis of an annual review.

However in 1852 it seemed that local autonomy would have to be surrendered when the Town Clerk, Samuel Johnson, was threatened with an inspection by the Board of Health in London because the death rate in the town had reached 26 per 1,000. The report by the Sanitary Committee was an attempt to forestall intervention and it worked, convincing Westminster that conditions were under control and there was no need for interference from the Board.[18] There was no room for complacency because the report noted that, 'it is a matter for deep regret that in the quarter ending September 30th, out of 409 deaths, 150 were children under one year, and 33 were under two, a total of 183 deaths.'[19] Over half of all the deaths (224) occurred in two of the most densely inhabited districts, St Ann's and Byron wards.

In 1853 there were fatal consequences arising from poor sewage disposal in St Mary's ward where the deaths had risen from 51 in the previous year to 66 deaths in 1853. The river Beck flowed through this district and had overflowed in Poplar Place spreading sewage along the streets. Sewage waste presented a major problem and the construction of cesspools was something which needed to be considered with some urgency. The Enclosure Act provided for these receptacles to be made air and water tight, but in many instances the pits had been filled and the contents had overflowed into the water cistern and lower apartments of houses, and in other instances the

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17. Royston Lambert, *Sir John Simon 1816-1904 and the English Social Administration* (1963), p. 304
18. Beckett, *Centenary*, p. 243
19. *SCR*, 1852

materials used to encase them were of a pervious nature and the liquid had seeped through into the adjoining soil.[20] The committee was able to report later that the Beck dyke was being replaced by a capacious sewer along Manvers Street, and another from Cork Holes across Eastcroft to the Trent.[21] An experiment with self-acting water closets in Kingston Court (Narrow Marsh area) had already proved most satisfactory and their general adoption were considered to be beneficial. Unfortunately, pecuniary concern came into play and although the superiority of water closets was acknowledged, it had to be weighed against the expense both in outlay and upkeep and so the old privies were not replaced.

One of the major problems facing the town was the state of the Nottingham Canal and the River Leen, which drained into the Trent, the source of a considerable amount of domestic water. The canal was found to be 'foul and offensive' because of the water draining into it from the Leen which was contaminated with sewage from the western districts of Nottingham.[22] A key problem was that the smaller authorities which bordered the Leen had different methods of sewage disposal but under the Nottingham and Leen District Sewage Act, 1872 a standard system of sewage removal from all areas of the borough was proposed and sewage would be sent to farm lands at Stoke Bardolph, the sewage farm eventually being opened in 1880.[23]

The report of 1854 made depressing reading with the number of deaths recorded at 1,853 and over half (717) were children under 2 years. The report added that the deaths were mainly among the operative classes and any improvement would need 'judicious maternal management' and better ventilation and cleanliness of the dwellinghouse.[24] A hint as to where the blame for the high infant mortality rate was

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20. *SCR*, 1853 and *NBR*, 21 November 1853
21. *SCR*, 1854 and *NBR*, 5 January 1857
22. *NBR*, 22 November 1857 and 21 November 1858
23. Church, *Victorian Nottingham*, p. 203
24. *SCR*, 1854

located. It is perhaps not surprising that the two districts which had the highest populations, St Ann's and Byron, also had the highest number of deaths both in deaths overall as well as for infant mortality.

Although enclosure was far from completion in 1857 the Sanitary Committee reported that 2,101 houses had been built; 845 were rated at under £10 per annum.; 820 between £10 and £20; 228 between £20 and £30 and 184 above £30 per annum. The corporation was satisfied that houses could be built which complied with the regulations of the Enclosure Act and still be let at 3/6 per week free from rates and taxes.[25] This proved to be a mistake and the newer houses were in fact rented to artisans able to pay the higher rents. There was also an air of prosperity in the town, reflected in the construction of 71 factories and 41 warehouses and partly to do with an upswing in framework knitting and the extension of steam power to the hosiery industry. This prosperity also had a down-side with the emission of smoke and it was not long before 'Old Nottingham was thoroughly enveloped in a black pall of smoke.'[26] However, the local authority were reluctant to enforce legislation that would drive industrialists to relocate in districts where more lax attitudes prevailed.[27]

A new Public Health Act was passed in 1858, provision coming under joint jurisdiction of the Privy Council and Home Secretary. The Privy Council had powers to conduct investigations into public health and also to appoint a Medical Officer whose duty was to compile annual reports on the health of the community and report to Parliament. Sir John Simon was appointed as Medical Officer of Health for the Privy Council and during his first few years he was able to create a substantially independent department, which suited his efforts to get on with the job of organising public health. Nottingham adopted the act and formed its own local Board of Health but the option of

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25. *NBR*, 5 January 1857
26. Beckett, *Centenary,* p. 245
27. Wohl, *Endangered lives*, p. 218

appointing of a Medical Officer of Health was not taken up.[28] The new Highways Committee established under the Act, had responsibility for drainage but the Sanitary Committee was finding it difficult to carry out their remaining responsibilities without becoming involved in the wider question of the town's drainage and sewerage systems.

Despite the upbeat view that Nottingham had been 'blessed since 1832 with an almost unlimited supply of wholesome filtered water obtained from the Trent'.[29] Marriott Ogle Tarbotton, the newly appointed borough engineer, 1858, noted in his first report that the town's sanitary condition showed an absence of an accurate plan of the sewerage disposal facilities and that the council was found to be wanting in sewerage removal. Many streets in the low-lying marshy area of the Meadows were found to have houses with rooms below flood level. On the south side of the Tinker's Leen, there were some 258 homes housing 1300 people and 3 factories employing 260 workers; out of these 231 houses drained into cesspools close to the houses and only 27 were supplied with water from the water works with the remainder obtaining their water from surrounding wells,[30] which were often contaminated.[31]

The provision of clean water to the public created problems. The siting of a single tap supplying water in a heavily populated neighbourhood was open to abuse from both contamination and damage. Nottingham had been privileged in having Thomas Hawksley as its municipal engineer (1830-1852). By 1844 he had been responsible for providing around 4,000 houses with a clean, constant and sufficient water supply. He by-passed the polluted River Leen and used purer water from the Trent gravels of the alluvium.[32] The cleansing of streets and courts using water

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28. Church, *Victorian Nottingham*, p. 201
29. *NBR*, 5 February 1849
30. *NBR*, 20 June 1859
31. See Edward Seaton's, *A Report on the Sanitary Conditions of the Borough of Nottingham* (Nottingham, 1873), in which he gives a full report on the condition of water supply to Nottingham and state of wells
32. Beckett, *Centenary,* p. 195

delivered at high pressure had been undertaken on a regular basis on Hawksley's authority.[33]

Nottingham was fortunate because for many industrial towns the supply of pure water often did not exist, or if it did it was not always readily available, the supply being turned off at intervals. This intermittent supply had a two-fold affect; not only was there insufficient water for washing and culinary preparation, there was insufficient to flush the sewers. Before 1845 Nottingham had three waterworks companies, the Old, New and Trent Waterworks Company, but all three were amalgamated when Parliament passed the Nottingham Water Act. The 1848 Public Health Act permitted local authorities to take over water companies but only if the company agreed and the expense of a private bill was often prohibitive. Private water companies could create real problems by their arbitrary actions, the Nottingham Waterworks Company being no exception. When it refused to lower its charges to the council, its biggest customer, the council was urged to purchase the company at a ratepayers meeting.[34] The request was refused and it took a further three attempts before the water company finally came under the control of the council in 1879 and this was in spite of the 1872 Public Health Act which placed a definite obligation on the shoulders of the local authority to provide a proper water supply and the Public Health (Water) Act 1878 making it financially possible for local authorities to purchase private companies.

Although enclosure began in 1845 it was a further twenty years before completion and in that time problems were exacerbated by the fact there were in effect two authorities dealing with one town, albeit divided into the old and the new The Nottingham corporation were reluctant to be involved in any of the dealings for which the Enclosure Committee were responsible, until the whole thing was handed over to

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33. *SCR,* 1854
34. Church, *Victorian Nottingham*, p. 340

them. The Committee, on the other hand were accused of dragging their feet over various aspects resulting in the development of two towns. The road network between the two was in disarray, some streets remained unfinished, the sewers for the two areas were not connected and despite the 'exceptional rigour' of the housing construction, many houses built on the Meadows were of inferior quality.[35]

In 1859 the Sanitary Committee had received complaints from owners of homes in the Meadows area concerning the lack of sewers for both houses and factories. Four years later the Committee reports drew attention to the manner in which many of the dwellings in the Meadows, formerly enclosed land, had been constructed; 500 dwellings and new extensive trades were all destitute of drainage in addition to cesspools which were close to wells providing the drinking water.[36] Through the mediations of Tarbotton as borough engineer, the corporation and the Enclosure Committee were finally brought together to talk about the outstanding problems and in September 1866 agreement was reached to apply for an Improvement Act which would transfer powers from the commissioners to the corporation and in 1867 for the first time the 'two' towns became a united one.[37]

There was much to be done by the corporation to resolve the problems of the 'old' town. The wards of St Ann's and Byron, had been described in the worse possible terms in the Inquiry into the State of Large towns,[38] continued to be the worst areas in Nottingham for conditions and death rates until the 1920s.These two wards had the densest population and many of the dwellings were of poor quality, back-to-back housing. Throughout the period 1853 to 1870 the two prevalent diseases were diarrhoea and phthisis. Both were considered to be linked with insanitary conditions

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35. *ibid.* p. 202 and *NBR*, 20 October 1859
36. *SCR*, 1863 and 1865
37. Beckett, *Centenary,* p. 244
38. *State of Large Towns and Populous Districts,* First Report, PP.1844, 602 (XVII), evidence of Thomas Hawksley, pp. 139-40

and densely populated areas. Diarrhoea was a cover-all name for a number of diseases which affected the gut and was most devastating in children under the age of one year. Although the numbers of deaths listed were high, they may well have been even higher, had the recording of deaths in the mid-nineteenth century, been more accurate. The recording presented problems because of the imprecise language used to describe only the most immediate and obvious cause or general condition at the time of death.[39] Other diseases which would have had an adverse affect on the gut were, atrophy, marasmus and convulsions. Of these three, convulsions had the highest recorded number of deaths in the under one year age group and was frequently higher than those recorded for diarrhoea, when in fact it was almost certainly diarrhoea which had brought on the convulsions. It was noted by Medical Officers in later years that convulsions were used too frequently to describe the symptom and not the cause of death. Most deaths appear to have occurred in the summer months suggesting the prevalence of summer diarrhoea.

The Sanitary Committee obviously felt that the improving sanitary conditions in the town were in no way responsible for the high infant death figures and felt that the majority of deaths were as a result of poor nursing care and the administration of Godfrey's Cordial.[40] This was not the first reference to the administration of this drug to silence the cries of children. The Report into the condition of the Framework Knitters, 1845 commented on the widespread use of this mixture and in 1860 Dr Greenhow had also drawn attention to the prolific use of the drug.[41]

Children were not the only ones to suffer from the affects of gut infections. Typhoid (enteric) fever, was to become the scourge of the adult population in the town during the last decades of the nineteenth century. Although typhus and typhoid were

39. Robert Woods and Nicola Shelton, *An atlas of Victorian mortality* (Liverpool, 1997), p. 22
40. *SCR,* 1870. Godfrey's Cordial contained opium, treacle, water and spices.
41. *Royal Commission to Enquire into the Condition of the Framework Knitters*, PP. 1845, 641 (XV), p. 108 and *ARMOH,* Second Report, PP.1860, 2736 (XXIX), diarrhoeal districts, p. 61

treated as one and the same disease until 1869, the later figures suggest that typhoid may have been the greater killer of the two. In 1868 an epidemic of the disease was expected and an inspection of the St Ann's district, which was particularly affected revealed where the problem lay - the keeping of a considerable number of pigs in close proximity to dwellinghouses. The frequent outbreaks of typhoid fever kept alive the miasma theory in the densely populated, insanitary areas.

The other major adult killer, phthisis, was also to be found in areas which were associated with poor living conditions, both in terms of the environment and the standard of living and the density of population which favoured its spread.[42] Over a period of twenty years phthisis was the cause of many deaths in the St Ann's and Byron districts.[43] Both areas were known to be insalubrious and contained a substantial number of common lodging houses, a recognised seat of phthisis. The almost universal belief that it was an hereditary disease and that normal preventative measures would be to no avail, together with the fact that many people tried to conceal deaths of phthisis, made it very difficult for medical practitioners to make any in-roads into reducing the effects of this disease.

The number of deaths from phthisis in the whole town had dropped slightly from 261 in 1864 to 222 by 1868, and as the disease was considered predisposed to breathing poor air, in ill-ventilated and overcrowded houses built on damp undrained soil, this reduction was attributed by the Sanitary Committee to an improvement in housing.[44] Hardy has observed that it was in the poor housing that the infectious diseases of adults flourished and that stress overcrowding commonly occurred. [45] It is difficult to associate the piecemeal improvements in housing, i.e. demolishing a few

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42. Seaton, *Sanitary conditions*
43. *SCR,* 1852-1872
44. *SCR,* 1870
45. Anne Hardy, *The Epidemic streets. Infective disease and the rise of preventative medicine, 1856-1900* (Oxford, 1993), p. 234

houses whilst lime-washing the remainder, as being responsible for the greater fall in deaths.

It is difficult to say with any certainty what effect the industrial works of Nottingham had upon the health of the residents, but they must have played no small part in compounding the unhealthy atmosphere. The town had its share of knacker's yards, bone boilers, fell mongers, gut scrapers, slaughterhouses, candle and tallow works and chemical industries, all producing their own distinctive smells, creating an offensive mélange which pervaded the town. The situation of these associated trades was to allow easy access to the raw material. The siting of slaughterhouses and other marginal trades was a source of constant aggravation to the Sanitary Committee. Bone yards and gut scrapers were often situated in built-up areas, as were knacker's yards.[46] As we shall see in a later chapter, slaughterhouses were quite often situated by the side of or at the rear of residential properties within the town. Their environmental, as well as structural condition, was always questionable. A further complaint was that their situation offered considerable opportunities for the dressing-up and disposal of unwholesome meat.[47] In an effort to remove one problem, it was proposed to build a knacker's yard at Eastcroft but this did not materialise until a deputation from the Health Committee had visited Germany to inspect their knackery services. A site was finally chosen at Old Basford.[48] However, not everyone was enthusiastic about moving the industries away from their source of material, indeed a complaint was lodged by the hide and skin sellers about the removal of their market, which would take them away from the 'Shambles' butchers.[49]

The preparation and sale of food began to be monitored after the startling revelations of Dr Arthur Hassall in the 1850s concerning widespread adulteration. The

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46. *SCR*, 1853 and 1857. *NBR*, 7 August 1876
47. *SCR*, 1859
48. *One hundred years of Public Health in Nottingham* (Nottingham, 1973), p. 16
49. *SCR*, 1856

constant threat of a large amount of meat which was unfit for human consumption making its way onto the market, prompted the authorities to appoint an inspector of meat, fruit and vegetables in 1854. The task of checking all food offered for sale must have seemed insurmountable particularly when in 1862, the Privy Council estimated that one-fifth of all butchers meat in England and Wales came from animals which were diseased. The problem of diseased meat was compounded in 1866 when the country was struck by the cattle plague. As a result, the number of cattle available for slaughter for human consumption and made it possible for more unsound meat to come onto the market and consequently the meat inspector, Mr Richards, was put under even greater pressure.

Whilst the domestic life-style of the workers was criticised and under scrutiny from the authorities, the surrounding atmosphere within the towns was undoubtedly a source of bodily discomfort for the masses who had to endure breathing in the noxious air, on a daily basis. Wohl noted that it was extremely difficult to trace directly any illness to the polluted atmosphere although Sir John Simon had pointed out that the fumes from chemical works destroyed plants and that it would follow that they would be harmful to humans too.[50] Of greater importance was the indirect affects of these noxious fumes because in an effort to block out the stench, inhabitants would keep their windows and doors tightly shut, thus increasing the chances of infection. It was all well and good for the authorities to advocate that air should be allowed to circulate through the houses but, whilst the choking atmosphere surrounding towns increased, the inhabitants were not going to open their windows and allow foul air inside. One Nottingham resident recalled his school was next to a tannery, which "smelt horrible".[51]

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50. Wohl, *Endangered lives,* pp. 207-8
51. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), A44, male born 1913

Complaints were received by the Sanitary Committee of 'noxious effluvia' emanating from the creosote and naptha works at Eastcroft, which was situated some way distant from the old town.[52] The Sanitary Act of 1866 included smoky chimneys under the nuisance category. Almost the whole town must have been guilty of contravening this section as the only form of heating and cooking was the domestic fire. Evidence from family budgets suggest that coal was the main fuel used by urban dwellers during the nineteenth century so it must be presumed that cost prohibited the poorer town dwellers from purchasing 'decent' coal; the fuel that would give off less smoke and fumes. Wohl noted that domestic fires were exempt from acts controlling smoke nuisances and that the cost of converting domestic fireplaces to burn coal more efficiently was a deterrent to the working-classes. This type of legislation to eliminate smoke was considered to interfere in what was essentially the Englishman's castle.[53]

A considerable dilemma for the health authorities was that of the disposal of corpses. The coroner had noted that Nottingham did not possess a mortuary and for a town of over 100,000 inhabitants, this was a great inconvenience! The Health Committee was instructed to investigate this matter and it subsequently recommended that one should be built at Eastcroft together with two others elsewhere.[54] Burial grounds were another serious menace to health because rain falling over graveyards percolated into wells from which the living drew water. Ancient churchyards had become grossly inadequate for a rapidly expanding population and many of them were saturated with human putrescence. In 1856 places of internment within the old built-up part of the town had been closed by the council. It must be noted that these three burial grounds; Bellar Gate, Carter Gate and Barker Gate were all situated in the heart of the living area. However, by 1875 the three had all fallen into disrepair and it was suggested that the gravestones should be laid flat, trees planted and asphalt be laid

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52. *SCR,* 1858 and *ARMOH, 1873*
53. Wohl, *Endangered lives*, p. 213
54. *NBR,* 6 March 1882 and 4 September 1882

around them.[55] Decisions made at the council meetings, obviously failed to deter those who were responsible for burials because the Barker Gate burial grounds were still being used in 1877 and the Home Office was petitioned to issue an absolute closure order on all grounds in Nottingham.[56]

Figure 2-1: Map showing the location of Bellar Gate, Carter Gate and Barker Gate burial grounds

Source: Salmon Map of Nottingham 1861.

Before concluding the subject of nuisances, we cannot omit the problem of keeping pigs since they were a constant source of irritation to the health authorities throughout the early period and even causing agitation to Dr Boobbyer as late as the

55. PRO MH 12/9464, Poor Law Guardian papers
56. *NBR,* 7 May 1877

1890s. The pig played an important role in the life of the poor man the animals being kept in pens, sties and even the houses alongside their owner and their presence added to the already insanitary conditions which existed. Nevertheless, they were tolerated by the poor because they were a source of much needed cheap meat and their manure was much prized and valuable.[57] The Sanitary Committee considered it undesirable to keep pigs in places adjoining dwelling-places in a town with more than 2,000 inhabitants and in 1850 it was made illegal to keep pigs close to dwelling places.[58] Nevertheless, they continued to share the environment of their owner and complaints were made to the Sanitary Committee in 1852 and 1854 about pigs causing a nuisance in dwelling areas in total disregard of the health hazards. Both Inspector Betts from the Nuisances Department and Boobbyer received numerous complaints[59] about pigs being kept in yards at the rear of premises.[60] Boobbyer became quite frustrated with this mentality and commented, "(the keeping of pigs)... in populous places, should as far as possible be restricted, but is extremely difficult in Nottingham where pig keeping has become to be regarded as the prescriptive right of almost every owner of a manure pit."[61]

These are just a few examples of the problems that were in existence before the appointment of a medical officer and which continued well into the twentieth century. If we multiply them and fix them in the densely built-up areas[62] where the poor lived, it is not too difficult to imagine the damage that they must have inflicted on an already chronically-ill population. When Seaton was appointed in 1873, the environmental and health problems had escalated; the problem of the pail system was just beginning to show itself in the number of cases and deaths from typhoid fever. It was perhaps

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57. Wohl, *Endangered lives*, pp. 82-3
58. *NBR,* 1 October 1849 and *SCR*, 18 September 1850
59. NAO CACM 45/12, Health Committee Minute Book, 26 April 1889
60. See NAO CACM 45/12, 30 January 1891, 2 October 1891 and 1 July 1892
61. *ARMOH,* 1893
62. See population increase Table 1-2 p.22.

fortunate that Nottingham gained his expertise and his systematic view of how to remedy the problems began to slow down the spiralling death rates.

In his eleventh report as Medical Officer of the Privy Council, in 1868, Simon set out a formal programme of reform for public health. Outside of government, other members of the medical profession were also calling for more reforms. These two powerful lobbies resulted in a joint committee of the British Medical Association and the Social Science Association being appointed to promote the improvement of public health. They produced a petition calling for a thorough enquiry into the sanitary organisation of England with a view to revising and consolidating the laws. The petition was favourably received by Disraeli's government and between 1868 and 1871 the Royal Sanitary Committee investigated and reported its findings. It recommended a consolidation of the piecemeal sanitary legislation which had been drawn up over a long period and also instigated further legislation. This came in the form of the Local Government (Board) Act 1871, which began the fundamental change in the sanitary state of England and Wales.[63] The Act provided a Minister and a department which dealt with most aspects of local government and compelled local authorities to use to the full their public health powers. Sanitary progress was possible provided that the proponents of public health worked with the local authority and did not try to override them.[64] The Local Government Act transferred to a Local Government Board all powers of the Poor Law Board and Privy Council in relation to public health and sanitary legislation. By this time the public health movement had gained momentum and the Local Government Board needed to present to Parliament an organised plan for further sanitary legislation.

The result was the 1872 Public Health Act, which divided England and Wales into urban and rural sanitary authorities, each with its own obligatory Medical Officer

63. Jeanne L Brand, *Doctors and the State. The British Medical Profession and Government action in Public Health, 1870-1912* (Baltimore,1965), p. 15
64. ibid. pp. 22-23

of Health. At that time there were only about fifty Medical Officer of Health throughout the country but even with the implementation of compulsory legislation local authorities were slow to appoint a Medical Officer, because of the fear of centralisation. Edward Seaton was the first Medical Officer for Nottingham, appointed in 1872. The duties of the Medical Officer of Health and inspectors were to maintain, pave and light streets, and to ensure drains ran into sewers. They were also responsible for ensuring that no new houses were built lacking water or drainage. In many districts the Medical Officer was only employed on a part-time basis. As Wohl notes, the attitude of the local authority was very often hostile and they received little support from central government so that it was surprising that those who applied for the positions were of such a high calibre.[65] Seaton certainly came into this category. Employed full-time, he remained as Medical Officer Health for Nottingham until 1884. He began his work by writing a thorough report on the state of the town in 1873 and systematically catalogued 'special peculiarities' which had a bearing on public health such as housing accommodation, over-crowding, common lodging houses; the predominant diseases in the town; the water supply to the town etc. The town was fortunate to have had both Seaton and later Philip Boobbyer as Medical Officers because they laid the foundations for the future of public health in Nottingham.

By far the most probing piece of legislation in the area of public health was the Public Health Act 1875. It was to consolidate all previous public health acts, as well as the sanitary acts and nuisance act and to increase the powers of local authority. It was a break from the past where traditional government was of a non-interventionary type - it was at last accepted that public health was a proper function for state activity. It received full backing from The Lancet and The British Medical Journal. Thus the public health debate moved into a new era with the ability to monitor the private sphere of health.[66]

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65. Wohl, *Endangered lives*, p. 181
66. Brand, *Doctors and the State*, pp. 18-21 and Frazer, *Public health,* p. 120

During the second half of the nineteenth century, the public health question moved on from being unprepared and reactionary, to being methodical and embracing a plethora of problems, from sewage to smallpox and drains to diarrhoea. More importantly the initial narrow approach of cleaning up the environment widened to include more personal problems such as infant and maternal mortality and ensuring housing was of a standard with inside toilets and piped running water. This development was remarkable because the public health question was speedily moved from the street into the *private domestic* sphere; a movement that only half a century before would have been abhorrent to the *laissez-faire* doctrine. The late nineteenth and early twentieth centuries saw a development in scientific knowledge of contagion that cast the miasma theory aside to allow a more focused bacteriological approach to the spread of disease.

The position of Medical Officer was a crucial part of those developments because he was able to direct the department towards those areas which needed most attention for example the seat of diseases, the sale of unsound food. Seaton and Boobbyer were both strong leaders who did much to rectify the problems which had been allowed to amass. Boobbyer was fortunate that during his service, great strides were made in the area of food and nutrition, medicine and eventually social policies such as the housing plans for Nottingham after 1920 which is covered in the next chapter.

Conclusion

In this chapter it has been shown how the miasma theory held its position throughout the nineteenth century. McKeown makes the point that water-borne diseases declined first, acknowledging that attention to improvements in public health had been beneficial.[67] There is no doubt that during the last half of the nineteenth century, progress was made in public health, not least with the introduction of public legislation, such as the 1872 and 1875 Public Health Acts. The importance of these were that responsibility for ensuring urban areas were clean and safe was placed with the local authority and no longer left entirely to parsimonious councillors.

In this period the state and subsequently the local authority, became much more involved in public health matters. Nottingham was in a similar position to many other towns, for example Leicester. The waste removal system was inadequate, the canal and river Beck were open sewers and in the unhealthy districts of the town the residents suffered from poor health. One redeeming feature of the town was that it had a clean water supply.

In this chapter it has been suggested that after 1875 the attitude to public health began to change and attention to cleaning the outside environment was replaced by a much wider scope for improving health, for example seizing unsound food, isolating certain diseases and improving welfare facilities for mother and babies. The introduction of the 1875 act forced councils to accept responsibility for the conditions in their town. Szreter makes the point that there were limits to what the 'municipal sanitation' movement could achieve, and they could not alter the shortcomings of the living conditions, especially food preparation.[68] It was only in the second decade of the twentieth century that public health completed the move into the domestic sphere.

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67. McKeown, *Modern rise*, p. 61
68. Simon Szreter, 'The importance of social intervention in Britain's Mortality decline c. 1850-1914: A re-interpretation of the role of public health', *Social History of Medicine*, 1, 1 (April, 1988), p. 28

The appointment of a Medical Officer in 1873 and the introduction of the Public Health Act, 1875 played a crucial role in furthering public health in Nottingham. Both Seaton and Boobbyer worked hard to rectify the problems which had been allowed to deteriorate since the first half of the nineteenth century.

Chapter 3

Housing and Health

Introduction

The unsatisfactory state of housing in Nottingham during the nineteenth and early twentieth centuries is well documented.[1] However, it would be difficult to investigate problems concerning health without referring to the housing conditions in Nottingham, in view of Szreter's suggestion that the quantity and the quality of housing were being alleviated by the end of the nineteenth century.[2]

Some of the material used in this chapter is not new but has been used to demonstrate the housing difficulties experienced in the town during the nineteenth and early twentieth centuries. The examination of this, together with other material will show that where there was a concentration of insanitary housing there was also a high mortality rate and infectious diseases such as typhoid and phthisis were endemic. The chapter will also show the difficulties Boobbyer encountered when making decisions on housing to be demolished and the intransigence over the improvement of housing by successive corporations.

The failure to enclose land surrounding the town before 1845, combined with the textile boom at the end of the eighteenth century, kept the town within a tight boundary. Most of the houses erected at the turn of the nineteenth century were poorly constructed, back-to-back and centred around courts and alleys where dirt and rubbish

1. Stanley Chapman, ed. *The history of working-class housing. A Symposium* (Newton Abbot, 1971). Lewis F Wilson, 'The State and the Housing of the English working class, 1845-1914, with special reference to Nottingham', (University of California, Berkeley PhD thesis, 1970). Neal A Ferguson, 'Working class housing in Bristol and Nottingham 1868-1919', (University of Oregon, PhD thesis, 1971)
2. Simon Szreter, 'The importance of social intervention in Britain's mortality decline c. 1850-1914: a re-interpretation of the role of public health', *Social History of Medicine*, 1, 1 (April, 1988), pp. 28-9

accumulated. There was an absence of building land on the perimeter of the existing town which raised the price of available land for development, forcing speculative builders to reduce the quality of any development in order to make a profit. Before 1845 there were no building regulations in Nottingham to stop the construction of sub-standard houses. Both central and local government paid little attention to house building because this problem was regarded as a matter for individuals and contrary to the policy of *laissez-faire.*

This chapter discusses the state of housing in Nottingham during the course of the nineteenth century and early twentieth century. Many of the later housing problems stem from the failure to open up the land surrounding the old town so that when it was finally released to the development market after1851, the houses constructed were too expensive for the slum dwellers to move into. The successive failures of the council to rectify the conditions and an overall shortfall in housing exacerbated the situation until the end of the First World War, when intervention from central government forced the council to act.

The findings of the Royal Commission on the state of Large Towns in 1844 and 1845, revealed that Nottingham had some of the worst slums in the country and that mortality rates were as a consequence unacceptably high. For example Byron ward had a mean age at death of 18.1 years.[3] As a result of these reports some legislation was introduced by central government to improve the state of towns. Nottingham corporation adopted the Nuisances Removal Act 1846, which gave limited powers to authorities to remove the worst nuisances.

In 1845 a private act to enclose the lands around Nottingham was passed, which allowed for the natural expansion of the town and regulated later house

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3. *Royal Commission on the State of Large Towns and Populous Districts*, First Report, PP.1844, 602 (XVII), Appendix, evidence of Thomas Hawksley, p. 140

construction. Unfortunately because of the restrictions set out by the Enclosure Committee concerning buildings, the new dwellings were rarely occupied by those they were intended for. The rents were too high and the distance from the workplace was too far, so many of the poorer workers continued to live in the old insanitary housing.

Central government was slow to legislate on housing and the first act passed in 1868, the Artisans' and Labourers' Dwellings Act, was ineffective because it was a permissive act and only provided for small scale demolition. There was no provision for re-housing the displaced tenants. This act was followed by the Cross Act, the Artisans' and Labourers' (Improvement) Dwellings Act, 1875. This was slightly better allowing for larger scale slum clearances. However, there was still no pressure for the council to re-house tenants. The construction of new dwellings was left to the private sector. The main emphasis at this time was for the removal of insanitary housing. On the few occasions that the corporation involved itself in removing slums and re-building property, it was small scale and proved to be expensive to the corporation.

The 1884-85 Royal Commission on housing of the working-classes[4] in England and Wales called for a complete review of the housing acts. Unfortunately the timing was wrong and Prime Minister Gladstone had more pressing concerns in the shape of Ireland, so that it was a further five years before some of the commission's recommendations were finally put on the statute register. The Housing of the Working Classes Act, 1890 consolidated all previous housing legislation. This act went a step further than previous acts by allowing houses to be built by the local authority, but it did not contain any financial provision from central government.

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4. *Report of the Royal Commission inquiring into housing of working-classes,* First Report, 1884-5, C4402 (XXX)

Because of their failure in the construction of housing, the council withdrew from the housing problem altogether after 1890, leaving the responsibility of the destruction of slum areas to the Medical Officer of Health and construction to the private sector. The chapter will show that this withdrawal led to large areas in the old town being allowed to deteriorate. Construction of new houses was limited and so led to a shortfall in available houses for the poorer workers and such a situation proved difficult for the Medical Officer when he was considering which unhealthy areas should be demolished. The lack of suitable alternative housing would force displaced tenants to seek accommodation in other squalid surroundings. It will be shown in a later chapter that the old town, containing the majority of poor housing, suffered from high rates of mortality from particular diseases such as typhoid fever, phthisis and infant diarrhoea. This would suggest that there was a link between the condition of housing and the health of tenants.

The Housing Act of 1909 took the question of the state's responsibility for housing a step further but once again the corporation failed to make full use of the act. The improvement of housing was put on hold during the First World War and ultimately increased the shortage of affordable housing.

The 1919 Town Planning and Housing Act fundamentally altered the manner in which houses were provided. The act consolidated all previous acts into a mandatory obligation by local authorities to provide working class dwellings and let them at affordable rents. The post-war housing policy solution to the housing shortage was to build "plenty of good houses" and most of these houses were to be built on behalf of the council, with government subsidies, on green-field sites around the town. Large areas of slum housing were cleared and many of the residents re-housed in the new developments. This act marked the culmination of 75 years of agitation for the provision of good lower income housing.

In this chapter the problems of overcrowding and the early housing acts, will be considered in relation to infectious diseases and ill-health. It will also consider the attitude of Nottingham corporation towards housing since their failure in house building and subsequent withdrawal from involvement in housing after the 1890s, is a key issue in the state of housing by 1920. By the end of the first decade of the twentieth century the Housing Committee began a push to improve housing but this was delayed by the 1914-1918 war after which there was a shortfall of good quality housing and it was the intervention of central government that finally prompted the council to build new homes and to improve existing dwellings in the city. This chapter will also look at the cost of renting property and other cheaper accommodation such as common lodging houses and houses let-in lodgings.

The condition of housing

A report in the Nottingham Review in 1829, likened the courts and alleys of Nottingham to 'maggots in carrion flesh' and 'mites in cheese'; so huddled together were the dwellings. These comments were to be reiterated in the evidence given by Thomas Hawksley and J R Martin to the Commission into the State of Towns 1845-5. Thomas Hawksley described Byron ward (the area around St Mary's church) as,

"...the densest and the worst conditioned quarter...it abounds with ranks of back-to-back houses, enclosed courts, privies under dwellings, unpaved and undrained streets... As an inevitable result the mortality is excessive, and the deprecation of life extreme, the deaths being 3.1 per cent, and the mean age of death 18.1."[5]

Martin described the houses of the poor as for the most part "singularly defective, being erected in parallel ranks". [6] An estimated 7,000 back-to-back houses

5. *State of Large Towns*, First Report, PP.1844, 602 (XVII), Appendix, evidence of Thomas Hawksley, p. 140
6. *Royal Commission on the State of Large Towns and Populous districts*, Second Report, PP.1845, 610 (XVIII), Appendix, evidence of J R Martin, p. 250

existed within the town. By 1857 the number of new dwelling-houses built in the town since 1851 numbered 2,101, of which less than half were let at rents of about 3s to 4s per week. [7]

Burnett discusses at length the 'fit' between the number of houses built annually and the rate of population increase and concluded that as a whole house-building kept pace with the rise of population,[8] although fluctuations in house-building were determined to some extent by local conditions, such as local demand, state of trade and prosperity of industries, level of wages and the number of empty houses.[9] Between the years 1856 to 1861 there were an average of 724 houses built annually in Nottingham, but by 1865 this number had slowed down to 100 houses.[10] This was compared to the population of the town which had grown by thirty per cent between 1851 and 1861.

The effects of enclosure on easing the housing situation were unexpected. Housing demand was greater than expected therefore forcing up land prices. The stipulation for constructing houses on the newly enclosed land ensured that houses built could not be let at a rate cheap enough to attract migrants from the old slums; only 4 per cent were let for 3s a week or less.[11] The predicted movement of the lower income families from the cramped conditions in the old town to the new developments did not take place because the new houses were rented by the better paid artisans. The corporation had no physical control over the houses being built by private developers

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7. *SCR*, 1857
8. See however, Colin G Pooley, 'Housing for the poorest poor: slum-clearance and re-housing in Liverpool, 1890-1918', *Journal of Historical Geography,* 11, 1 (1985), p. 72, who states that in Liverpool, demolition exceeded the total number of houses erected between 1890 and 1895.
9. John Burnett, *A social history of housing 1815-1985*, Second Edition (1986), pp. 141-144
10. Wilson, 'The State and the Housing', p.118
11. J V Beckett ed. *A Centenary history of Nottingham* (Manchester, 1997), p. 241, footnote 73 and J V Beckett and Ken Brand, 'Enclosure, improvement and the rise of new Nottingham, 1845-1867', *Transactions of the Thoroton Society of Nottinghamshire,* XCVIII (1994), p. 97

and the enclosed land when it became available was limited, freehold and consequently more costly. It follows that the speculative builder wanted to maximise on his outlay by building as many dwellings as possible, cheaply and quickly.

Despite strict building regulations for dwellings on the enclosed land, Seaton acknowledged many were "erected in a manner which, though complying with the letter of the law, are built in distinct contravention to its spirit."[12] What Seaton meant was that the houses which had been built *had* to contain three bedrooms, so that a single couple renting the house may well sub-let it, which would lead to overcrowding. In his study of the social geography of Nottingham, Donbavand suggested that families shared their houses with others who contributed to the rent.[13] Furthermore, houses which had been built in the Meadows, whilst they complied with the legislation by having their front on a level with the street, the rear did not comply because it was below ground level.[14] Where the old and new houses did vary was in the circulation of air around them. The old unventilated, narrow alleys and courts prevented the free-flow of air, whilst the newer houses allowed the flow of air. The belief in the miasmic spread of diseases was perpetuated in the condition of old courtyards and alleys.

In 1873 Seaton estimated there were 7,000 back-to-back houses, many of which he found to have crumbling walls, floors and ceilings and the gaps were 'lurking holes for fever'. His concern over the spread of disease from these harbours of filth is perhaps expressed in his plea to the council to adopt the clauses contained in the 1866 Sanitary Act, relating to the cleaning of sub-let houses which would force the landlord and the tenant to accept responsibility for lime-washing the walls and ceilings, the essential way of preventing the spread of disease. As far as Seaton was concerned, the

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12. Edward Seaton, *Report on the Sanitary Conditions of the Borough of Nottingham* (Nottingham, 1873), p. 33
13. Roger Donbavand, 'The Social Geography of Victorian Nottingham 1851-1871', (University of Nottingham, PhD, 1982), p. 77
14. Seaton, *Sanitary Conditions*, p. 33

houses should be brought into line with common-lodging houses, which were kept under constant observation and cleansed once a year.[15]

Some of the worst housing in the town was around Millstone Lane (now Huntingdon Street) and Narrow Marsh. One elderly resident of Nottingham recalls the terrible conditions which existed around the "Bottoms" (Coalpit Lane).[16]

The poor construction of housing, however, did not arouse the same concern as that of the evil of overcrowding. Throughout the nineteenth century it seemed that all attempts to remedy overcrowding were to no avail, the problem being what was understood by overcrowding. It was first recognised under the Nuisances Removal Act 1855, and was used as a crude measure of people per house, irrespective of the number and size of rooms or the ages of the occupants. The Local Government Board had suggested 400 cubic feet per person.[17] Seaton was disposed to think that 500 cubic feet was the least required by every adult. Even so, his enquiries led him to believe that for many the allowance was below this standard, and may have been as low as 100 cubic feet![18] However, in 1891 overcrowding was defined as a room containing two or more adults, with children counting as half, and babies not at all. Overcrowding was not defined by statute until the Housing Act 1957, when it became effectively one and a half persons or more, aged over 10, to a room or dwelling.[19] For the country as a whole in 1891, 11.2 per cent of the population lived in terms of overcrowding, whereas in 1921, 9.6 per cent were living in overcrowded conditions.[20]

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15. PRO MH12/9464 Poor Law Guardians papers 1875. *NBR,* 20 September 1875
16. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), A2, female born 1889
17. Anne Hardy, *The Epidemic streets. Infectious disease and the rise of preventative medicine,* (Oxford, 1993), p. 235
18. Seaton, *Sanitary conditions*, p. 32
19. F B Smith, *The retreat of tuberculosis 1850-1950*, (1988), p. 169 fn 14
20. Burnett, *Housing,* p. 145 and W M Frazer, *History of English public health, 1834-1939* (1950), p. 360

These figures, however, conceal the differences between regions and local variations which varied considerably. Seaton noticed the 'very unequal distribution of the inhabitants', especially in the old town.[21] Almost a decade later in the 1882 report, he stressed the anomalies concerning density of population. Nottingham was recorded as having 19.4 persons to the acre, a low number compared to Plymouth, Brighton and Portsmouth which were not classed as industrial towns but had a higher density of population. The reason for Nottingham's apparent low density was due to the built-up areas being confined within a comparatively small space. Before the borough extension of 1877, the town consisted of approximately 2,000 acres with a population of 100,000 which gave a density of population of 50 per acre. The new areas which the borough acquired in 1877 consisted mainly of agricultural land with relatively small populations. Table 3-1, shows quite clearly how unevenly the population is distributed. In some parts of the town the houses were packed closely together and the density of the population rose accordingly, for instance in Narrow Marsh the number of persons per acre was well over 300.[22]

Two factors contributed directly to overcrowding. The first being the cost of constructing houses which frequently resulted in about two-thirds of the rent being interest charges, consequently houses had to be smaller and less durable. At the turn of the nineteenth century, timber imported from the Baltic was restricted and the cost of labour was high with the result that the building of a house was proportionally expensive.[23] It was, therefore fortunate for Nottingham that a brick-works was opened at Bunny in 1863, allowing for cheaper and more readily available material for the housing industry. The Builder reported in 1884, that the poor "cannot afford to pay more than a rental of from 1s to 2s per week, for their dwellings, of whatever size or construction, and wheresoever situate... but no practical plan has yet been devised by

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21. Seaton, *Sanitary conditions* p.32
22. *ARMOH,* 1882
23. T S Ashton, *The Industrial Revolution 1760-1830* (Oxford, 1970), p. 128

which dwellings can be built... which can be let at these low rentals and prove remunerative to builders".[24]

The second factor was the demolition of dwellings and clearance of areas to be used for the construction of railway lines and stations. The destruction of some of the unhealthiest slums and rookeries was a double edged sword; whilst these developments removed one problem, they created others when the displaced people were forced to find alternative but similarly cheap accommodation. Even as early as 1843, William Farr, Registrar-General, wrote in his Fifth Annual Report, "The objection to these measures is that 'you take down the dwellings of the poor, build houses in their places for which the middle classes only can pay, and thus by diminishing the amount of cheap house accommodation increase the rents and aggravate the evil which you attempt to cure...'[25]

The two most important acts in shaping future housing policy nation-wide, were the Artisan's and Labourer's Dwellings Act (Torrens) of 1868 and the Artisan's and Labourer's Improvement Dwellings Act (Cross's) of 1875. The Torren's Act enabled local authorities to demolish small groups of insanitary dwellings but made no provision for re-housing the displaced tenants. The act had lost much of its effectiveness through Parliament[26] but was another milestone in the government's intervention in housing. The main objective was to give power to local authorities for the demolition of individual houses. Under the act, the closure of unsuitable dwellings was relatively easy, if somewhat slow. The Medical Officer would condemn those houses he felt were uninhabitable and it was then for the Borough Engineer to inspect them and make a recommendation for their demolition or repair to the Health Committee. This was the dilemma for the Medical Officer, should he recommend the

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24. *Builder,* 47 (1884), p.746
25. As quoted in P Stocks, 'The association between mortality and density of housing', *Proceedings of the Royal Society of Medicine*, Epidemiology Section 27 (1934), p. 1133
26. Gauldie, *Cruel habitations*, p. 278

closure and eviction of the inhabitants knowing that suitable alternative accommodation was unavailable?

Table 3-1: Acreage and population of districts acquired in Borough extension 1877 (as at census 1881)

District	Population	Acreage
Lenton	9,246	2,080
Radford	14,346	640
Basford	18,136	2,720
Bulwell	8,573	1,210
Sneinton	15,473	720

Source: Annual Health Report 1882

Table 3-2: Number of Persons to an acre in each of the twenty Great Towns

Norwich	11.9	Leicester	39.4
Leeds	14.6	Sunderland	43
Sheffield	14.8	Hull	43.7
Bradford	18.6	Brighton	46.5
Nottingham	**19.4**	Bristol	47.2
Wolverhampton	22.6	Birmingham	48.6
Oldham	24.8	London	51.6
Newcastle	27.5	Plymouth	53.4
Portsmouth	29	Manchester	79.2
Salford	35.6	Liverpool	107.7

Source: Annual Health Report 1882

The Cross Act, after Richard Cross the Home Secretary, recognised that one of the impediments to the effectual working of the 1868 Torren's Act had been the uselessness of attacking slum areas in a piecemeal fashion and therefore allowed and encouraged slum clearance on a larger scale, the purchase and demolition by the local authority of large areas of 'unfit' property. However, it only paid lip-service to the notion of re-housing as a public responsibility and conveyed the disapproval of

government to such an idea.[27] It was also a permissive act, many of its clauses favouring the property owner's interest rather than that of the tenant. A year previously, Seaton had informed the council of the large amount of poor quality housing and persuaded them that they must act to alleviate the problems. An Industrial Dwellings Committee was formed to investigate the matter but whilst they were still debating, Cross's Act came onto the statute book. Seaton recognised that the act gave him the scope to tackle the housing and immediately condemned two areas of particularly poor housing in Darker's Court, Broad Marsh and St Ann's Alley, near Glasshouse Street. The corporation agreed to the compulsory purchase of a site resulting in council-owned land near to the Forest recreation ground being made available for the building of forty, two-storied, two-bedroom houses on Ortzen Street.[28] There is no reason to believe that any of the displaced families moved into the new dwellings as the rents were too expensive and they were over a mile from the previous condemned dwellings.[29] Wilson noted that the council was concerned about the cost but were assured by Seaton that they would recoup the expenditure from the sale of land cleared after demolition (see Figure 3-1).[30]

The question of demolition created a great strain on the alternative accommodation because the workers needed to be close to their place of employment. Seaton drew the council's attention to this problem but realised that little could be done whilst, "the manufactories of the town require the services of workmen who must live within a certain radius of the factory...and the effect of strictly enforcing the sanitary laws with respect to overcrowding would be to cripple...the commercial interests of the town..."[31]

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27. Gauldie, *Cruel habitations*, p. 276
28. *NBR* 23 September 1875 and 21 October 1875
29. Wilson, 'State and Housing' p. 164
30. *ibid.* p. 163
31. *NBR*, 24 October 1873

By the 1870s the corporation made some progress in providing housing for the working class but there was still not an effective housing policy and there was a lack of co-operation between local and central government.[32] Two small housing projects were embarked upon during the seventies, the Albert Building at Basford and the other on Bath Street, the Victoria Buildings, completed in 1877. The two buildings were a failure in terms of providing good quality housing at affordable rent and the council was left out-of pocket.[33]

Seaton's most ambitious scheme in 1881 was to redevelop the area between Market Street, Long Row and Upper Parliament Street, an area known locally as the 'Rookeries'. This small area was filled with houses, public houses and common lodging houses and shops. The area was redeveloped into King and Queen Streets and the houses replaced by commercial property. [34] The council allocated a site near Hungerhill Gardens where they hoped they could sell the land to building contractors, but they only managed to recoup a very small portion and were obliged in 1899 to build the dwellings - the first proper council estate. The councillors were extremely cautious in the future and as a result, the 1875 legislation was not applied again in Nottingham.[35]

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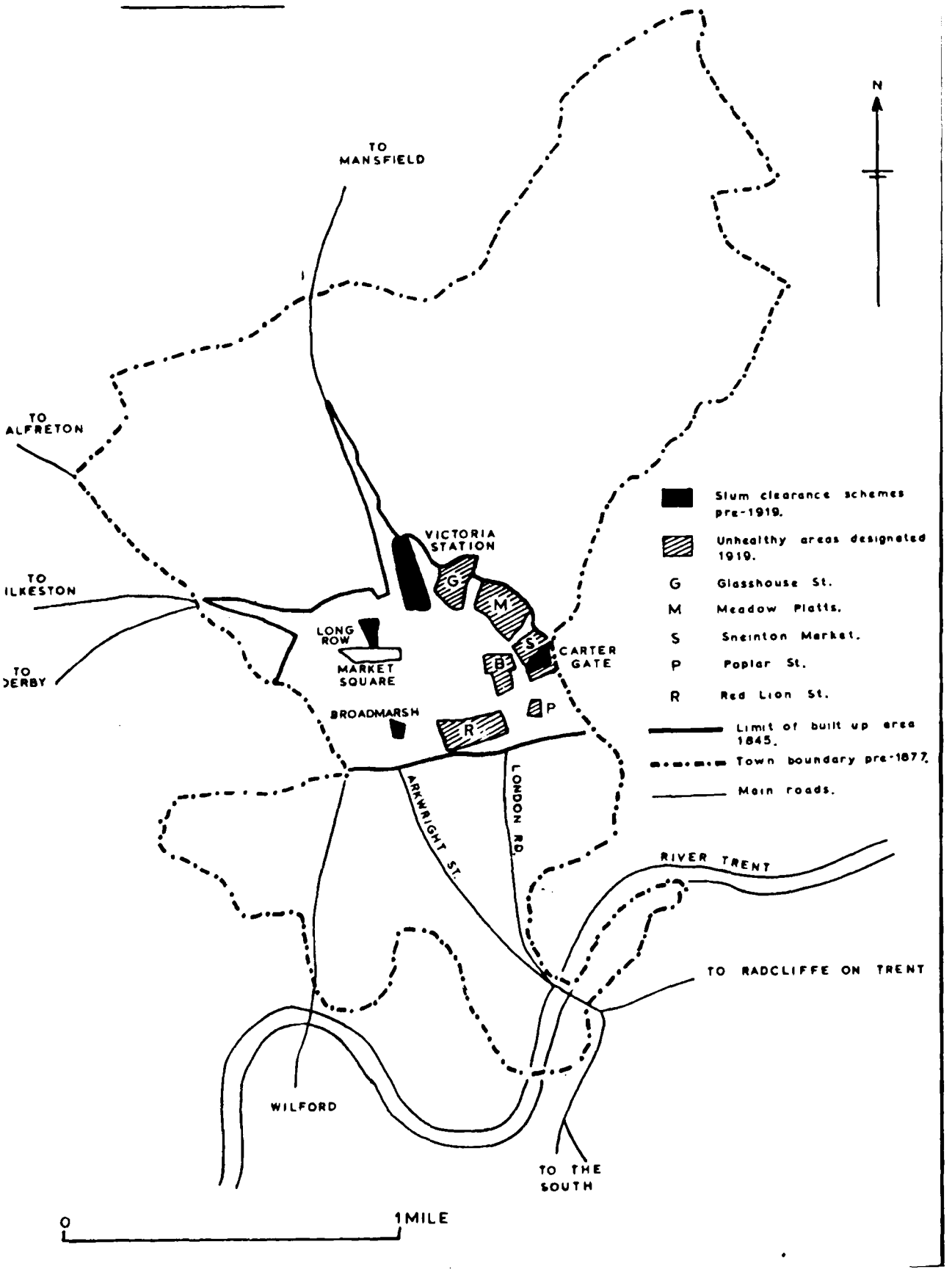
32. Wilson, 'State and Housing', p. 170
33. Wilson, 'State and Housing, pp. 164-66. Beckett, *Centenary,* p. 258 and Stephen Best's detailed study of "Minnitt's Folly: The origins of Victoria Buildings, and how they passed out of Council ownership", *Nottingham Civic Society Newsletter*, 96-100 (1995 and 1996)
34. Roy Church, *Economic and Social Change in a Midland Town. Victorian Nottingham 1815-1900* (1966), p. 349
35. Beckett, *Centenary,* pp. 268-9

Figure 3-1: Nottingham slum clearance schemes pre 1919



Source: CJ Thomas, 'Geographical Aspects of the Growth of the Residential Area of Greater Nottingham in the 20th Century. I.' (University of Nottingham, PhD thesis, 1968)

The dilemma facing Medical Officers was widespread; Burnett cites the Medical Officer of Health for Hackney saying that if he were to carry out his work to the letter he would condemn 10,000 people to sleep in the streets.[36] Not all Medical Officers were of the same opinion, for instance Liverpool's Dr E W Hope believed that the destruction of insanitary property and the densities of areas were more important than rebuilding in central areas.[37] Nottingham was no exception and both Seaton and Boobbyer experienced problems. In the 1882 Housing Report, Seaton, had grasped the problems involved in demolition for 'sanitary improvements' and wrote at length about the plight of the inhabitants. Nevertheless, he also recognised the dilemma facing the corporation over building houses for the labouring classes and needing to see a return on such developments.[38] He cautioned, "...the commercial prosperity of a town must exercise a great influence on the health of the people, so also on the other hand the health of the people must react on its commercial prosperity."[39]

The 1884 Royal Commission on Housing[40] advocated that the control of building standards, water supplies and sewage disposal systems were to be undertaken by the local authority, so that conditions of housing and the health of the population of towns might be improved. The recommendations were reflected in the Housing of the Working Classes Act, 1890, which consolidated and amended all previous legislation on housing. It was possible after this date for an enlightened authority to pursue a progressive housing policy, but did nothing to compel slow authorities to act.[41] Unfortunately Nottingham's efforts to remove slums and provide better housing can best be described as inadequate and unsuccessful, as the council found the new legislation too complicated to deal with the necessary re-housing. Wilson noted that

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36. Burnett, *Housing,* p. 146
37. Pooley, 'Housing for the poorest poor', p.77
38. The case of Victoria Dwellings was cited
39. *Report to the Housing Committee on measures required for the improvement of Narrow Marsh,* 17 November 1882, pp. 14-15
40. *Royal Commission on the Housing of Working-Classes*, PP.1884-5, C4402 (XXX)
41. Neal Ferguson, 'Working-class housing', p. 139

thirty-two per cent of the population continued to live in houses of four rooms or less, indicating they had been built before 1845 and lacked all decent facilities.[42]

In many ways the act was contradictory; Part III was potentially of great importance as it was an adaptation of the 1851 Lodging Houses Act, advocating the construction of dwelling-houses for the working classes by the local authority, an assumption of state responsibility for housing the poor.[43] Prior to 1890, local authorities had not been empowered to build houses except as replacements for those destroyed in the course of the Cross Act and it became more difficult for the Health Committee to move slum clearance on a pace. Although they had the power in future to make decisions without consultation with the owner, the owner could now seek redress through a Justice of the Peace. The Health Committee usually tried to come to an amicable agreement with the owner but the magistrates were often reluctant to order the closure of certain properties and overruled their condemnation of many houses. This clearly irritated Boobbyer, who was only too ready to demolish unhealthy houses.[44] However, he was delighted when the Great Central Railway was authorised to build a railway in 1893 which involved the demolition of a large number of unwholesome and inferior dwellings in the area of Charlotte Street. The line was to run virtually north-south through the town with a station (Victoria Station) situated on Mansfield Road and included the area up to Woodborough Road and Huntingdon Street. The company would compulsorily purchase the land and demolish 1,300 houses, twenty public houses, the Union workhouse and a church.[45] Boobbyer wrote, 'The new railway has affected demolition of much insanitary house property. Many houses that would not otherwise have been condemned have been left to go down

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42. Wilson 'State and Housing', p. 225
43. Gauldie, *Cruel habitations*, pp. 293-4 and Burnett, *Housing*, p. 138
44. *ARMOH*, 1895 and 1896. See also Ferguson, 'Working-class Housing', p. 140
45. Beckett, *Centenary*, p. 270. Ferguson, 'Working-class Housing' p.142 and Colin G Pooley, 'Housing for the poorest poor:', pp. 70-88, Ferguson suggests that the choice of this area was where there would be least opposition and Pooley also makes the point that slum clearance was very rarely done for the inhabitants benefit

before this irresistible agent of destruction. The unwillingness of many magistrates to render their closure...is a bar to the necessary work of demolition.'[46] The following year, 1896, he again criticised the magistrates for their reluctance to order demolition and made the point that, 'The area of the new Central Station was occupied by a dense neighbourhood of very poor dwellings of which the town is well rid.'[47] According to Ferguson by 1897 the local magistracy had completely paralysed the city's ability to deal with insanitary housing.[48]

The railway company was supposed to replace all of the houses but the Health Committee felt that they should only ask the railway company to build more than 150 houses. It was proposed that 125 of the houses would be built in the Meadows district - on a site which had not actually been purchased. The houses that were to be erected were to have a parlour, a kitchen and a scullery and three bedrooms, and the rent not exceed 6s, in fact they were let at 7s per week. The Health Committee were aware that this would create difficulties for many residents who had been used to paying only 2s 6d for a week's rent, anything above 3s a week would result in two families sharing a house.[49]

The railway line would continue to cross the Marsh area and necessitate the destruction of more poor quality housing in Peach, Pear, Plum and Currant Streets. A further 24 houses were to be demolished to make way for the Great Northern Railway involving an area to include Leenside, Lees Yard, Pearl Yard and Malt Mill Lane. Fifteen new houses were to be constructed to accommodate 75 people in the Meadows and would be similar to those built by the Manchester/Sheffield/Lincolnshire railway. The divide between rents charged and affordable rents is perhaps expressed clearly by the case of Charles Glossop, a stone mason of 25 Maltmill Lane, who had a wife and 5

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46. *ARMOH*, 1895
47. *ARMOH*, 1896
48. Ferguson 'Working-class housing', p. 140
49. PRO MH12/9505 Poor Law Union correspondence, May-December 1896

children and earned 27s per week. He lived in a house with one room downstairs together with a small warehouse, two rooms upstairs and the use of a communal closet. The prospect of paying out nearly one-third of his weekly income in rent would have been potentially devastating.[50]

The problem of overcrowding was a major concern for the health authorities and it would persist whilst alternative accommodation, provided by them or otherwise, was too expensive. In his 1898 Health Report, Boobbyer disputed the case that the renewed housing activity in the city was sufficient to keep pace with the demolition of houses necessitated by the new railway works. He claimed that the greater part of the population displaced by the activity had found shelter in houses previously unoccupied in various parts of the town. The newly erected dwellings were of a superior quality and out of the reach of the poor, migrating population, an issue picked up on by the Nottingham Daily Express.[51] What Boobbyer is suggesting here, is that the 'grossest and intractable overcrowding', would move around the cheap neighbourhoods as the demolition work took place.

In 1897 the corporation applied for authority to carry out street improvements in Lower Parliament Street and St Ann's Street, and allow private developers to take over reconstruction. Unfortunately this did not happen and the corporation was forced into the housing situation by the requirements of central government.[52] The following year they again considered embarking on major street building projects hoping to demolish the area of Meadow Platts, but the project was shelved because of the costs.[53]

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50. *ibid.*
51. *Nottingham Daily Express*, 4 January 1898, p.8, col.4
52. PRO MH 12/9500, Nottingham Poor Law Union correspondence, 1893, reported a request by the Town Council to borrow £45,000 for the purpose of providing electricity
53. *City of Nottingham - Reports presented to the Council, Reports of Housing Committee,* 6 July 1903, p. 201 and Beckett, *Centenary,* p. 273. It was shelved six years later in 1903

Boobbyer's involvement with sub-standard housing and overcrowding appears to have been as keen as his preoccupation with pail closets and enteric fever.[54] For many years he raised the issues which he considered to be at the root of the housing problem and which he later suggested was more aptly described as 'the problem of the poor'.[55] In 1900 he saw the solution to this 'knottiest' of problems as being the construction of houses outside of the city boundaries on land acquired by the local authority under the Housing of the Working Classes Amendment Act 1900. Land would be cheaper and therefore, the cost of housing, which would allow houses to be let at realistic rentals. Part of the problem of overcrowding was due to the fact that houses were not always built where people wanted or needed to live but it was hoped that a solution to the proximity to the workplace would be resolved by the construction of a cheap tram and railway service. The Tramways Corporation had been taken over by the corporation in 1897 and improvements and expansion had taken place almost immediately. The suburban railway serving the population north of the city had been operative since 1889,[56] so the infrastructure was in place allowing the movement of the population out of the city. By 1905 it was reported that the average number of persons per house was 4.5[57] and that the centrifugal movement was due to the rapid transit from the city. There was however, a disadvantage in this situation due to travelling costs putting extra strain on the already stretched budgets.

Boobbyer had made the point repeatedly that large tracts of slum housing needed to be demolished and that appropriate accommodation should replace it to overcome the problem of overcrowding. The failure of slum clearance was excused each year by the corporation by stating that it was financially unable to build either the new homes or to compensate owners of the dilapidated property. One newspaper

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54. Wilson, 'State and Housing', pp. 227-8 suggests, however, that Boobbyer did not give the aggressive leadership to the housing problem.
55. *ARMOH,* 1906
56. Beckett, *Centenary,* p. 265
57. *ARMOH*, 1905 refers to 1901 census figures

labelled the housing in certain districts of Nottingham a 'disgrace to Christianity' and another described vile conditions existing in Leopold Place.[58] The nub of the issue however, was that any plea for improvements was met with a cry that there was no money. [59] There was some conflict within the council over the availability of money to be used on housing, reflected in a comment made by Sir John Turney who was quite sure that if the Housing Committee asked the council for extra money they would get it.[60]

The appointment of Dr C W Milner, a surgeon, as leader of the Housing Committee in 1906 saw a more positive attitude towards the housing problem. This attitude was further boosted by the Housing, Town and Planning Act 1909 which made it compulsory to recondition houses and outlawed the building of new back-to-backs. Whilst pressure was put on the owner and tenant to rectify neglect, it did not offer any substantial building programme to the corporation who still had vested interests. By June 1910, 261 insanitary houses had been renovated and rendered habitable. Some houses containing three or four bedrooms on Parker Street and Windmill Street, Radford had been almost reconstructed but the rents were maintained between 3s and 4s 9d per week.[61]

In 1910 the Housing Committee made an exhaustive inspection of the poorer areas of Nottingham. In some areas, such as Red Lion Street, the number of persons recorded per acre was 510; Sussex Street area contained 433 per acre, this being compared to 24 per acre for the whole of the city. Many of the houses had been converted into one-roomed accommodation, usually crudely and the sanitary conveniences were totally inadequate, for example some houses were inhabited by 22

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58. *The Sunday Chronicle,* 17 November 1906, p.3, col.2
59. *Nottingham Daily Express*, 5 July 1904, p.4, col.6
60. *Nottingham Daily Express*, 11 September 1906, p.2, col.4
61. *ARMOH*, 1909. See also the *Report of the Housing Committee, 1908-9* where the committee decided that it was cheaper to implement Part II of the 1890 act than Part I which would necessitate clearance and building new dwellings at greater expense

people with one tub-closet allotted to them 35 yards away from the home. As a result of this survey, Dr Milner suggested that the corporation should discourage landlords from allowing slum property to deteriorate further and that preservable houses be repaired.[62]

One of the worst areas which came to light was that contained in triangle of land of roughly seven acres between Carter Gate and Manvers Street. There were over 500 houses, and nearly 450 were uninhabitable. They contained three or four rooms, the upper one of which was an attic and frequently unfit for habitation and the staircases were so constructed as to play the part of an atmospheric conduit from room to room; the majority of the houses had pail closets.[63] As well as the domestic living accommodation there were 2 sets of stables, 1 slaughterhouse, a forge and a bakehouse. Most of the residents were unskilled or casual labourers.

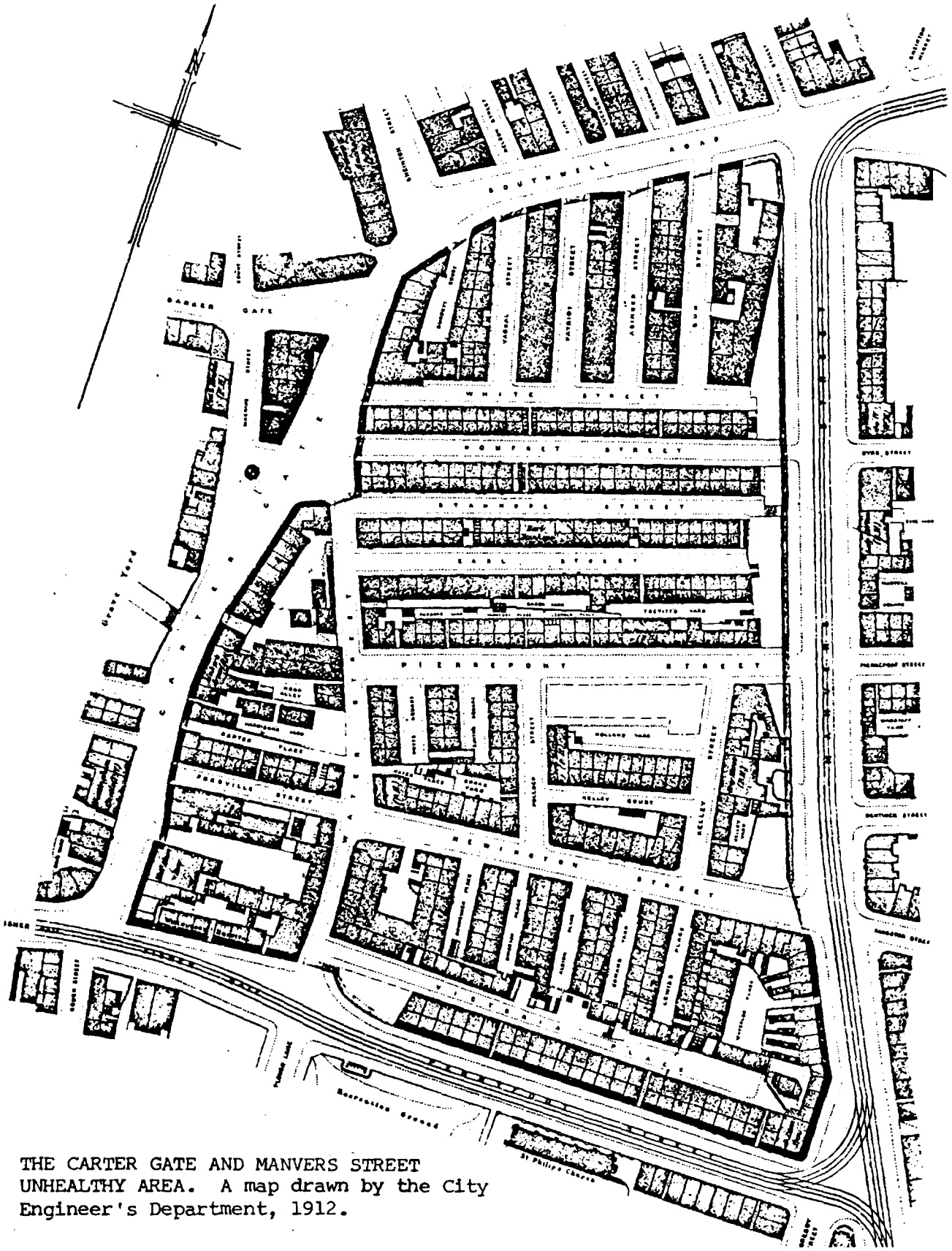
Table 3-3: Death rates comparing Carter Gate area and Nottingham 1909-1911

Area	Crude death rate per 1000 population	Death rate under 1yr per 1000 births	Death rate from 7 principal epidemic diseases per 1000 population	Death rate from phthisis per 1000 population
Carter Gate 1909	32.2	291	6	4.5
Nottingham 1909	16.2	150	1.67	1.22
Carter Gate 1910	19.1	206	2.5	0.5
Nottingham 1910	14.09	128	1.01	1.26
Carter Gate 1911	34.2	301	7.7	3
Nottingham 1911	16.01	162	2.4	1.32

Source: PRO HLG/600

62. Ferguson, 'Working-class Housing', p. 199. See also *Report of the Housing Committee, 1911-12*, commenting that owners were becoming more aware of the intention of the committee to insist on thorough renovation, rather than threatening demolition. Nottingham did not have a Housing Department until 1967
63. PRO HLG 1/600 and 7501/01 Local Authority correspondence 29 January 1912

Figure 3-2: The Carter Gate - Manvers Street unhealthy area



Source: S Best, 'Unfit for human habitation', Sneinton Magazine, 14 (Autumn, 1984)

From Table 3-3 it is possible to see how one small area can distort the figures for a larger district. Compared to the rest of Nottingham, Carter Gate is shown to be a particularly unhealthy area. The crude death rate is nearly twice as much in the Carter Gate area as for the whole of Nottingham; similarly the infant mortality rate is nearly

twice that of the city; the deaths from epidemic disease in Carter Gate are three times as great in 1909 and 1911.[64]

Despite this overwhelming evidence the Local Government Board issued an order on 13 December 1912 stating that the corporation *should not* demolish buildings which provided accommodation for more than 800 persons of the working class until suitable accommodation for 500 people had been erected. Nevertheless, the corporation went ahead and purchased two-thirds of the area and clearance had made some headway by the outbreak of the First World War. Approximately half the houses had been demolished and of the rest, 187 of these were still occupied. Owing to financial restrictions by the Treasury the corporation was unable to proceed with the erection of dwellings but, because of the dangerous state of many of the remaining buildings, an order was given in 1915 to demolish all the properties immediately.[65]

The problem of the Carter Gate area remained unresolved and there seemed to be no consensus of opinion among the council members on what to do with it as to its future.[66] Eventually the land was given over for business premises, but the building did not materialise and according to a local newspaper, the reluctance of the council to make an initial decision had already cost them thousands of pounds due to the construction of housing costs being much higher than a decade earlier.[67]

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64. *ARMOH*, 1912, Appendix A. The figures for 1910 indicate a slight improvement due to the weather, which had been wet and cold during the summer when enteric fever and diarrhoea were at their most dangerous. Similarly 1911 had a hot, dry summer, pushing up the figures for diseases.
65. PRO HLG 1/1434 Local Authority correspondence
66. *Nottingham Daily Guardian*, 5 April 1923, p.6, col.1 and 10 April 1923, p.2, col.1
67. *Nottingham Daily Guardian*, 11 April 1923, p.3, col.3

During the years 1900-1914, the city did very little to improve the housing conditions.[68] The 1911 census returns show that there were just over 59,000 dwellings for 60,000 families, an absolute shortfall in housing for the lower-income group.[69] The war halted further progress and between 1916 and 1919, only 47 new houses were built but 246 houses were demolished.[70] The remainder of the properties continued to deteriorate and the seriousness of the situation was later revealed in July 1919 when the corporation unsuccessfully applied for an extension of the city boundaries because of the state poor sanitary and housing arrangements.[71] The Housing, Town and Planning Act of 1919 provided a mandatory obligation for housing authorities to construct dwellings and let them at current working-class rents with any shortfall being met by the government, so in effect the state had finally taken responsibility for the provision of working-class housing.

At the end of the war in September 1918, the Housing Committee sparked off a row which had serious repercussions for the city issuing instructions that all unfit houses should be demolished.[72] After some conflict with Westminster and intervention by Christopher Addison (Minister for Reconstruction, later to be known as Minister of Health and responsible for the Housing and Town Planning Act 1919), the Housing Committee's recommendations were put into motion.[73]

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68. Ferguson 'Working-class Housing', p.168
69. Thomas, 'Greater Nottingham', p. 75
70. *ARMOH*,1916-1928
71. Beckett, *Centenary*, p. 437
72. See Housing Committee Report, *Reports presented to the Council, 1917-18.* Report of Sub-Committee who visited, Birkenhead, Liverpool, Glasgow, Edinburgh, Newcastle and London unanimously were of the opinion that the most effective method of dealing with insanitary dwellings was to implement Part I 1890 Act and to clear whole areas. In connection with erection of dwellings for dispossessed tenants the sub-committee concluded that it was not the duty, nor was it desirable, for the local authority to provide homes except for the poorest members
73. Nick Hayes, 'The government of the city, 1900-1974: The consensus ethos in local politics', in Beckett, ed. *Centenary,* p. 465.

Prior to the implementation of this Act, Nottingham Corporation had been forced into a complete U-turn on policy by Dr Addison. In September 1919 they rescinded schemes which had previously decided on the provision of new homes on the grounds that the income from rents would not cover the costs of building and as there was nothing under (at that time) government arrangements to safeguard the council from heavy losses. Two weeks later, having received a letter from Dr Addison, they decided to proceed with a plan to build 175 houses at a cost of £160,000, with plans for a further 400 dwellings.[74] The council's housing policy up to this period appears to have been without direction and the over-riding consideration was cost. The human cost, however, appears not to have entered into the equation until the rejection of a boundary extension[75]

The official survey into the housing situation in Nottingham in October 1919 showed that the city required over 3,700 new homes. Their solution for the post-war housing shortage was to build plenty of good homes[76] with strict guidelines on the construction of the new properties; a limit of 12 houses to an acre, their design was to be pleasing and attention should be paid to open spaces and playgrounds. Attention was paid to the interior detail; the living rooms had been designed to obtain the maximum sunlight, they were fitted with a combined cooking range and open fire, thus reducing fuel needed and ensuring a regular supply of hot water. The window in the scullery overlooked the garden thus enabling mothers to supervise their children. There was to be an interior bathroom with a water closet wherever possible. Compared to their previous accommodation, described by residents as having no inside toilet or

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74. *The Times*, 23 September 1919 p.7, col.d and 7 October 1919 p.4, col.g
75. *Nottingham Daily Guardian*, 9 April 1923, p.2, col.4. The council's lack of consideration on housing is summed up by their consideration to build cottages between High Pavement and the railway viaduct near to rat-infected factories.
76. T C Howitt, *A Review of the progress of the housing schemes in Nottingham under the various Housing and Town-Planning Acts,* (Nottingham, 1928), introduction by Dr R Unwin.

bathroom, no gas or lighting and the only means of cooking on the open fire, these proposed houses must have seemed like a dream.[77]

From the middle of the 1920s the council attempted to rectify years of inconsistencies by enforcing large slum clearance schemes. The first major scheme was the improvement of the Red Lion Street area whereby the infamous Marsh area was redeveloped. To portray this in graphical terms, there were 3,814 dwellings housing 12,416 people. In 1922 the number of people per acre for this district was 293.3 and the majority of houses were let at rents between 4s and 5s. Figure 3-4 gives an indication of the health of most of the inhabitants could have expected. In each case, the death-rate in Red Lion Street is considerably higher than for the whole of Nottingham.[78] The interesting point is that over half of the resident male population, lived more than a mile away from their work so we can suggest that it was the cheap housing which kept them in this district. The tenants were re-housed in houses on Colwick Road, Cardale Road and Fraser Road.

Table 3-4: Death rates comparing Red Lion Street and Nottingham, 1909-22

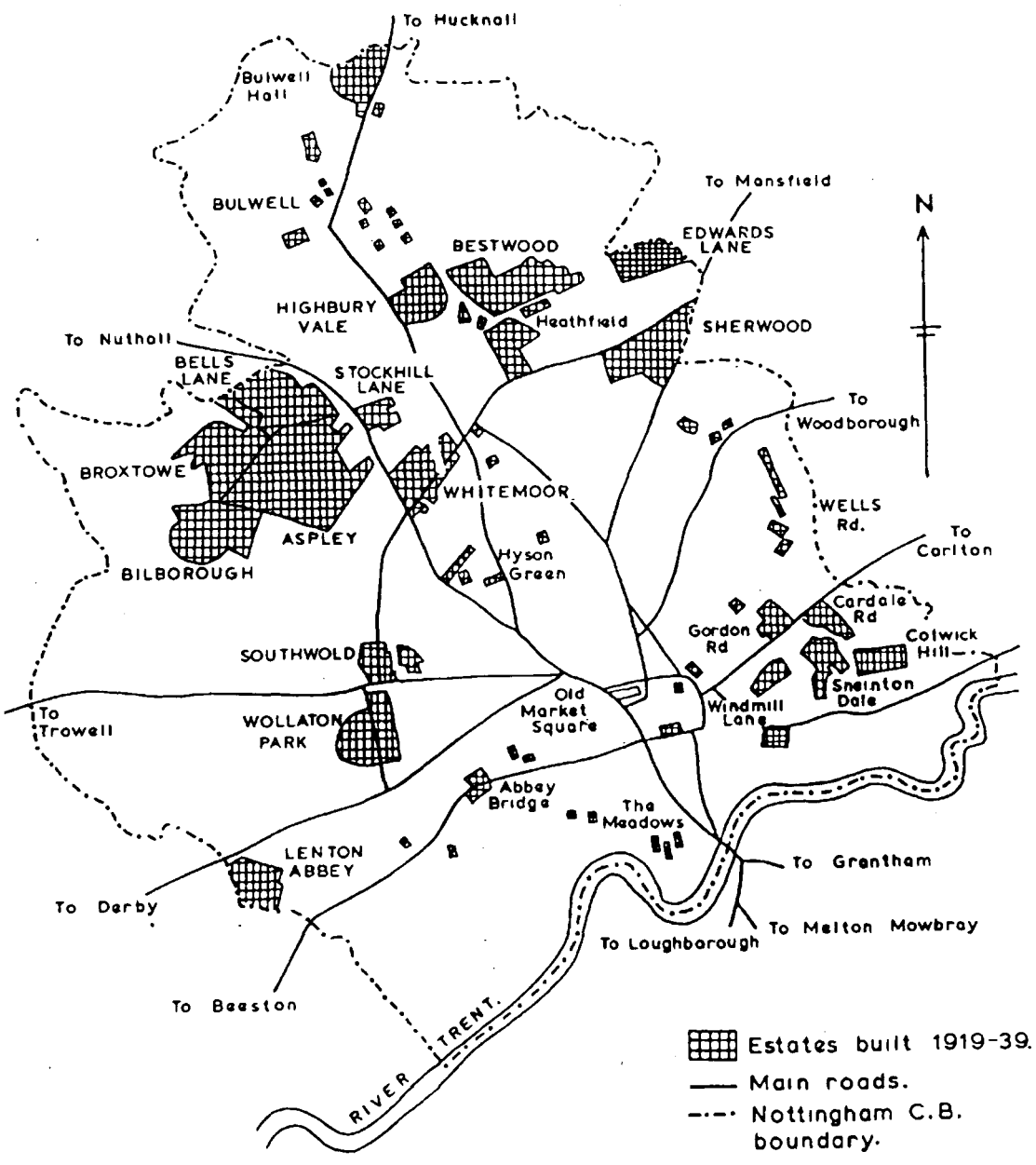
	1909		1919		1920		1921		1922	
	RLS	**City**	**RLS**	**City**	**RLS**	**City**	**RLS**	**City**	**RLS**	**City**
Death rate	51.7	-	34.3	14.5	35	13	46.7	13.1	49.5	12.3
Death rate under 1yr	442	150	170	106	179	96	170	102	179	83
Death rate from phthisis	8.04	1.67	6.29	1.22	1.37	-	2.74	-	4.01	-

Source: CATC/10/121/6/3 and Annual Health Reports

77. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), A23, female born 1908; A63, male born 1919 living in Sneinton; A81 female born 1906 living in Narrow marsh and A88, female born 1907
78. NAO CATC/10/121/6/3, Compulsory Purchase Orders on Housing

Other areas which came under the improvement schemes were the Barker Gate area, St James Street, Meadow Platts, Coalpit Lane and Sussex Street.[79] Between 1923 and 1928, over 7,000 houses were built by the corporation. Between the two wars. Nottingham Council built over 17,000 new houses; 65.5 per cent of the total number of houses built. Suburban estates were built at Sherwood, Wollaton Park, Bulwell Hall Park, as well as Colwick Road and Cardale Road, these new spacious houses were in stark contrast to the slum housing of the inner-city (see Figure 3-3).

Figure 3-3: Nottingham Council Housing Estates 1919-1939

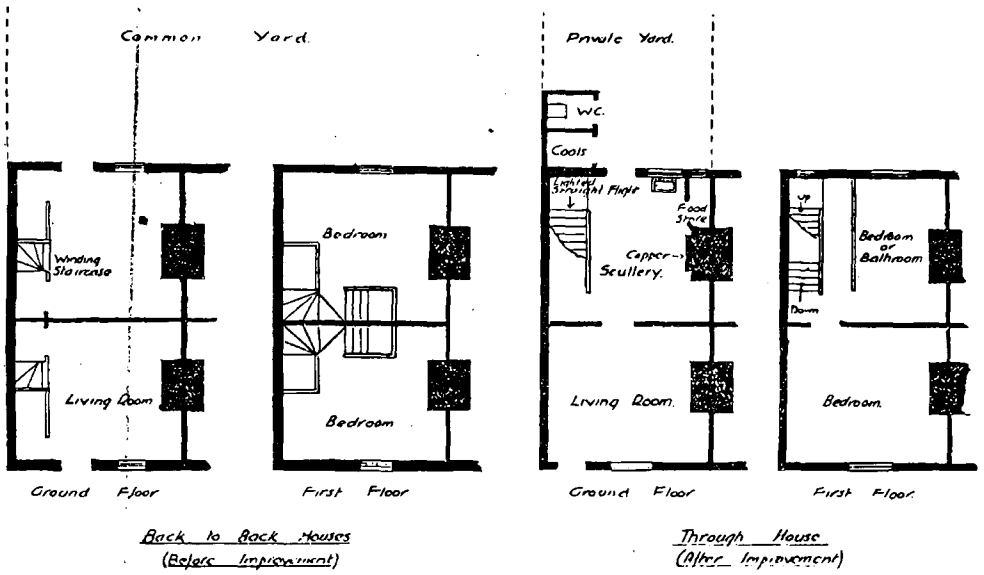


Source: CJ Thomas, 'Geographical Aspects of the Growth of the Residential Area of Greater Nottingham in the 20th Century. I.' (University of Nottingham, PhD thesis, 1968)

79. See NAO CATC 10/121/1/48/1; CATC 10/121/2/13/21 and CATC 10/121/4/7/2

There was no immediate transformation because there remained twenty nine declared Clearance Areas, affecting over 2,000 houses and nearly 8,000 people.[80] By 1932 there were still over 4,000 back-to-back houses, about half the number of those in 1920 and it became obvious that the number of houses to be built was going to exceed the available space so a limited extension was granted with most of the territory in the Basford Rural District area.[81] Another method was to demolish one out of every two back-to-backs and convert them into through houses, see Figure 3-4. The problem with this was that there was nothing in the Housing Act of 1930 to provide alternative accommodation for those displaced thus intensifying the housing shortage.

Figure 3-4: Back-to-back house improvement, before and after



Source: ARMOH, 1932

Nevertheless, there was a certain air of self-congratulation contained in the various reports on slum clearance in the city, none more so than Mr E Phillips, housing architect to the corporation addressing a meeting of the Toc H group who commented, 'Nottingham had been fully alive to its obligations as regard slum clearance.'[82] Similarly in the 1935 Annual Health Report it was noted that when sanitary history was written, "the unprecedented scale of slum clearance would be regarded as the most notable achievement."[83] A survey of overcrowding in the city between 1935-36

80. PRO MH 66/785, public health survey 1932, p. 13
81. Beckett, *Centenary,* p. 440 and *The Times*, 21 March 1932 p.4, col.
82. *Nottingham Daily Guardian*, 16 February 1935 p.7, col.5
83. *ARMOH*, 1935

showed that of the 66,835 working-class houses which were examined 1,015 (1.5 per cent) were found to be overcrowded. Estimates from the Clearance areas showed that the average number of people in a house was 3.6, but as we have seen, averages very often covered up wide variations. The standard of overcrowding as laid down in the 1935 Act was low since the living room was taken into account and many of the working-classes used this room for sleeping purposes.[84] Between 1936 and 1937 the number of dwellings that were overcrowded fell by about one-third from 1,187 to 717.[85]

Much of the evidence on housing in Nottingham does not sit easily with Szreter's view of housing. He considered it reasonable to assume that from the 1890s the very worst housing tended to be knocked down and replaced with housing with basic utilities, that there was a stricter enforcement of minimal standards, and the provision of municipal housing was made financially feasible.[86] It would seem that many of his observations based on the metropolitan area of London cannot be applied to Nottingham and this draws attention to the problem of generalisations.

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84. NAO CATC/10/121/1/48/9, slum clearance areas
85. *ARMOH*, 1937
86. Szreter, 'Social intervention', pp. 28-29

Rents

During his term of office, Boobbyer saw the housing problem as a much wider issue. In 1906 he considered the underlying problems of housing in terms of the tenants because matters such as wages, drink and recreation all played a role in the treatment of housing. The main factor governing a person's housing would be their economic situation, specifically how much rent they could afford to pay and how much they were prepared to pay. Although it was possible to buy houses through the building societies, for the majority of poorly paid workers, this was not an option until well into the twentieth century.[87]

It would seem that from the family income, the amount spent on food took the greatest portion with rent taking second place. Oddy suggests that 58 per cent of their income was spent on food.[88] It has been estimated that in London, 85 per cent of the working-classes paid one-fifth of their income in rent and that about half paid between a quarter and a half on rent.[89] However, rent was one of the 'fixed' expenses whereas, money spent on food and clothing could be adjusted. Maybe this accounts for the frequent change of address for many of the poor.[90]

It is difficult to give accurate figures for rents paid as they varied widely according to the type of accommodation. The available evidence indicates that rents in *general* showed an upward trend throughout the nineteenth and early twentieth century.[91] The rents charged in Nottingham show they remained fairly static at between 1s 9d and 2s 2d, depending on the size of house, until 1850[92] but evidence

87. Burnett, *Housing*, p.147
88. D J Oddy, 'Working-Class Diets in Late Nineteenth-Century Britain', *Economic History Review,* 2nd Series, 23 (1970), p. 322
89. A S Wohl, 'The Housing of the Working-Classes in London 1815-1914', and John Butt, 'Working-Class Housing in Glasgow, 1851-1914', in Chapman, ed. *A Symposium*, (Newton Abbot, 1971), pp. 37 and 81
90. Wohl, in Chapman, ed. *A Symposium*, p. 26
91. Gauldie, *Cruel habitations,* p. 157
92. Chapman, ed. *A Symposium*, p. 155

from the later periods illustrate that rents varied quite substantially between 2s and 7s.[93] The Board of Trade enquires of 1908 and 1912, suggest that the rent for a three-roomed tenement varied between 3s 6d and 4s 6d although the old back-to-backs were rented at a lower figure because of their inferiority.[94] The very poor could afford only the lowest rent so the decaying houses would continue to be inhabited by these people and reforms in housing conditions would remain difficult to implement.[95] For instance, in his study of Narrow Marsh, E P Bailey, lists most of the occupations as mainly involved in service industries and were non-skilled.[96]

Common lodging houses

These houses came under the legislation of the Common Lodging Houses Act 1853, which gave the local authority the powers to inspect them for cleanliness and overcrowding. Until this time they had been little more than 'brothels and harbours for criminals' and even later they tended to attract the very poor, the destitute, and criminals. Common lodging houses were arguably as bad, if not worse, than the other slum dwellings abundant in the urban areas. They were intended to provide temporary accommodation for migratory or transient single workers but very often whole families took up residence in them, some times for short periods but some times permanently, contrary to the legislation.[97]

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93. *See ARMOH,* 1873, p.29. Best, "Minnitt's Folly", Part III, p.19 and Part IV, p. 16. *ARMOH,* 1882, pp. 36 and 48-9, Seaton quotes 18s being an average wage for a labourer. *ARMOH,* 1906, Boobbyer comments 'labourers with families cannot live decently on wages of £1 a week...' p. 100
94. *Report of an enquiry by the Board of Trade into working-class rents, housing and retail prices together with standard rates of wages of United Kingdom*, Cd.3864, 1908, pp. 352-3 and *Report of an enquiry by the Board of Trade into working-class rents and retail prices in the United Kingdom*, Cd6955, 1912, p. 214
95. Gauldie, *Cruel habitations*, pp. 158-161
96. E Peter Bailey, "Leenside: the Churches and a Nineteenth Century Slum", in *Transactions of the Thoroton Society,* 100 (1996), p. 145
97. Gauldie, *Cruel habitations,* p. 242

Plate 3-1: Common lodging house Pear Street, Red Lion Street area

The problem in trying to improve common lodging houses was that it removed the profitability of such accommodation. Local authorities were not prepared to build premises which would make a loss. Nottingham had two model lodging houses in 1885, one in Narrow Marsh (Popham Street) and the other in Millstone Lane. Due to their success, the Health Committee had decided to establish a third, in Parliament Street, for females only. Table 3-5 indicates that there was a demand for this type of accommodation. There were a total of 65 houses, 54 of which were licensed providing accommodation for 940 lodgers. Many of these were in the Narrow Marsh area, which had a history of bad housing and sanitary conditions. In 1899 there were 58 registered

houses [98] and by 1908 there were still 45 houses in Narrow Marsh. Boobbyer was actively discouraging any more to be opened, claiming, "The wanderers who constitute the bulk of their guests do less harm when scattered than when herded together....especially when the area is so morally insalubrious."[99] The houses were regarded as little better than brothels because much of the accommodation was double-bedded and very often in dormitories, providing little privacy or decency.[100] A female resident remembered seeing prostitutes, rogues and vagabonds entering and leaving the lodging houses and at the age of seventeen she recollected that the one toilet in the yard was also used by men from the lodging house nearby.[101]

The problem of the common lodging houses was that they were usually situated in poor areas and were often the foci of the various contagious diseases such as typhus, tuberculosis and smallpox. The only specific reference in Nottingham to a link between common lodging houses and disease, was in 1893 when they were kept under scrutiny because of a smallpox epidemic. However, as many of the lodging houses were in the poor areas, where it has already been shown that there was a greater concentration of the diseases, it is not surprising that they were regarded with some caution by the health authorities.

The lodging houses, both corporation and privately owned, were well patronised and during the influx of men working on the new railway in 1894, they became particularly popular. Improvements were made in the accommodation offered, through the efforts of the Health Department.[102]

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98. 46 in Narrow Marsh, 5 Millstone Lane, 3 Canal Street and Leenside, 2 Main Street in Bulwell, 1 Portland Place in Coalpit Lane, and 1 in Water Street.
99. *ARMOH, 1908*
100. *ARMOH, 1915*
101. Nottingham Oral History, (NLSL), A81, female born 1906
102. *ARMOH,* 1897

Table 3-5: Number of residents of the three Nottingham Model Lodging Houses, 1889-1900

Year	Mill Stone Lane	Popham Street	Parliament Street
1889	3,696	5,172	3,804
1890	3,803	5,810	4,107
1891	3,786	6,442	4,720
1892	4,276	7,708	5,110
1893	3,769	7,272	5,387
1894	Closed in 1893	7,813	5,555
1895	-	7,492	5,663
1897	-	6,568	6,374
1899	-	6,792	7,053
1900	-	7,965	Closed in 1900

Source: Annual Health Reports 1889-1900

In 1905 it was claimed that there had been a slow improvement, but these dwellings were a continuous cause of irritation to the Medical Officer. Even the corporation houses were becoming uninhabitable. The new women's house on North Church Street (a replacement for Parliament Street), was, by 1906, defective and was not offering the type of accommodation intended. In 1915 there were still 36 private houses in Red Lion Street many of which survived the war and even as late as 1929 provided accommodation for 853; 793 for men and 52 for women and 8 double beds. When Red Lion Street was being demolished, it was proposed that the lodgers should be re-housed in a corporation lodging house to be built on Gedling Street/Colwick Street, with accommodation for 280.[103] 'Sneinton House' was finally opened in 1932 and the remaining Red Lion Street lodging houses disappeared by 1938. In the meantime other cheap accommodation had to be sought and by the thirties two new types of accommodation were available.

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103. NAO CATC/10/121/6/5. The cost of the accommodation was 1s per night

In 1910 a new bye-law was created to counter-attack the increasing number of private houses which were being transformed into houses let-in lodgings, similar to present-day bed-sits. This was made possible by two factors, the first being the process that Ferguson referred to as 'percolation', that is, many of the better-off families were moving out of the city to the quieter suburbs which were developing around the city thus leaving large houses able to accommodate several families, the second being that there was not sufficient affordable houses being provided by the municipality. Concern was expressed that these houses should be kept under constant attention and inspected, registered and equipped with sufficient sanitary facilities for the number of occupiers and by doing this they would not be turned into slums.[104] In reality they did become bad housing and it was reported in 1931 with 149 registered, that many were in such a poor condition that they were to be demolished. Nevertheless, there was a constant demand for this type of accommodation since there were always well over one hundred registered, some people preferring this shared sort of housing despite the rents being higher than other working-class housing.

A potentially more worrying threat was revealed in October 1929, when a survey revealed 93 tents and vans which were being used as permanent habitations. They had no sanitary conveniences, water supply or drainage and their numbers were increasing. Steps were taken over the next few years to clear away some of the colonies but Banks noted that they were used more during housing shortages. Much to the annoyance of the Health Department this type of accommodation remained in Nottingham for several years.

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104. *ARMOH*, 1910 and Ferguson 'Working-class housing', p. 201

Conclusion

Housing problems in Nottingham began at the beginning of the nineteenth century, with an increase in population, compounded by the fact that the old town was unable to develop naturally, due to a large area surrounding the town being unavailable for development and the existing crowded accommodation was in a state of deterioration.

This chapter has shown that until the 1880s the council had been prepared to build some housing but the first few projects were unsuccessful both in monetary terms and construction. The Albert and Victoria dwellings proved to be expensive and did not help those for whom they were intended; the Parliament Street clearance was a failure in financial terms for the council; the clearance of housing in the Charlotte Street area was little better and there was a shortfall between the number of houses demolished and their replacements. After 1890 the council withdrew most of its involvement with housing, the main concern was to renovate rather than replace.

The only project the council involved itself with before the First World War, was the Carter Gate/Manvers Street area. Once again, there was indecision and uncertainty, ensuring that the scheme was a failure in terms of a financial return and for those living in the area. The area was finally cleared after the war and replaced by commercial property.

The acute housing shortage after the war brought little movement from the council until it was faced with the full weight of central government's intervention over the sanitary and housing arrangements in the town. The situation had been allowed to deteriorate for so long that it would take many years to detect any noticeable difference in the old town. In 1919 the Report of the Housing Committee designated the greater part of the city as an unhealthy area the largest of these areas being Red Lion Street - Broad Marsh and Narrow Marsh areas and Meadow Platts,

Lower Parliament Street. One by one these areas were demolished and the inhabitants re-housed on the new estates. The new suburban municipal estates which developed around the town after 1920 relieved some of the pressure on housing but even in 1935, there still remained many insanitary and unfit houses in the city. The moving force was that central government was prepared to offer subsidies to local authorities for building new housing and on this we cannot fault the council. This assistance seems to have given the necessary impetus to the council in order to forge ahead with an adventurous scheme using green field sites on the outskirts of Nottingham.

In the introduction it was pointed out that the condition of housing in Nottingham until the 1920s is not a new subject for investigation but it was necessary to highlight factors such as the local authorities attitude towards housing, the location of poor quality of housing, overcrowding and rental charges to be able to see in later chapters if and how housing was influential on health. This information will be analysed against the location of high mortality in Nottingham because it is believed there is a correlation between the two. However, the 'housing problem' failed to be resolved until the 1920s-30s, whereas death rates from some diseases were beginning to fall by 1910. This suggests that there were other factors which may have been more influential in reducing deaths. The material also challenges Szreter's suggestion that housing gradually began to improve in quality and quantity, diminishing his argument about the importance of 'social intervention'.

Chapter 4

Food Availability and Adulteration

Introduction

By the end of the nineteenth century there was an noticeable improvement in the general standard of working-class diets. There was greater variety and better quality food available to the housewife[1] due to the falling prices of basic food stuffs[2] suggesting that people could eat better and experience an improved diet. In order to assess whether or not the people of Nottingham were able to experience a better diet, it is necessary to examine the food that was on offer and what was actually eaten. The first part is simpler to investigate because there is evidence available on the supply of food to the town during the period. The second part is more complex since the absence of evidence about diet means that we have to rely on the few testimonies that have survived and use them in conjunction with diets from the various institutions (including the workhouse and prison) to understand what people ate.

For families food was a priority, second only in importance to the rent. Whereas the cost of rent was fixed, the amount spent on food per week varied according to income.[3] The problem of feeding a family was compounded by the extensive adulteration of food which took place and the poor quality of certain foods, such as bread, milk and meat. Prior to 1850, the food supply to English towns was limited in range. It was therefore, unlikely that there were any improvements in diet particularly when the evidence is coupled with life expectancy and real wage data. As transportation links improved, a greater variety of food came onto the market. Staple

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1. A S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), p. 50 states that the cost of the average national food basket fell by 30 per cent between 1877 and 1889
2. John Burnett, *Plenty and Want. A social history of diet in England from 1815 to the present day*, Third Edition (1989), p.176
3. See also Chapter 3 *Housing and Health 1850-1939*, sub-section Rents

foods such as bread lost its monopoly amongst the working-class as ready prepared foods such as fish and chips, hot pies, vegetables and potatoes became more popular. The introduction of imports of cheap foreign of meat and cereals, in the 1880s saw a drop in prices and this, in turn, opened up the market for the availability of a broader range of foodstuffs to the average working-class family.[4] In other words, a combination of rising wages and falling food prices, at the end of the nineteenth century, provided the resources to permit an improvement in diet. McKeown argued that 'we owe the reduction of mortality and growth of population basically to improved nutrition which resulted from the increase in food'.[5]

In the course of the nineteenth century, foodstuffs were increasingly subjected to public and official scrutiny, principally because of the widespread adulteration of many foods. The Sale of Food and Drugs (Adulteration) Act 1875 was the major piece of legislation to have an impact on the quality of the urban food supply. The law stipulated that no-one should sell any food which was not as it should be and that it was no longer necessary to prove that the adulteration was harmful.

As well as adulteration, public health officials were concerned with the transmission of disease through foodstuffs [6] meat and milk being the two major areas of concern. The standard of hygiene under which meat was processed and sold left much to be desired. Milk was another major source of disease implicated in the spread of tuberculosis, typhoid, scarlet fever and diphtheria since the 1870s. By the 1900s milk was more widely used for feeding infants and its deadly potential was becoming appreciated.[7]

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4. Brinley Thomas, 'Food supply in the United Kingdom during the Industrial Revolution', in J Mokyr, ed., *The economics of the Industrial Revolution* (Totowa, 1984), pp. 137-50. J Mokyr, 'Is there still life in the pessimist case? Consumption during the Industrial Revolution, 1780-1850', *Journal of Economic History*, 48 (1988), 69-92
5. Thomas McKeown, *The modern rise of population* (1976), p. 159
6. Burnett, *Plenty and Want* and Wohl, *Endangered lives*
7. See P J Atkins, 'White Poison? The social consequences of milk consumption, 1850-1930', *Social History of Medicine*, 5, 2 (1992), p. 217 and pp. 219-227

While we cannot directly link the improvements in health to calorific intake, and while no attempt is made in what follows to look into the more scientific aspects associated with nutritional issues such as protein, fat, vitamins and minerals, there is the suggestion that improved diets may partially explain the falling death rate at the end of the nineteenth century. So what has been constructed is an empirical view of the increased food availability and from this we can later *suggest* that diets improved and so make assumptions about health.

This chapter deals specifically with food supply whereas the next chapter examines the type of food eaten and how it was made to work on the body and the nutritional effect on the body. The chapter will also examine the adulteration of food and the problems experienced in Nottingham by the continuing use of private slaughterhouses and the failure to construct a council abattoir.

Food supply and availability

The working-classes left little evidence of what they ate and as Dr Thomas Oliver said in 1895, 'great difficulty is experienced in obtaining reliable facts; working men do not readily impart the information asked for.'[8] The evidence on consumption is therefore thin and if we cannot quantify what individuals ate, we have to look to the supply of food to interpret their eating habits.

The varieties and quantities of food on sale in Nottingham changed and increased between 1850-1939. These changes were the result of concurrent developments which were stimulated by three factors. Firstly, the rise in population which put the existing system of food distribution under strain evidenced from bread and corn shortages. Secondly, the rising purchasing power of the working class as a group. The evidence available suggests that there was a real growth in food

8. Dr Thomas Oliver, 'The diet of toil', *The Lancet*, (29 June, 1895), p. 1630

consumption, [9] particularly in the first period of the study, together with the increasing mobility of the working-classes and the availability of the traditional markets. Thirdly, technological improvements in food production and transportation, the spread of rail transport and the replacement of sail by steam increased the range of fresh produce available.

Outlets

By the middle of the nineteenth century there were three main types of retail outlets supplying town dwellers. The first was the weekly or daily market which was particularly popular among the working-class because the price of food was usually at a more competitive price than in fixed shops and the customer could examine her purchases. The markets were also places of socialising and would stay open until around midnight on a Saturday evening, pay-day for many workers.[10] Nottingham had an important Saturday market where goods of every description, including poultry were offered for sale.[11]

The second type of retail outlet was the many hawkers, pedlars and street sellers who sold their wares around the town and were popular with the working-classes. They sold hot pies, fried fish and potatoes for immediate consumption, which was a significant consideration at the end of the nineteenth century and early twentieth century when many houses had no cooking facilities.[12]

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9. Mokyr, "Is there still life in the Pessimistic case?", p. 71 and P Deane, *The First Industrial Revolution,* Second Edition (Cambridge, 1979), pp. 268-9
10. NAO CACM/57, Minutes of Market and Fairs Committee, 2 January 1877 and PRO MH12/9510, Poor Law Union correspondence 1900. By this time the food had gone past its best and was easier to dispose of under cover of darkness. Nottingham *Daily Express,* 9 November 1899 letter from H Talbot 46 St Ann's Well road, complaining about the council wanting to close the markets at 11 p.m.
11. Roy A Church, *Economic and social change in a midland town. Victorian Nottingham 1815-1900* (1966), p.7
12. See NAO CACM/57 Markets and Fairs Committee, 5 May 1881, 12 March 1884, 10 June 1885, 9 January 1889, for details of such sellers. Peter Atkins, 'The production and marketing of fruit and vegetables, 1850-1950', in D J Oddy and D S Miller, eds. *Diet and health in modern Britain* (Beckenham, 1985), p. 119

The third outlet, was the fixed premise, the shop, which was becoming increasingly more important as the nineteenth century progressed. Originally these had been units of single occupation, from which the butcher, the baker and the grocer-chandler had worked. The baker would make and sell his bread from one building, likewise the butcher who purchased cattle on the hoof, slaughtered them and sold the meat from the same premises. The grocer would purchase commodities from a wide range of suppliers and would process them into marketable goods, for example, by blending tea and grinding coffee. Grocers in Basford and Bulwell acquired their supplies from districts as far afield as Bristol and Hull.[13] The working-class tended to avoid these shops and in particular, the grocer, principally because the prices charged were out of their reach, and the goods sold were not in small enough quantities to suit their pockets. They were also afraid of being snared into credit and finding themselves forced into acquiring underweight and overpriced food. There was also a strong possibility that the food would be adulterated; as Wohl has noted, 'much of the food consumed by the working class family was contaminated and positively detrimental to health'.[14]

In time, the poorer urban housewife began to look for somewhere within easy reach where she could purchase a wide range of food products and allied household goods and the response to this need saw the shop evolve from the traditional flour and provision dealer into a more general store.[15] By the 1880s shops were not restricted to the middle-class areas of the town and in 1883 there were seventeen shops recorded in the Narrow Marsh, one of the poorest areas in the town, with a further ten in the immediate locality. In 1923 a deputation of shopkeepers from the Red Lion Street area, met with the council to discuss the improvement scheme for that area. Among those

13. J B Jeffreys, *Retail trading in Britain 1850-1950* (Cambridge, 1954), pp 1-2. NAO DD 708/1-170, receipts circa 1863, pertaining to Higginbottom, grocer, Bulwell. NAO DD 708/171-365, receipts 1877-1887, pertaining to John Coupe grocer/tea and provision dealer, Basford
14. Wohl, *Endangered lives*, p. 52
15. Janet Blackman, 'The development of the retail grocery trade in the nineteenth century', *Business History,* 9-10 (1967-8), pp. 110-17

listed with addresses on Red Lion Street were 5 grocer/provision merchants; one greengrocer/grocer; one grocer/beer-off; three fish and chip shops; an eating house; a second-hand clothes dealer and a boot repairer.[16] This is not a comprehensive list by any means but it gives an indication as to the number of shops to be found in one small section of the city. The growth of these shops can be seen by the increasing list of entries in the Trade Directories.

Bread

We have already mentioned the fixed premises of the baker and for a vast number of the lower income families, this was their staple food. Of all available foods, bread held a unique position in the diet of the British people; it was the single most important element in the diet of 80-90 per cent of the population.[17] The importance of bread can be illustrated by mentioning some references to Nottingham. At the beginning of the century there had been bread riots in Nottingham occasioned by the difficulty in obtaining flour; [18] bread had been used as wages for the framework knitters during their times of hardship and to pay men from the workhouse sent to work on the Forest.[19] In 1855 Matthew Herbert Lancashire, writing from Cecil County, America, to his family in Nottingham wrote of the rich foods he now enjoyed compared to the 'average fare of bread' to which he had been accustomed.[20] By the end of the nineteenth century there were over 200 baker/flour sellers recorded, an increase of more than fifty per cent from the beginning of the century. This increase was brought about by a sharp rise in population, and a decline in domestic baking, an

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16. For instance in Kelly's Trade Directories for 1853 and 1895 in the Red Lion Street/Broad Marsh area also, there were 27 and 26 shopkeepers recorded. NAO CATC/10/121/6/3, Red Lion Street Improvement scheme
17. E J T Collins, 'Dietary change and cereal consumption in Britain in the nineteenth century', *Agricultural History Review,* 23 (1975), pp. 97-115
18. See NAO CA/3990/1-27 and NAO DDTS/6.4.5 Diary of John Barnes
19. *Royal Commission to enquire into the condition of the Framework knitters,* PP. 1845,641 (XV), pp. 74, 129 and 175, evidence of Josiah Hunt, John Stacey and Dr Shaw. PRO MH 12/9455 Poor Law Union correspondence February 1864
20. NAO DD/419/1, letter from M H Lancashire

inevitable consequence of more women going out to work. According to Dr Edward Smith in a report drawn up in 1864, of the communities he examined, three-quarters of them ate bread which had been baked other than at home.[21]

Towards the end of the century, there was a change from brown to white bread. This was partly to do with 'fashion' but more to do with the introduction of roller-milling flour to remove the husks. During the enquiry into Physical Deterioration questions were asked as to the nutritional value of white over brown bread and the reply was that it was just as nutritious.[22] In fact white bread would probably have been better for those who were malnourished because it would not contain the amount of fibre as brown bread.[23]

Bread continued to play an important role in the diet of the poorer families; it was relatively cheap and filling and could be flavoured with jam or dripping; it could be eaten in the hand and out of the house so that for many children it became their staple diet.[24] During the First World War wheaten flour was debased through a variety of methods in order to stretch limited supplies. Nottingham introduced a local Flour and Bread Order in 1917 and the Mayor's Food Committee decided to make it compulsory for bakers to use potatoes in the making of bread at a ratio of 14lbs of raw potato to 280lbs flour.[25] The importance of bread at this time is best illustrated by the government drawing back from enforcing bread rationing in 1917.[26] During the inter-

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21. *ARMOHPC*, Sixth Report, PP.1864, 3416 (XXVIII), appendix 6, report by Dr Edward Smith, on the food of the poor labouring classes in England, p. 216. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), 44, Nottingham male resident born 1913 remembers taking the dough from home and putting in the baker's oven after he had finished baking
22. *Report of the Inter-Departmental Enquiry into Physical Deterioration*, PP.1904, (XXXII), Section VI, p. 37. Mark Weatherall, "Bread and newspapers: The making of 'a revolution in the science of food'" in H Kamminga and Andrew Cunningham, eds. *The science and culture of nutrition, 1840-1940* (Amsterdam, 1995), pp.179-213
23. Nottingham Oral History, (NLSL), A44, male, born 1913 who stated very few people ate brown bread
24. Nottingham Oral History, A44, resident born 1913
25. NAO CACM/35/1, Local Food Control Commission Minutes

war period bread was still used as an easy means to satisfy hunger. According to Oddy, although consumption had decreased, bread still remained significant in the diet.[27] By 1934 Burnett estimated that twice the amount of fruit was eaten compared to bread, indicating an improvement in diet.[28]

Meat

The butcher was the other tradesman who had fixed premises. Meat was readily available in Nottingham, but for many of the working-class, it played a minor role in their diet for much of the period under review. Nottingham was never classed as a major cattle market town, unlike Leicester, Derby or Northampton. There had been a regular cattle market held in the Great Market Place until 1808 but by 1859 it was thought that a specific area should be set aside for the market together with slaughterhouses near to the railway station at Eastcroft. The role of the railway in the development of the livestock trade is complex and there was no overnight transformation of the supply to markets.[29]

The evidence of an increase in meat consumption is more tangential than specific and is based on a variety of evidence. Directory evidence suggests that in the course of the nineteenth century there was an increase in the number of meat sellers from fixed shops and a greater differentiation between them.[30] By the turn of the century there were over 300 butchers /meat salesman recorded including those who

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26. Mikulas Teich, 'Science and Food during the Great War: Britain and Germany', in Kamminga and Cunningham, eds. *Science and Culture*, p. 214 and J Burnett, *Plenty and Want,* p. 246
27. D J Oddy, 'The urban diet Britain 1860-1950', Seminar at Centre for Urban History, Leicester, Friday 14 May (1999)
28. Burnett, *Plenty and Want,* p. 266
29. G E Mingay, ed. *The agrarian history of England and Wales. 1750-1850, Volume 6* (Cambridge, 1989), p. 272. G R Hawke, *Railways and economic growth in England and Wales 1840-1870* (Oxford, 1970), Chapter 5. R Perren, *The Meat Trade in Britain 1840-1914* (1978), Chapter 2
30. In *Wright's Directory* for 1864, 26 bacon and cheese factors were recorded. It may be that as time progressed, the sale of such items came under the general umbrella of shopkeeper/ grocer

occupied the 'Shambles', an increase of over 100 since the middle of the previous century. According to Church most of the meat sold in the town was supplied from an area within a 20 mile radius of Nottingham and although some foreign cattle reached the market via Liverpool and Hull, four-fifths of the town's nineteenth century cattle supply was driven to the market on the hoof.[31] This was not a satisfactory method as in the case of some fat pigs being driven from Little Ponton to Grantham market who after two and a half miles were said to be exhausted and near to death.[32]

The market prices and availability of meat fluctuated.[33] Duncan has suggested that the low price of imported frozen meat at the end of the nineteenth century was largely responsible for the increased consumption of meat by the poorer workers.[34] Most of the meat which they consumed would probably have been the cheaper imported meat; several residents recall eating mutton or breast of lamb at the beginning of the twentieth century.[35] According to a contemporary commentator, the proportion of foreign meat to total supply had increased from 20 per cent in 1877 to 25 per cent in 1886. Because meat was becoming cheaper, it was believed that the amount eaten per head per annum had increased from 103 lbs. to 109 lbs. in the same period of time.[36] This reliance on foreign meat was a benefit in times of hardship as in 1908, when the Prime Minister received a deputation worried about the seriously depleted meat supply and consequent high prices. Fortunately for the working-classes, the

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31. Church, *Victorian Nottingham,* p. 239
32. *Nottingham Evening Post,* 13 July 1908, p.3, col.2
33. *Report of an enquiry by the Board of Trade into working class rents, housing and retail prices together with the standard rates of wage in UK,* PP.1908, Cd3864 (CVIII) Nottingham
34. R Duncan, 'The demand for frozen beef in the United Kingdom, 1880-1940', in *Journal of Agricultural Economics,* 12 (1956-7), p. 84. *Annual Report of the Registrar-General,* sixty-first report, PP.1899, C9417 (XVI), p. cxxx
35. Nottingham Oral History, (NLSL), A13, male born 1921; A23, female born 1908 and female born 1922, who recalled buying on Saturday night because there was no refrigeration
36. William Bear, 'Our meat supply', *The Quarterly Review*, 165 (July and October, 1887), p. 42

rising costs of home-killed meat did not affect them because they consumed the foreign imported meat.[37]

Some live animals were being transported but initially, the majority of imported meat was made up of salted and canned meat, the latter variety being usually consumed by the poor and this resulted in a general prejudice developing towards imported meat. This bias continued when frozen meat came onto the market, because of the widespread practice among retailers of deliberately selling at a higher price, the best imported meat as English or Scottish and the inferior refrigerated product being sold as foreign imports.[38] A resident of the Sneinton area recollects being able to buy legs and shoulders of meat for 6d, "all American stuff, all frozen."[39] By the end of the First World War, however, the prejudice was fading, partly due to better supplies and partly owing to the war time allocation of meat and offal; all classes had to share this variety of meat. The butchers having created prejudice against imported meat, then realised that they could make a reasonable profit from it and exercised their considerable influence over consumer demand in its favour![40]

After the war, with the exception of the late 1920s and early 1930s when low wool prices cheapened mutton and lamb, the United Kingdom consumed as much beef and veal as it did mutton, lamb and pork combined. Home production of beef was inadequate and so imported beef became a necessity, but a change towards chilled rather than frozen meat was becoming evident. The excellent quality of South American chilled beef made it very popular and only the very poor working-class continued to buy frozen meat. During the twenties, a public demand for smaller, leaner joints could only be provided from the grazing lands of Argentina. This was partly to

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37. See Bear 'Meat supply', p. 55. *Nottingham Evening Post,* 12 June 1908, p.8, col.4 *Nottingham Guardian,* 16 July 1908 p.6, col.4 and 18 July 1908, p.7, col.3
38. Duncan, 'Demand for frozen beef', p. 83. NAO CACM/35/2 14 February 1919 which suggests that some butchers were not taking their fair share
39. Nottingham Oral History, (NLSL), A 98 resident of Sneinton, born 1897
40. Duncan, 'Demand for frozen beef', p. 84

do with fashion and slimmer figures and a more health conscious population averse to eating fatty, heavy meat of the nineteenth century type.[41] As late as 1935 the poorer classes were still consuming almost exclusively imported meat, chilled rather than frozen out of preference.[42]

Whereas the latter years of the nineteenth-century and the early part of the twentieth century saw an increase in consumption of meat linked to a general rise in living standards, the inter-war years do not show clear evidence that consumption of meat rose or fell with income but it might be suggested that for part of this period when there was wide-scale unemployment, meat would have been an expensive item and consumption of it would have been curtailed, possibly changing from meat to the cheaper offal.[43] Oddy's figures show a substantial rise in the consumption of meat towards the end of the nineteenth century but from 1900 until 1935 the weekly consumption remained static.[44]

Pork was perhaps the largest quantity of meat consumed by the poor until about 1914, the reason for this being the abundant supply of pigs within towns. They were tolerated because they provided a cheap source of meat and the manure. The close proximity of pigs to dwellings caused great problems for the health authorities and it took many years for old habits to be changed. Much of the pork consumed by the family would have been sausages, polonies, savaloys or brawn - all tasty and easy or ready prepared. Pork pies also provided a hot and appetising meal from a small quantity of meat. Regional variations would determine the way meat was presented. Although small joints and lean meat were unacceptable fat meat was acknowledged to be as good, but lean bacon was described as, 'the most wasteful thing a family can

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41. *ibid.* pp. 85-7
42. *ibid.* p. 84
43. See Betty McNamee, 'Trends in meat consumption' in T C Barker, J C McKenzie and J Yudkin, eds. *Our changing fare* (1966) and Forrest Capie, 'The demand for meat in England and Wales between the two world wars', in Oddy and Miller, eds. *Diet and Health*
44. Oddy, 'Urban Diets', 14 May 1999

use.' Bacon had always enjoyed a special place among the lower income groups. The predominant price of bacon in 1905 was between 7d and 9d per lb. Bacon kept well, an important fact considering the lack of storage facilities and it was usually very fatty and flavoursome, both of which complemented the rather bland and monotonous remainder of the diet. Perhaps this indicates why it was still purchased by the poorer classes, although considerably more expensive than some fresh meat. American and Irish bacon were cheaper than British bacon.[45]

During the First World War, the shortage of hams, bacon and lard in Nottingham became so worrying that a letter was received by the Town Clerk from the Nottingham Wholesale and Provisions Association suggesting that if stocks were not released then there was a serious likelihood of a famine.[46] This was an over-exaggeration, but nevertheless in 1918, a bid was made to overcome the shortage through rationing bacon and pork and making the shops in the city open at 9 am to avoid queues forming.[47]

Poultry and game were an alternative to meat and made up a considerable percentage of the ordinary meat diet.[48] The presence of a poultry market in Nottingham on Wednesdays and Fridays suggests that chickens were on sale, likewise the consumption of eggs in diets, but there are no means of estimating the quantities.[49] Rabbits were another source of meat and were regularly sold in butchers shops and markets. Belgium was a source of skinned rabbits, known as 'Ostend cat', but this supply was seriously restricted during the war resulting in the shortage of rabbits on sale in Nottingham.[50]

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45. R Perren, *The meat trade in Britain1840-1914,* (1978), p. 71. Wohl, *Endangered lives*, p. 50
46. NAO CACM/35/1, Local Food Control Committee, 26 October 1917
47. NAO CACM/35/1, Mayor's Food Committee, 1 February 1918 and 27 March 1918
48. *ARMOHLGB,* Fifteenth Report, PP.1886,C4844-I (XXXI), Appendix B, No. 2
49. Bear, 'Meat supply', p. 58
50. ibid. and NAO CACM/35/1 25 January 1918

Fish

Burnett refers to the rising level of fish consumption and its connection with the standard of living debate, the increased demand no doubt due to the better transport. Nottingham's geographical location at the centre of England made it peculiarly remote and until the 1840s fresh seafish would have been transported by boat along the River Trent but the advent of railways transformed existing supply routes. The increased traffic in fish in the 1880s can be illustrated by the employment of a Fish cash collector, a Fish Porter and a Fish foreman, at the Midland Railway Station.[51] By the 1890's the number of fishmongers recorded in the Nottingham directories had increased by 50 per cent to 56 and by 1936 there were over 100 fishmongers listed in the town.[52] The delivery of fish to Nottingham was not without its problems, the main one being the practice of restricting supply in order to raise prices and resulting in large amounts of fish being destroyed.[53]

Part of the increase in fish consumption was no doubt linked to the partiality of the working class to fish and chips. The 'marriage' of these two is tangled but from the 1870s the combination produced a growing industry nation-wide including Nottingham.[54] Twenty two shops selling fish and chips were recorded in 1883, but by 1905 there were one hundred and thirty. The frying of fish in fat or oil camouflages any decay and a good deal of fried fish sold came from fishmonger's end-of-the-day stocks.[55] Fish and chip stalls were an alternative to the hot pie stalls, both of which were heavily criticised in the enquiry into Physical Deterioration. At least two of those

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51. PRO RAIL 491/1007, register of staff at Nottingham and Beeston Railway Stations
52. *Wright's Trade Directory,* 1854, 1898-9, 1907-8 and *Kelly's Trade Directory*, 1936
53. *ARMOH,* particularly 1884 and 1893. When fish was plentiful it was often taken to Derby, Birmingham and Nottingham was indifferently supplied, to keep the prices artificially high
54. John Walton, 'Fish and Chips and the British working-classes 1870-1930', *Journal of Social History*, 23 (1989-90), 243-66. NAO CACM/57/7, 11 March 1908 The Markets and Fairs Committee refused a request for an additional fried fish stall. No reason was given.
55. W H Chaloner, 'Trends in fish consumption', in Barker ed. *Our Changing Fare*, p. 109

giving evidence cited fried fish stalls as being injurious to children, particularly when the fish was fried in 'unwholesome cotton seed oil'.[56]

Plate 4-1: Nottingham fish and chip shop, c. 1910

A variety of fish was caught around the coast of Britain but some were more 'fashionable' than others. Prices varied considerably, with cod at 6d per pound, turbot about 1s 2d per pound and herrings 20 for 1s. Before the First World war a shilling box of shrimps, rabbits, herrings could be purchased from Palmer's fish shop on Southwell Road.[57] Herrings had always been a good source of nutrition, although those which had been pickled or salted were not always palatable.[58] By the late nineteenth century the condition of the fish reaching Nottingham came under close scrutiny and anyone responsible for supplying unsound fish was prosecuted.[59]

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56. *Physical Deterioration*, PP.1904, CD2210 (XXXII), evidence of Dr Alfred Eichholz, HMI of Schools Q.437 and Mrs Bostock, Health Visitor, Q.7476
57. *Nottingham Evening Post,* 1 January 1908, p.7, col.5 and 6 May 1908, p.9, col.2 Nottingham Oral History, (NLSL) A98, resident born 1897
58. PRO MAF 12/1/S100.
59. *ARMOH*, 1882; NAO CACM/45/121 Health Committee Minute Book No 12, 25 March 1982 and CACM/57/7 Markets and Fairs Committee, 25 July 1907

Shellfish provided another source of protein for the working family. Oysters and mussels were the main crustacean eaten in Nottingham and there are existing records of oysters being sold both in the market and by dealers in the town.[60] Mussels were imported from Castlemaine and Conway in Ireland and were implicated on several occasions during outbreaks of typhoid fever in Nottingham.[61]

Milk

Milk had always been included in the diet of families to a greater or lesser degree but the poor condition of the fresh milk had been a continual health risk. For many of the less well-off buying 'fresh' milk was a luxury, for them the nearest they came to milk was either 'old' milk or condensed - both of which were low in nutrition and high in health hazards. The rise in liquid milk consumption towards the end of the nineteenth century was made possible by an increase in dairy herds. The more appealing and generally more lucrative dairy farming had taken over from arable farming. Corn crops were still grown in the county but dairying was expanding around Nottingham and the Trent Valley. John Hemsley of Hall Farm, Shelton had already turned to more profitable dairy farming and by the turn of the century dairy farmers were leading a recovery with a profitable market for liquid milk in Nottingham and the colliery districts.[62]

The sale of liquid milk had hitherto been restricted by transport facilities. Until the railways, ten miles was probably the uppermost limit to the distance milk could be transported by road.[63] Milk was brought to Nottingham from West Bridgford and

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60. See *Wright's Trade Directories,* 1871, 1883 1889 and 1905. *Nottingham Evening Post*, 4 January 1908 p.7, col.5 - oysters were fetching 8d a dozen
61. *ARMOHLGB,* Thirty-ninth Report, PP.1910, Cd5313 (XXXIX), supplement continuing a report on shellfish other than oysters in relation to disease, pp. 22 and 72
62. Philip Lyth, *A history of Nottinghamshire farming*, (Newark, 1989), p. 43 and P. Lyth, 'Nottinghamshire farming 1850-1950', in *Aspects of Nottinghamshire agricultural history*, (Ely, 1989), pp. 9-10
63. Janet M Blackman, 'Changing market methods and food consumption', in Barker eds. *Our Changing Fare,* p. 41

Wollaton and even as far afield as Lowdham, a distance of 7 miles, along 'good roads'.[64] The West Bridgford grasslands were 'excellent pasturage and chiefly devoted to the production of milk for the consumption of Nottingham', as was the area around Holme Pierrepont.[65] For nearly 50 years, John Barwick, of West Bridgford and George Copley of Upper Broughton had supplied milk to Nottingham.[66] The borough of Nottingham had its own dairy herds which were kept for most part of the year in cowsheds scattered around the town. Documents for the middle of the nineteenth century show that town dairies were an established business. On the 17 August 1847, 86 cowkeepers and 248 cows were registered in the parish of St Mary.[67] In the latter years of the century there were still a considerable number of registered cowsheds in the town, many of which would probably only have housed two or three cows.[68] Undoubtedly the strict hygiene conditions which were imposed on the production and sale of milk in the twentieth century discouraged many from pursuing this occupation and by the 1920s the numbers of cows in the town had been reduced.

The introduction of the carriage of milk by railways did not always alleviate the problems of transportation, the movement of the train having an effect similar to that of a walking horse and milk was still prone to souring. Cooling and filling the cans to the brim helped but, until the use of refrigeration on the trains, milk was still arriving in a poor condition.[69] However far more milk was being brought into the towns by the railways and in 1879 a 'milk porter' was employed at Nottingham railway station.[70] In an effort to overcome the problems of poor milk arriving in Nottingham, George Robertson's contract to supply milk to three milk sellers in the

64. PRO IR/18 7464, Tithe Commutation Records, 1838
65. PRO IR/18 7433 and 7347, Tithe Commutation Records, 1838
66. NAO DDTB/4.1.33.li and Lyth, 'Aspects' p. 10
67. NAO DDTB/4.1.27. Records for July 1844 show 164 milking cows were pastured in the Meadows with a further 158 on the sand and clay fields.
68. *ARMOH* 1882, 1903 and 1914. In 1882 181 cowsheds and 237 milkshops recorded. In 1914 there were 41 cowkeepers, 86 cowsheds with a total of 543 cows.
69. *Daily Guardian*, 10 May 1919, p.8, col.3. Mr Buckley of the National Clean Milk Association complained that there were no refrigerated vans used on the railways.
70. PRO RAIL 49/1/1007, register of staff at Nottingham and Beeston Railway stations

town between 1880 and 1883 stipulated that during the week two daily deliveries were to be made one to arrive at 8 am and the other to leave Widmerpool station at 4.16 p.m.[71]

A product which became very popular with the working classes at the turn of the century was ice-cream, brought to Nottingham by Italians as early as 1890. Regrettably it was responsible for the dissemination of diarrhoea and tuberculosis due to the unhygienic way it was produced and sold and consequently Boobbyer demanded statutory control over its manufacture and sale which was achieved by the 1905 Nottingham Corporation Act.[72]

Butter, cheese and margarine

Prior to the impact of the railways, much of the milk produced would have been converted into butter or cheese before being sent for sale but the increasing demand for liquid milk meant butter production in England began to take second place. However, consumption of butter was outstripping production and therefore large supplies were imported from Ireland, as well as France, Denmark and Holland. According to a contemporary writer there had been an increase in butter imports over the past 36 years mainly because of the uncertain quality of British butter.[73] Nevertheless, there was still a market for local butter manufacture and such butter always had a qualitative edge on imports. In the 1870s farmers from Kingston on Soar and Costock were supplying butter, cheese and eggs to the Nottingham market.[74]

For many of the working class butter was too expensive and they preferred lard, especially if it was home-made, to supplement their fat intake. By the end of the

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71. NAO DDPF/157
72. Nottingham Oral History, (NLSL), A48, male born 1884. *ARMOH*, 1902
73. William Bear, 'Dairy produce', *Quarterly Review*, 165, (July and August, 1887), p. 304
74. R Owen Wood, 'Farming in East Leake - a continuous story from 5000 BC', in Lyth, 'Aspects', p. 76

nineteenth century an alternative fat had been found in the form of oleomargarine but it lacked the taste of butter and was not an attractive product. Although the low price encouraged its purchase it took time to develop a more appealing homogenous product both in taste and texture. The Margarine Act 1887 clearly defined butter and margarine and made the mixing of them illegal. However, further stringent measures on its production were rejected on the grounds that margarine was consumed by a great number of poorer people.[75] During World War One, the rationing of butter and margarine was said to have caused cravings in many people to the point where the local authority was concerned that serious unrest may have resulted.[76] The addition of vitamins A and D in the 1920s produced a palatable product with additional nutrition, but it was still a commodity open to adulteration and its production and sale were kept under strict control by the Food and Drugs Act (Adulteration) Act 1928, with wholesale companies needing licences for its sale.[77]

The other by-product of milk was cheese, consumed by many of the working classes. Cheese-making was a much more traditional production than that of butter. The farms which produced cheese tended to be further away from towns and had been obliged to make a product which would keep and travel well. Nottingham was in a good position both for the production of Stilton and Leicester cheeses and the construction of a railway between Nottingham and Melton Mowbray meant that cheese could be brought in on a regular basis.[78] Farmers from Upper Broughton and

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75. PRO MAF53/1 reports of Deputation's, Vol. I 1890-98, Milk and Margarine 2 March 1892, reply from Rt. Hon. Herbert Gardner MP
76. NAO CA/CM/35/1 Local Food Control Committee 25 October 1917, 18 January 1918 and 7 June 1918. *ibid.* 11 January 1917 and 18 January 1918 and J C Drummond and A Wilbraham, *The Englishman's food. A history of five centuries of English diet*, new revised edition (1958), p. 438. NAO CACM/ 35/1, Mayor's Food Committee, January 1918, 14 March 1918, 2 and 16 August 1918. One section which especially felt rationing was the Jewish community
77. NAO CATC/10/120/9, sale of margarine
78. Midland Railway Company placed a private bill for the construction of a line between Nottingham and Saxby near Melton Mowbray in November 1871; work was completed in 1879. C. Aldsworth, *Nottingham and Melton Railway 1872-1900* (Keyworh, 1990)

the Vale of Belvoir produced cheese for the Nottingham market as well as London.[79] The price of cheese had not increased in nearly a century; in 1829 it cost 8d per pound, in 1897 it varied between 11d per pound in April and 1s1d per pound in September and in 1919 a pound was priced between 1s 5d and 2s.[80]

Cheese appears to have been one of the least adulterated foods on the market, but the standard of production was criticised for failing to improve cheese and keep in line with foreign cheeses. Consequently Stilton, which had been poorly imitated in areas away from the Vale of Belvoir and the resulting bad reputation had increased the sale of imported Gorgonzola. Cheese, like many other agricultural products, went through a period of turmoil between the wars owing to competition from Canada, Australia and Argentina. The price of cheese dropped but the standard was not always of a high quality, causing one commentator to proclaim that it would be difficult to differentiate between chalk and cheese.[81]

Vegetables and fruit

The size of demand and market proximity provided by the growing urbanisation of towns was the stimulus to the economic success in vegetable growing. As the towns expanded or contracted, so growers altered the crops and livestock they produced and also the intensity of their production.[82] There were only two greengrocers listed in the 1834 Trade Directory but by the end of the century over 300 were recorded. Diametrically, the growth of urban sprawl may have been a retrograde move on market gardening. R S Sayers suggests that much of the land suitable for

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79. Lyth, 'Farming 1850-1950' in 'Aspects', p. 10
80. *Nottingham Review,* 12 June 1829; NAO DD/555/1, Elizabeth Doubleday, Cheese Book, 1897; NAO CACM/35/2, food supplies 4 July 1919
81. Bear, 'Dairy produce', p. 312; Burnett, *Plenty and Want*, p. 256 and *Nottingham Evening Post*, 6 May 1930, p.7, col.4
82. Mark Overton and Bruce M S Campbell, 'Six centuries of Norfolk farming - a new perspective on medieval and early modern agriculture c.1250-c.1850', *Past and Present,* 141 (November, 1993) pp. 103-4; Roy Battersby, 'The development of market gardening in England and Wales, 1850-1914', (University of London, PhD thesis, 1960), p. 18

market gardening lay close to the towns and as house building encroached it then became more difficult for vegetables to be grown and the growth of conurbations had a detrimental effect on the Englishman's diet because it limited the availability of growing land.[83]

Church says that farmers and market gardeners sent produce into Nottingham on carriers carts from the east Midlands villages to be sold in the markets.[84] The reports from the Markets and Fairs Committee show that there was an increase in the quantity of fruit and vegetables being brought into Nottingham.[85] The area around Nottingham had always produced vegetables such as turnips, potatoes peas and beans as well as fruit for consumption by the townspeople.[86] According to Battersby, the development of market gardening would not have flourished without the input of enormous quantities of night soil, soot and stable manure which were readily available in Nottingham.[87]

Allotment gardens had always been an important asset to many working-class families and provided an extra source of food. One resident recollected gathering celery from the allotment.[88] An improvement scheme in 1897, joining Parliament Street with St Ann's Well Road, meant the re-housing of a considerable number of people on a site between Coppice Road and Hunger Hill, for many years being the site of over 5,000 allotments worked by a large number of the working-class.[89] However, Beckett suggests that as many of the allotments had been outside of the boundaries of the old town, they were not lost to accommodate housing.[90]

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83. R S Sayers, *A history of economic change in England 1880-1939* (1973), p. 10
84. Church, *Victorian Nottingham,* p. 238
85. NAO CACM/57/7 Market and Fairs Committee, 26 March 1868 and 13 October 1880
86. See NAO DDTB/4.1.25-6, PRO IR/187535 and 7465 and PRO MAF 68/1052 and 1622
87. Battersby 'Market gardening' pp. 21 and 23
88. Nottingham Oral History, (NLSL), A65, female born 1897
89. Lewis F Wilson, 'The State and the Housing', p. 230
90. J V Beckett, ed. *A Centenary history of Nottingham,* (Manchester, 1997), p. 399

The most important vegetable to the working man was the potato. The industrial worker was essentially a bread eater, first and last, he never abandoned bread, merely eating less in times of hardship and when the worker's budget was at its lowest the potato then became the staff of life, thus acquiring its nickname 'root of misery'. By encouraging workers to grow potatoes the authorities believed the working-classes would move away from eating bread which would help them exist in times of hardship without recourse to raising wage levels. According to a local newspaper, growing potatoes as a form of relaxation and not necessity was acceptable.[91] Potatoes were always associated with misery and hardship and were regarded with scepticism by many of the working-class mostly because of their association with the Irish and pigs. Eventually, potatoes began to take a more prominent role in the diet of the population and as 'convenience' foods began to develop towards the latter part of the nineteenth century, chip-potato stalls were found increasingly in Nottingham.[92]

Evidence on the availability of fruit, according to Angeleki Torode is scarce until after the 1870s when the urban working classes began to consume more fruit.[93] There are possibly two reasons for the lack of consumption; firstly, only English fruits would have been affordable and then only when in season; secondly, there was a certain prejudice against the eating of fruit, especially by children, as it was believed to be dangerous.[94] The Nottingham Evening Post carried a warning article against the consumption of summer fruits because of the dangers of putrefaction and disease. [95] By the time fruit gained popularity, other social and economic changes had been taking place. Higher real incomes, together with declining food prices, had already started to have an affect in other areas of food consumption so that more money was being spent

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91. *Nottingham Review*, 3 December 1841
92. NAO CACM/57/7, Markets and Fairs Reports, 12 March 1884, 9 January 1889, 21 June 1905 and 14 February 1906
93. Torode, 'Trends in fruit consumption', in Barker, ed. *Our Changing Fare* p. 115
94. Drummond and Wilbraham, *Englishman's food*, p. 249
95. *Nottingham Evening Post,* 4 July 1893, p.3, col.1

on better foods and there was an increasingly larger market for foodstuffs such as fruit. A change in attitude towards fruit was noticeable by the end of the nineteenth century, and, according to Torode, was influenced from abroad, especially France and Italy.[96] All of these factors combined with the new initiatives taken by the local farming community to move away from the traditional arable farms and look towards cattle and dairy farming whilst other food producers in the south and east of England were beginning to experiment with fruit and vegetable growing.

Fresh fruit, especially bush fruits, are highly perishable and so it was necessary for quick, cheap and efficient transport to take the fruit from the farm to the markets. Although the advent of railways helped, a bottle-neck occurred in its distribution, because much of the fruit was being taken to London and then conveyed around the country. The over-production of fruit, combined with this bottle-neck created a problem of fruit going to waste. This problem was alleviated by the jam industry; the abolition of the sugar tax in 1874 was a major contributor to the growth of the jam industry as between 50 and 60 per cent of the weight of jam is made up of sugar. Jam became an important part of the diet for the working class and was used as a substitute for the more expensive butter and it could transform a slice of bread into a sugary delicacy. Thus the jam industry stimulated fruit growing but a jar of jam was sensitive to price changes particularly if sugar was rationed.[97] During World War One, jam was rationed towards the end of the hostilities although syrup and honey were not. There were occasions when it was impossible to supply jam and to circumvent this problem, sugar beet was used in jam making instead of cane sugar.[98] Other methods of preserving fruit were advocated and demonstrated by women's groups in the late 1930s particularly with the outbreak of war imminent.[99]

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96. Torode, 'Trends in fruit consumption', pp. 116-9
97. *Nottingham Evening Post*, 8 May 1908 p.5, col.4 and p.6, col.1. Nottingham Oral History, (NLSL), A45, female born 1901, recalled sugar rationing in First World War
98. NAO CA/CM/Distress/20/1 6 May 1918 and NAO CA/CM/35/2 4 October 1918
99. NAO CACM/Misc/12, preservation of fruit 1939

For many people the Saturday market, particularly late in the evening, was the place to buy cheap fruit and vegetables. The enquiry into Physical Deterioration led Dr Alfred Eichholz, a schools inspector, to note that the poor diet of many children was supplemented by collecting rotten fruit from beneath the market barrows and Anna Davin suggested that children supplemented their diet by working and being paid in 'speckled' fruit and ageing vegetables. One Nottingham resident recollected buying slightly bruised fruit from the market.[100] By the first decade of the twentieth century there was a range of foreign and local fruits, including bananas and oranges, available for those who could afford them. The markets were offering apples at between 1d and 3d a pound, bananas at 2 for 1d and pears 2d a pound.[101]

The Board of Trade decision to restrict the importation of fruit in 1916 brought a response from nutritionist such as Hopkins and Wood, who clearly saw that to dispense with such accessory foods as fresh fruit and salad foods, was foolhardy.[102] Nonetheless, Nottingham saw rationing and shortages of fruit and vegetables during the war.[103] The bulky vegetables, such as turnips, onions, and cabbage were available but more difficult to obtain unless self-grown. Potatoes were unrationed but applications had to be approved in order to sell them and requests from those who lived in thickly-populated working-class areas were granted on the grounds that potatoes provided calories *and* vitamins.

After the war, the food produced by British farmers had undergone a change and many of the staple foods, nearly half our total food supplies[104] were now

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100. *Physical Deterioration*, PP.1904,Cd2210 (XXXII), Dr A Eicholz, Inspector of schools Q. 437 and Anna Davin, *Growing up poor: home, school and street life. London, 1870-1914* (1996) p. 168. Nottingham Oral History, (NLSL), A66, female born 1922; NAO CACM/ 57 Markets and Fairs Committee Reports, 11 August 1880 handbills were distributed warning of prosecution for selling unsound fruit
101. *Nottingham Evening Post*, 23 September 1904, p.7, col.3 and NAO DD1347/1, 6 December 1903, diary of Mabel Emma Dexter
102. M Teich, 'Science and Food during the Great War:' *Science and Culture*, p. 224
103. NAO CACM/35/1 30 November 1918; 16 August 1918 and NAO CA/CM/35/2 3 January 1919 and 28 February 1919
104. Burnett, *Plenty and Want*, p. 258

imported, leaving the farmers to grow specialised crops. More varieties of food were available and fresh fruit was becoming popular.[105] The range of canned foods increased and included vegetables and fruit. A tin of 'Tarantella' tomatoes cost 4d-[106] a considerable saving on the price of fresh tomatoes, which were unavailable during the winter months. This diversification gave the housewife a far greater choice of products and with growing competition within the retail trade, prices were kept competitive. The late 1920s and 1930s saw the growth of grocery chain stores, such as Home and Colonial and Sainsburys but the local shop became so invaluable and popular with the housewife particularly during the Depression, as they allowed 'tick' for the impoverished shopper.

Plate 4-2: W Armstrong, 70 Sneinton Road (Kelly's directory 1922 and 1925)

105.*Nottingham Evening Post,* Extra, 25 October 1939 p.6, col.3 gives details of fruit prices
106.Nottingham Oral History, (NLSL), A23, female born 1908

Boyd-Orr's survey of 1936 showed that there had been a substantial increase in the consumption of fresh fruit and vegetables since 1928.[107] However, when the estimated consumption per head was examined, it was obvious that for families whose income was below 20s per head per week, in other words about 50 per cent of the population, purchased less than the average per week and this also applied to other areas of food especially those which contained the most nutrition. Such groups consumed more margarine and consequently milk, meat, fish and eggs featured less in their diets, but consumption of condensed milk was greater than fresh milk. The consumption of other staple foods, bread, potatoes, sugar and lard were all very similar.[108]

Adulteration of food

The adulteration of food had persisted throughout the nineteenth century but it is commonly assumed that as urbanisation increased there were extended opportunities for this to take place. Previously it had been on a limited scale, but with the growth of towns and the expansion of road and railway networks, the immature food industry was unable to cope with the considerable problems of handling, transport availability and storage. Prior to 1850 attitudes towards adulteration were very indifferent and it was not a generally held belief that all adulteration was harmful, 'but, on the contrary, constituted improvements which lowered the cost of expensive foods to the poor.'[109] Dr Arthur Hassall's enquiry and report between 1851 and 1854, which were published in the Lancet, highlighted the increasing amount of adulteration which was now taking place. The Select Committee which further investigated Hassall's findings discovered that adulteration was widespread and penetrated every branch of commerce. Within five years the first piece of permissive legislation to tackle adulteration was on the statute book. Nevertheless, the promotion of pure food, the influence of the

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107. John Boyd Orr, *Food, Health and Income: report on a survey of adequacy of diet in relation to income,* Second Edition (1937), p. 24
108. *ibid.* pp 31-35
109. Burnett, *Plenty and Want*, p. 216

co-operative movement[110] and a certain amount of voluntary reform did help the anti-adulteration lobby further along its path. Whilst the politics of *laissez-faire* remained, central government and local authorities could do little to change the habits of a lifetime.

Finally after a decade or so of continuous pressure, the Adulteration of Food, Drink and Drugs Act, 1872 made it illegal to adulterate food or drugs or to add any injurious ingredient. Despite its good intentions it was difficult to administer, its adoption was uneven and although an analyst could be appointed, it did not ensure that action would be taken. The weaknesses of this act were finally remedied by the 1875 Act which confronted many of the previous problems and with the aid of the Local Government Board, it was possible to ensure the appointment of a public analyst.

The Sanitary Committee was conscientious in attempting to improve the food supply. The Nottingham Journal reported that between 1868 and 1869 a large quantity of meat and fish had been found to be bad and all except two samples of bread and flour had been found contaminated with alum. The appointment of an analyst in 1875, was met with enthusiasm within the Health Department and the post continued to be a vital part of the authorities fight against sub-standard food and drink. There is abundant illustrative evidence of food being offered for sale, either bad, stale or adulterated but it is difficult to quantify how much was available.

Bread and flour were consistently adulterated with alum, which whitened the bread. The need for examining bread was illustrated by the following letter in the Daily Guardian complaining about the condition of bread issued to the inmates of the Nottingham Workhouse, the exterior of which appeared to be satisfactory but when pulled apart, was found to be rotten and stinking the responsibility for this being

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110. The first Co-operative shop in Nottingham was opened in Lenton in 1863

directed at the bakers.[111] The amount of adulterated bread varied considerably from year to year. In 1882, 51 samples of bread were submitted for analysis and 11 of these were found to be adulterated to varying degrees. Three years later, of the six samples of bread tested, all were found to be pure. In 1889, ten samples out of 16 were found to be adulterated but the following year all those tested were found to be pure.[112] When roller-milling became more widely used, the addition of alum as a whitener became unnecessary. Not only the addition of impurities affected the condition of bread but the state of many bakeries left much to be desired. Many bakeries were to be found situated underground creating very high temperatures causing the workers to sweat profusely whilst making the bread.[113] Burnett suggests that there was a vast improvement in bread during the last decade of the nineteenth century and judging from the Health Reports for Nottingham, there are few cases of adulteration visible in the twentieth century.

Milk was widely adulterated and the most common form was the addition of water. Although this was easy, profitable and fraudulent it was not dangerous to adults but for children dependent on cow's milk for nourishment it would have weakened its nutritional value thus negating its benefits. There are numerous illustrations of milk adulteration practised in Nottingham.; for example in 1889, 18 per cent of the milk analysed was found to be adulterated, whereas the following year only 11 per cent was found to be impure. The practice of adulterating milk, unlike bread, does not appear to have diminished during the early years of the twentieth century. For example from 1916-1920 there were between 20 and 30 prosecutions per year, whereas after 1920 the number of prosecutions were in single figures. However, variations do occur as and when new legislation came into being as in 1924 with the Milk and Dairies (Amendment) Act, 1922.[114]

111. *Daily Guardian* 19 July 1893
112. *ARMOH,* 1882, 1885, 1889 and 1890. NAO CACM/45/12 18 November 1887
113. NAO CACM/45/12 27 May 1892 and *ARMOH,* 1898, refusing requests for an underground bakery licence on Mozart Street
114. *ARMOH,* 1916-28. *Daily Guardian,* 9 May 1919, p.3 and 15 May 1919 p.3, col.3

It was not just adulteration which caused concern. The condition of the town cowsheds had been a constant source of irritation to the Health Department and as more milk was brought from the country, the condition of these farms was brought into question with claims that much of the milk arriving in towns was already contaminated.[115] Atkins has investigated the problem of milk brought in from the countryside and considered it was the seat of bovine tuberculosis.[116] The other source of contamination was the large number of milk shops and general stores selling milk straight from the unhygienic churn or container.[117]

Blackner's earlier claims on the high standard of meat[118] are not echoed in the reports of the Health Department. Concern had been expressed by the Mayor, John Armitage.[119] as early as 1827 regarding the sale of unsound meat being sold after dark, Perren, in his study of the meat trade, suggests that unsound meat was often traded under cover of the dark.[120] The condition of the animal before slaughter, and the premises and environment of the actual slaughtering were the two key problems. Perren claims that as much as 20 per cent of the meat consumed in the middle of the nineteenth century was considerably diseased.[121] Many pigs in the slaughterhouses, destined to be food themselves, were habitually fed on offal and scavenged on the other diseased organs.[122] In an attempt to sell this contaminated meat, it was often sent to sausage-makers or meat processors to be turned into polonies, sausages, pies or

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115. *Physical Deterioration,* PP.1904, Cd2210 (XXXII), p. 52 and Q. 1247 p. 55 and *Nottingham Evening Post* 4 July 1907, p.5, col.1. *ARMOH*, 1907 and 1911
116. P J Atkins, 'Country cows, urban disease: risk and regulation of bovine tuberculosis in Britain, 1850-1950', paper given at Annual conference of the Society for the Social History of Medicine, Liverpool, September, 1997
117. *ARMOH,* 1911 and 1912. Boobbyer wanted such shops to be refused permission to sell milk
118. John Blackner, *A history of Nottingham* (Nottingham, 1816), p. 61
119. NAO CACM/45/12 Health Committee Minute Book Number 12, 19 October 1888 and 15 February 1889. Seizures of unsound meat had been made after 11 p.m.
120. *NBR* 1June 1827 and Perren, *Meat Trade*, pp. 54-9
121. *ibid.* p. 63
122. *ARMOHPC,* Fifth Report, PP.1862,161 (XXV). Medical Officer's Report pp. 23-4 and Appendix IV, report by Professor Gamgee, pp. 281-2

brawn. In 1890 three people suffered severe diarrhoea from eating polony which was found to be 'offensive and acrid'. Boobbyer commented that the price of this type of food prevented good material being used in its manufacture.[123]

Cattle were particularly affected by tuberculosis and despite the numerous denials by interested parties, such as the Duke of Devonshire,[124] Atkins has suggested that at the beginning of the twentieth century 40 per cent of cattle were infected.[125] The arguments over the numbers of diseased animals continued[126] and the introduction of the Tuberculosis Order, 1909, failed to stop the trade. During the Great War there was a shortage of meat and Table 4-1 indicates that the amount of condemned meat was reduced compared to other years. At the cessation of hostilities, the sudden influx of chilled meat from abroad and the availability of fresh home-killed meat rendered much of the frozen meat which had been kept in storage to be unsaleable and accounted for the rise in condemned meat. Some headway was made as the Health Department gained more staff[127] and by 1937, of the 85,609 animals killed, only 3.29 per cent were found to be affected with tuberculosis and only 1.01 per cent were found to be affected by other diseases.[128]

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123. *ARMOH,* 1890. NAO CACM/45/12, 24 October 1890. *ARMOHLGB,* Seventeenth Report 1888, C5526-I (XLIX), Appendix No.14, reporting that the co-operative shops were guilty of selling contaminated meat and meat products
124. *ARMOH*, 1885. NAO CACM/45/12, 23 November 1888 and 4 January 1889
125. Atkins, 'Country cows, urban disease'
126. *Nottingham Guardian*, 20 July 1908 p.6, col.4 and 24 July 1908 p.3, col.3. Atkins, 'Country cows, urban disease', p.10
127. *Nottingham Evening Post* (Extra), 28 October 1939 p.5, col.3
128. *ARMOH,* 1937

Table 4-1: Amounts of meat destroyed as unfit for human consumption (in stones), 1899-1930

Year	Amount of meat seized in stones
1899	2,482
1890	3,596
1909	10,453
1916	6,927
1919	15,230
1923	18,535
1926	18,535
1928	23,376
1929	22,936
1930	25,000

Source: Annual Health Reports

Even if the slaughtered animals had been of the highest quality, the process of killing them introduced more contamination and until the local authority had sorted out the slaughtering process, there would always be cause for concern.[129] Both Wohl and Scola have commented that a strong Butcher's Association prevented the building of an abattoir in Manchester and it can only be speculative that a similar situation occurred in Nottingham, where the District Butcher's Association was equally forceful and regularly complained about the high-handed attitude of the Health Authority. In the meantime, the borough had to make do with many sub-standard slaughterhouses in terms of both buildings and the method of slaughtering.[130] The outbreak of the First

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129. *ARMOH*, 1873. See Seaton's report on slaughterhouses. *NBR* 7 May 1877. *NB*R 8 February 1878. Philip Boobbyer began his career as Medical Officer, in 1889, by overseeing the closure of the two oldest and most objectionable slaughterhouses on Wheeler Gate and Leenside but he refrained from advocating the building of a public abattoir until 1896. In 1898 there were 156 private slaughterhouses registered with the Health Department and according to Boobbyer, one quarter of those should have been condemned

130. Wohl, *Endangered lives*, p. 84 and R Scola, *Feeding the Victorian City. The food supply of Manchester, 1770-1870* (Manchester, 1992) p. 185. *NBR* 29 June 1899. *ARMOH* 1900 and *Nottingham Evening Post,* 9 April 1908 p.4, col.5

World War ended any ideas of an abattoir being built although the Health Committee had given serious consideration to such a building. At the end of the war the main task for the council was to tackle the housing problem which overshadowed any thoughts of building a new abattoir and some fifteen years after the war, there were still 65 registered private slaughterhouses to be found in the city.

An enquiry in 1932 revealed that only half the meat killed in private slaughterhouses was inspected and Table 4-1 shows that there had been an increase in the amount of meat seized had increased, but whether this was due to a greater amount of bad meat or a more vigilant inspection is speculative. Nonetheless, the provision of a public abattoir was long overdue and yet the council was reluctant to provide a valuable instrument to curb the sale of unsound meat.[131] Regular condemnations and a purge on revoking private slaughterhouse licences failed to remove many of the slaughterhouses.[132] However, by 1937 it was reported that 90 per cent of all meat slaughtered in Nottingham was inspected by the health authorities. A purpose-built abattoir was finally built in 1939.

Other foods, to a greater or lesser degree were open to adulteration. Fish was highly susceptible to deterioration unless kept cool and the introduction of railways had not eradicated the problem, but the development of better markets and the use of ice greatly improved sales of fish. Drinks were another source for adulteration; tea was the regular drink of the poor and a known target for adulteration. The other drink which was consumed by the working man was beer and this was also open to adulteration on a wide scale but, as with the tea, when the very strong ales began to be replaced by lighter ales, it was more difficult to hide any additives and so the practise became less of a problem. There is no evidence to suggest that this type of adulteration was widespread in Nottingham.

131. NAO CATC/10/120/8/1 26 November 1934. NAO CATC/10/120/8/1 7 November 1935; CATC/10/120/8/2 22 February 1939 and 19 June 1939 illustrate the condition of some of the slaughterhouses
132. NAO CATC/10/120/8/1 Slaughterhouses

Conclusion

This chapter has shown that during the nineteenth and twentieth centuries the availability and varieties of food increased and the number of retail food outlets grew. Whilst the market place remained an important part of working class life, there was a growth in the number of fixed shop premises closer to the home, which sold a greater range of foods. Both the quantity and quality were improved through transportation and legislation. For example the consumption of meat increased between 1850-1939, largely due to the importation of frozen and chilled meat from South America and Australia. Fish and fruit consumption, which had been limited until the late nineteenth century, began to be visible in diets of many of the lower waged. This was possible after the introduction of railways which allowed a faster form of transportation for such perishables.

It has also been shown that the introduction of the Food Adulteration Act, 1875, was forcing retailers to improve the food offered for sale. The Medical Officer and Health Department were conscientious in their work and with the introduction of legislation, were able to reduce many of the problems connected with adulteration. A key area which needed to be dealt with was the numerous private slaughterhouses situated within the town. The corporation was reluctant to sanction a public abattoir despite numerous recommendations in its favour, the reasons for this can only be speculative involving a strong lobby from the meat trade. The other serious problem of unclean milk took longer to bring under control, partly because the source of infection was outside the town's jurisdiction and it was only after the government took firm control of the milk industry in the 1930s, in a bid to boost the dairy industry, that a safer milk supply was developed.

The wider range of food products and availability to the working-classes, together with the increasing legislation which enabled the Health Department to make improvements in the condition of food, would have increased the health of the population and reduced the potential of certain diseases which in turn, reduced the number of deaths.

Chapter 5

Food Consumption and Nutrition

Introduction

During the first half of the nineteenth century only minimal interest was taken by the authorities into the quantity of food available to the working-classes. The two enquiries carried out by Charles Booth and Seebohm Rowntree[1] confirmed the belief held by many social investigators, that for many of the working-classes, their wages were insufficient to maintain them in a state of physical efficiency and their monotonous diets were lacking in nutrition. Reports from army recruiting offices during the Boer War campaign indicated that many of the labouring classes were unfit to serve in the armed forces because they lacked physical development, and had poor vision and defective dentition, all of them nutrition-related conditions. Further suggestions by eugenicists that the nation was becoming a race of degenerates prompted the government to take action in 1903 and set up an enquiry.[2]

The subsequent Report of the Inter-Departmental Committee on Physical Deterioration, published in 1904, concluded that there was no evidence of physical deterioration generally but that, for some of the more vulnerable sections of the population, particularly children, there was cause for concern. The report highlighted the issue of inadequate diets, lack of cooking skills among women and girls and ignorance of infant and child feeding practises. The recommendations from the committee led to the provision of food for poor schoolchildren at public expense - the Education (Provision of Meals) Act 1906 - and to the establishment of the School

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1. William Booth, *Life and labour of the people of London*, First Series (1902) and Seebohm B Rowntree, *Poverty. A study of town life* (1902).
2. *Report of the Inter-Departmental Committee on Physical Deterioration,* PP.1904, CD2175 and CD2210 (xxxii). John Burnett, *Plenty and Want. A Social History of diet in England from 1815 to the present day*, Third Edition (1989), p. 243

Medical Service - the Education (Administrative Provisions) Act 1907 which allowed for the medical examination of children, measures which were an important turning point in health care. The emphasis shifted from the *public* to *individual* health provision. The 1904 enquiry did not set out to influence diet directly; rather, by proposing that girls should be educated in domestic science skills, it was hoped that they would become aware of nutritional issues and the skills of motherhood.

It was fortuitous that positive developments were also being achieved in what constituted an *adequate* diet and the need to supplement an *inadequate* diet. With the discovery of vitamins, in 1912, came the recognition that protein, carbohydrates and fats do not in themselves provide all the essentials for an adequate diet. An adequate diet required *quality* as well as *quantity* and it was apparent that much of the poor health, previously believed unrelated to nutrition, was in fact directly linked to poor diets and it was a fact that 'A body made infirm by malnutrition, unsanitary housing and everything else that we summarise under the collective name of social need, more easily falls victim to every disease than a healthy body.'[3]

This chapter begins with a brief discussion of the background to the science of nutrition and the interaction between poverty, disease and nutrition. The limited diets available will be examined together with the diets from institutions such as the workhouse and the prison. These will indicate which foods and, to some degree, the daily amount of food consumed by many of the working-class and this information will give an indication as to the probable nutritional status. The evidence on family diets is limited, but it gives a guide and emphasises the monotonous, starchy foods consumed.

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3. H Albrecht, 'Gewerbehygienne und Arbeiterwohlfahrtsplege', *Bericht uber die Deutsche Allgemeine Ausstellung fur Unfallverhuntung in Berlin 1889,* (Berlin:Heyman), 1890, as quoted in Milles, 'Working capacity and calorie consumption: The history of rational physical economy', in H Kamminga and A Cunningham *The Science and Culture of Nutrition, 1840-1940* (Amsterdam, 1995), p. 80

Where we are in a position to know more about the diet is in relation to school children, after 1908. The chapter considers how the authorities in Nottingham reacted to the education legislation, after 1906, and whether the present-day criticism as to the subsequent provision of meals and milk is applicable to Nottingham. It will be shown that the introduction of school medical examinations revealed a much gloomier picture of health among children than had at first been expected by the local authority. The Depression and its effects on health have been widely debated[4] for some years and its effects in Nottingham is briefly discussed towards the end of the chapter. The final part of this chapter will look at the provision of school milk in Nottingham. From 1907, the Nottingham Education Authority provided meals and in the 1930s, milk was given to those children considered in need of help. It was emphasised that the help given was in consideration of the child's education, and on no account, an admission of the extent of the poverty.

The First World War had an important effect on diet; after the Armistice in 1918, greater emphasis was placed on the newer knowledge of nutrition and on quality of diets rather than quantity. Many of the of the population had sampled 'balanced' diets throughout the war and the newly acquired interest in nutrition increased after 1918 developing into the "Newer Knowledge of Nutrition" movement during the 1920s and 30s. These studies introduced an exclusively nutritional explanation for major public health problems[5] for example rickets and excessive dental decay in schoolchildren.

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4. John Welshman, 'School meals and milk in England and Wales, 1906-45', in *Medical History*, 41 (January, 1997), p. 14 and p. 20; Charles Webster, 'Healthy or Hungry Thirties?', *History Workshop Journal,*13 (Spring, 1982), p. 121; Margaret Mitchell, 'The effects of unemployment on the social conditions of women and children in the 1930s', *History Workshop Journal,* 19 (Spring,1985), p. 113
5. E V McCollum and Nina Simmonds, *The Newer Knowledge of Nutrition*, Fourth Edition, (1929). Medical Research Council, 'Vitamins: a survey of present knowledge', *Medical Research Committee (Special Report Series)*, 167, (1932). Elizabeth Petty, 'The impact of the Newer Knowledge of Nutrition: nutrition, science and nutrition policy 1900-1939', (University of Liverpool, PhD thesis,1994), p. 50

Burnett suggests the average diet of the 1930s was 'better' than ever before and, whilst the dietary standards of a few declined, there is little doubt that for many it rose. However, the independent scientists and the government were constantly at odds with each other over whether the poor working-class were having a nutritional diet especially those receiving public assistance.[6] This controversy is revealed through national averages which concealed enormous variations in mortality and morbidity.[7]

The science and socio-economics of nutrition

The science of nutrition was in its infancy at the end of the nineteenth century and whilst there had been periodic enquiries into the diet of the poorer classes by medical men,[8] there had been no systematic investigation into their nutritional value. The enquiries focused on the amounts of proteins, fats and carbohydrates consumed and the energy derived from them to produce heat, work and muscle repair. Dr Oliver Thomas's enquiry, circa 1889, is particularly useful in this respect.[9] Thomas's paper in the 'The Lancet' draws mainly on the work of German physiologists; Pettenkofer, Voit[10] and Moleschott.

During the nineteenth century scientists began to shape the debates on nutrition but, until the discovery of vitamins, only five parts of food were recognised: proteins, fats and carbohydrates, salt and water.[11] The proteins replaced the 'wear and tear' on

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6. Webster, 'Healthy or Hungry'; Charles Webster, 'Health, welfare and unemployment during the Depression', *Past and Present* 109 (1985), 202-230 and Madelaine Mayhew, 'The 1930s Nutrition Controversy', *Journal of Contemporary History* 23 (1988), 445-464
7. Burnett, *Plenty and Want,* Third Edition Chapter 12
8. See for example, W Nield, 'Comparative Statement of the income and expenditure of certain families of the working class in Manchester and Dunkinfield in the years 1836-1841', *Journal Royal Statistical Society*, iv (1841-2); *ARMOHPC*, Sixth Report, PP. 1864, 3416 (XXVIII), report by Dr Edward Smith on the food of the poorer labouring classes in England'; Dr Thomas Oliver, 'The diet of toil', *The Lancet*, (29 June 1895), 1629-1635
9. Oliver, 'Toil', 1629-1635
10. Carl Voit of Munich established the amount of protein required by an adult male to carry out moderate work was approximately 120 grams per day. This figure has been seriously questioned and reduced by at least half.
11. D F Hollingworth, 'Developments leading to present-day nutritional knowledge', in D J Oddy and D S Miller, eds., *The making of the modern British diet* (1976), p. 190

muscles, whilst the carbohydrates and fats were used for energy. The human body was likened to a machine[12] and emphasis was placed on obtaining the best performance from bulk foods such as carbohydrates, proteins and fats. The original idea was to satisfy the appetite through the intake of enough carbon and nitrogenous elements in the food which underwent metabolism to produce energy in the body. However, no account was taken of either the individual's social and occupational environment or food preferences, methods of preparation, cultural and social needs.[13]

All of this came into line with the socio-political thought of *laissez-faire* of the late nineteenth century with the need to improve the health of the working class without extra cost to the authorities or attracting governmental intervention. These ideas were particularly useful when they were applied to the institutions, such as prisons and workhouses.[14]

Poverty, cultural and educational aspects of food

For many working people in the period low wages, an unhealthy environment and a diet lacking in nutrition was all part of being poor. An inadequate wage made the purchase of a nutritious diet almost impossible and the better-off thought the poor to be their own worst enemy since they did not spend their money wisely on nutritious food. However, poverty is not just about being able to afford tangible goods, it is about having the education and knowledge to use the limited resources available to their greatest effect. All of this is commonplace today,[15] but was not so in the late nineteenth and early twentieth centuries. It was only reluctantly acknowledged by the

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12. Oliver, 'Toil', 1629-30
13. Hilary Land, 'Poverty and Welfare Policies', in *Proceedings of the Nutrition Society*, 33 (1974), p. 39
14. Milles, 'Working capacity,' pp. 82-3
15. See A Dennehy, L Smith and P Harker, *Not to be ignored. Young people, poverty and health* (1997); B Owens, *Out of the frying pan* (1997) and National Food Alliance, *Poverty, health and choice* (1997)

beginning of the second decade of the twentieth century, that poverty was not self-imposed, it happened for a variety of reasons.

The food which people ate was not always about necessity, because cultural and social influences were also involved. Dr H E Magee speaking in 1934 suggested that nutrition was a combination of food supply, its composition, preparation, taste and suitability to people with different physiological and environment conditions.[16] This theme has been taken up by more recent historians, for instance, Derek Oddy in his work on the diets of the working-class suggests that, 'palatability was probably the overwhelming consideration in expenditure on food.'[17] Similarly Ellen Ross's account of motherhood in London during the same period makes the point that eating habits were by no means organised around the rational principle of maximum nutritional value for the minimum outlay. Price, taste and ease of preparation were all taken into consideration.[18] Mushy foods, such as oatmeal and gruel, were not acceptable and had connotations with the workhouse. Cooking utensils were another major obstacle - to grill or fry needed only a fork and little fuel.[19] Maud Pember Reeves' study of East End women in the first decade of the twentieth century revealed that these principles were still adhered to - 'she must cook for her husband food which he likes, rather than food which she may consider of greater scientific value, which he may dislike.'[20] However, contemporary enquiries into the effects of poverty on nutritional status[21] revealed that there was no clear indication that the nutrition was directly associated

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16. Dr H E Magee, *Opening address, Proceedings of the Royal Society of Medicine*, (Epidemiology and State Medicine), 28 (1934-5), p. 713
17. D J Oddy, 'Working-class diets in late nineteenth century Britain', *Economic History Review,* Second Series, 23 (1970), p. 322
18. Ellen Ross, *Love and Toil: Motherhood in outcast London, 1870-1918* (Oxford, 1993), p. 31
19. *ibid.* p. 49 and Robert Roberts, *The Classic Slum* (Manchester, 1971), p. 84, see chapter on housing and the lack of facilities.
20. Maud Pember Reeves, *Roundabout a Pound a Week* (1914), p. 57
21. Dr N Paton and Leonard Findlay, 'Poverty Nutrition and Growth. Studies in child life in cities and rural districts of Scotland', *Medical Research Council, (Special Report Series)*, 101, (1923) and R Titmuss, *Birth, poverty and wealth. A study of infant mortality* (1943)

with income. Many other factors had a bearing on the nutritional status of a family e.g. housing, the mother's skills, the general environment.

Throughout the nineteenth century, there had been criticism of the mother's ignorance in the field of domesticity. There were plenty of critics who complained that she did not feed her family correctly, she did not spend enough time and effort on the preparation of meals and that she was a poor manager of money. This was a complacent opinion but, as we have seen, trying to raise a family on around £1.0s.0d a week in overcrowded homes with little or no facilities, it was hardly surprising that these women gave in and became 'convenience' shoppers, using tinned or pre-cooked food. There were women, however, who managed to bring up large families, reasonably successfully, on little money, so we must conclude that poverty was not the sole reason for the ill-health among the poor.[22]

Although the lack of education for girls in the domestic sphere was known for many years, the Inter-departmental Committee reported that, if family health standards were to be improved, then domestic education for working-girls could be a long-term solution to the nutritional problems of the poor. Dr Robert Jones, giving evidence commented, "The main point lies in education, especially for women, who should be taught how to choose and cook proper food.".[23] Several other witnesses giving evidence to the committee, observed that the problem was not so much that of wilful neglect but of ignorance or lack of education.[24] Mothers were willing to learn but it was so much easier and cheaper to buy a can than to cook and it was agreed that the

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22. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), A33. D Smith *Nutrition in Britain. Science, scientists and politics in the twentieth century* (1997), p. 291
23. D Smith and M Nicolson, 'Nutrition, Education, Ignorance and Income: A Twentieth century debate', in Kamminga and Cunningham, eds.*Science and Culture* (1997), p. 292
24. *Physical Deterioration*, Evidence of Mrs Bostock, Health Visitor, p. 287 and Mrs Smyth Q.1260

systematic instruction of domestic science to girls in their last year at school would be a tremendous benefit in the future.[25]

The introduction of the 'Mothers and Babies Welcomes' scheme in Nottingham, in 1908, was a starting point for educating women in the improvement of their living conditions. Although the aims of the Welcomes was to provide cheap but wholesome food for expectant or nursing mothers, it also encouraged them to think about feeding the remainder of their family. In the same year, the Education Committee set up classes to teach at Elementary Schools in Nottingham the 'art and mystery of household management'![26]

Throughout the twenties and thirties, the persistent economic problems were sidelined in favour of the education of women and girls. The degeneration of the race still concerned those responsible for the security of the nation and other 'elite and paternalistic organisations', such as the 'People's League of Health'.[27] Commenting on fifty years of progress in nutritional science, F C Kelly suggested that if general improvements in the nutritional conditions of a community were to happen, then it would be through the slow process of education rather than by peremptory dictation.[28] Education was the key throughout the forties, fifties and sixties, and cookery classes formed an integral part of the schoolgirl's education at secondary school.

Diet and nutrition

Historians would like to know more about the type of food eaten by the poor in their own homes, but as there is little evidence, it is a case of constructing a picture

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25. *Physical Deterioration*, evidence of Mrs Smyth, Q. 1277 and Dr Watson Q. 1958
26. *Nottingham Evening Post*, 16 July 1908, p.4, col.5 and *Nottingham Guardian*, 16 July 1908, p.6, col.4
27. Smith *Nutrition,* pp. 296-299
28. F C Kelly, 'Fifty Years of progress in Nutritional Science', in *The Medical Officer,* LIII (Jan-June,1935), p. 65

similar to a jig-saw puzzle. One piece of late nineteenth-century evidence can be found in F Le Play's 'Society of Social Economy' in which he published a series of articles relating to working-class families, one of which details the life of a Nottingham tanner and his family. The family had four meals a day; breakfast was at 8 am, consisting of tea or coffee, eggs or grilled ham and bread; dinner was at 1 p.m., and a meal of beef or mutton, always served with potatoes, butter or pudding, and washed down with beer. Tea at 4 p.m. or 5 p.m. was a cup of tea with bread and butter; supper at 8 p.m. consisted of cold meat with butter and beer. On special occasions and holidays, the family would eat more meat together with beer and sometimes whisky. Although working class, this family appeared to have been relatively affluent, perhaps because working off-spring were still living at home. The diet was still relatively simple and it did not include fresh vegetables, fruit or fish.[29]

Nonetheless, compared to the diet of lace workers in Nottingham, the tanner's diet was very good. For the lace workers, breakfast consisted of a drink of tea, 8oz of bread with ½ oz of butter and the occasional egg. Dinner was 8 oz meat, 8oz potatoes and pudding. Tea time was similar to breakfast with tea, 4 oz bread and ½ oz butter. The final meal of the day was supper which consisted of 2oz bread, 1 pint of beer and cheese. Wages for the male lace workers were about 40s a week but for women earnings ranged from 6s to 15s and out of that, 4s 9d had to be found for rent.[30]

Mabel Dexter lived in Wollaton, which in 1902, was a country village west of Nottingham. She suffered from rickets and in her diary it is recorded the recommendations given on how to improve her diet: for breakfast, milk and water or cococatina, bacon fat and bread crumbs and a lightly boiled yolk of an egg, fine oatmeal could be given occasionally; meat jelly, bread and water to be taken at late morning. For dinner, fish or pounded fowl together with gravy and vegetables were

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29. M Urbain Guerin, *Les Ouvriers Des Deux Mondes*, Second Series (Paris, 1891), pp. 269-324. The survey was carried out in 1888
30. Oliver, 'Toil', p. 1634

given, followed by milk or a light pudding - suet pudding - cooked fruit and cream; tea consisted of plain cake, bread and dripping, treacle or honey, milk and water; the final meal of the day was milk and water, a biscuit or dry rusk.[31] We do not know much about her circumstances but in 1906 she moved to Alfreton Road. A 'good' diet was thought at the time to include a considerable amount of carbohydrates.

Other evidence of biographical accounts of working-class diets in Nottingham is limited. The Interviews Nottinghamshire County Council Oral History transcripts contain evidence of food consumed and this has been used throughout this chapter. Much of the evidence corroborates the knowledge that diets were high in carbohydrate and low in protein. Stew made up of vegetables with a little cheap meat, was regularly on the menu. One resident recollected that Barne's butchers on Hockley produced a 3d 'wrap-up' on a Saturday night, which consisted of steak, liver and sausage, because there was no refrigeration.[32] Some meals suggest that the mothers were not ignorant of nutrition and used cheaper pulses to replace meat. Green vegetables were used, including nettles and dandelions because they were available and cheap and puddings, both savoury and sweet, were served providing energy. Many of the meals were 'one-pot' with everything cooked together. The alternative was to cook over the open fire. Given that many houses did not have storage or cooking facilities other than an open fire, the preparation of alternative meals would have been very difficult.[33]

A series of pamphlets produced in 1939 by the Food Education Campaign, included the preparation of cheap meals including oatmeal, puddings requiring no sugar, cheap fish dishes, the use of rabbit and giblets and unrationed meat-offal (see

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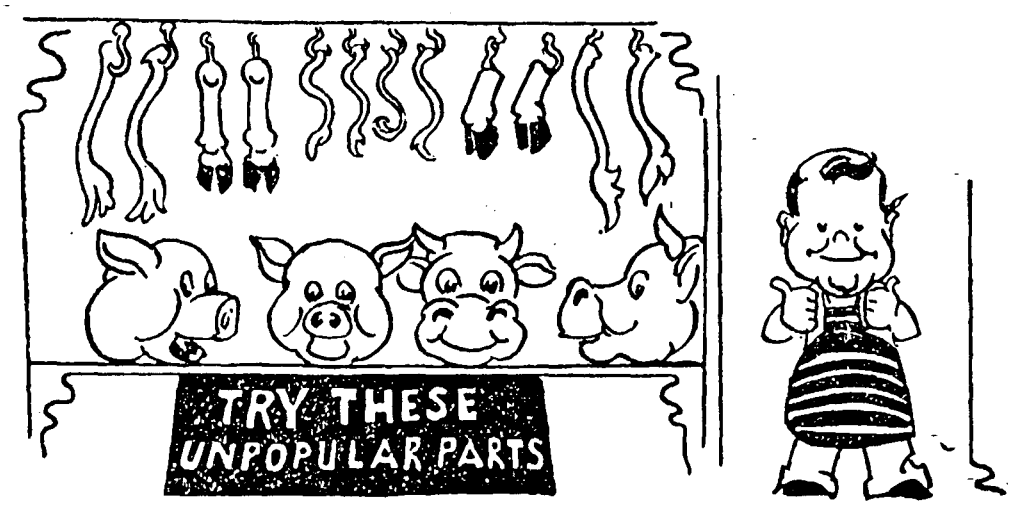
31. NAO DD1347/1, diary of Mabel Dexter 9 December 1902
32. Nottingham Oral History, (NLSL), A66, female born 1922
33. Nottingham Oral History, (NLSL),A12, female born 1913, A23, female born 1908; A33, male born 1913; A65, female born 1897, A44, male born 1913; A88, female born 1907

Figure 5-1).[34] The increased use of offal with the onset of war is corroborated by testimonies of meals including liver, pig's head and cow heel. [35]

Figure 5-1: Unrationed meat pamphlet from Nottinghamshire Education Committee, food education campaign 1939



NOTTS. EDUCATION COMMITTEE.

FOOD EDUCATION CAMPAIGN.

UNRATIONED MEATS.

Heads and Trotters, for Brawns and Rolls.

Tasty dishes may be made from heads and trotters and many people are not familiar with the cooking of them. Heads and trotters do not come under the heading of "Rationed Meats," and so they are especially useful.

The recipes included in this leaflet show how to make Brawns and Meat Rolls, which are very tasty. They form a welcome addition to the diet in summer months and are little trouble. Eaten with salads, they form very appetising meals for breakfast, dinner or tea. They are easily packed up for meals for any member of the family who does not return home for the mid-day meal.

LECTURE II. LEAFLET 7.

Source: NAO DD/322/2

34. NAO DD 323/1-8, Food Education Campaign
35. Nottingham Oral History, (NLSL), A66, female born 1922, A13, born 1921, A65, female born 1897

Figure 5-2: Nottingham Union Workhouse Dietary, 1854-55

NOTTINGHAM UNION.

RECEIVED 14 SEP 1854

HOUSE DIETARY.

CLASS	Dinner on Sundays and Thursdays.		Dinner on Mondays and Fridays.		Dinner on Tuesdays	Dinner on Wednesdays ~~and~~ Saturdays		Breakfast every morning and Supper every night but Monday and Friday.			Supper on Mondays and Fridays.		
	Beef ozs.	Potatoes lbs.	Bread. ozs.	Broth. pts.	Pudding lbs.	Bread. ozs	Soup. pts.	Bread. ozs.	Porridge pts.	Tea. pts.	Bread. ozs	Porridge. pts	Tea. pts
1	6	1	7	2	1	3	2	7	2		7	2	
2	6	1	7	2	1	3	2	6		1	7		1
3	5	1	6	1½	1	3	1½	6	1½		6	1½	
4	4	¾	5	1	¾	3	1	5	1		5	1	
5	5	1	6	1½	1	3	1½	6	1½		6	1½	
6	5	1	6	1½	1	3	1½	5		1	6		1
7	5	1	6	1½	1	3	1½	6	1½		6	1½	
8	4	¾	5	1	¾	3	1	5	1		5	1	
9	3	½	3	1	½	3	1	3	1		3	1	

VAGRANTS: 6 ozs. Bread and 2 pints Porridge, Night and Morning.

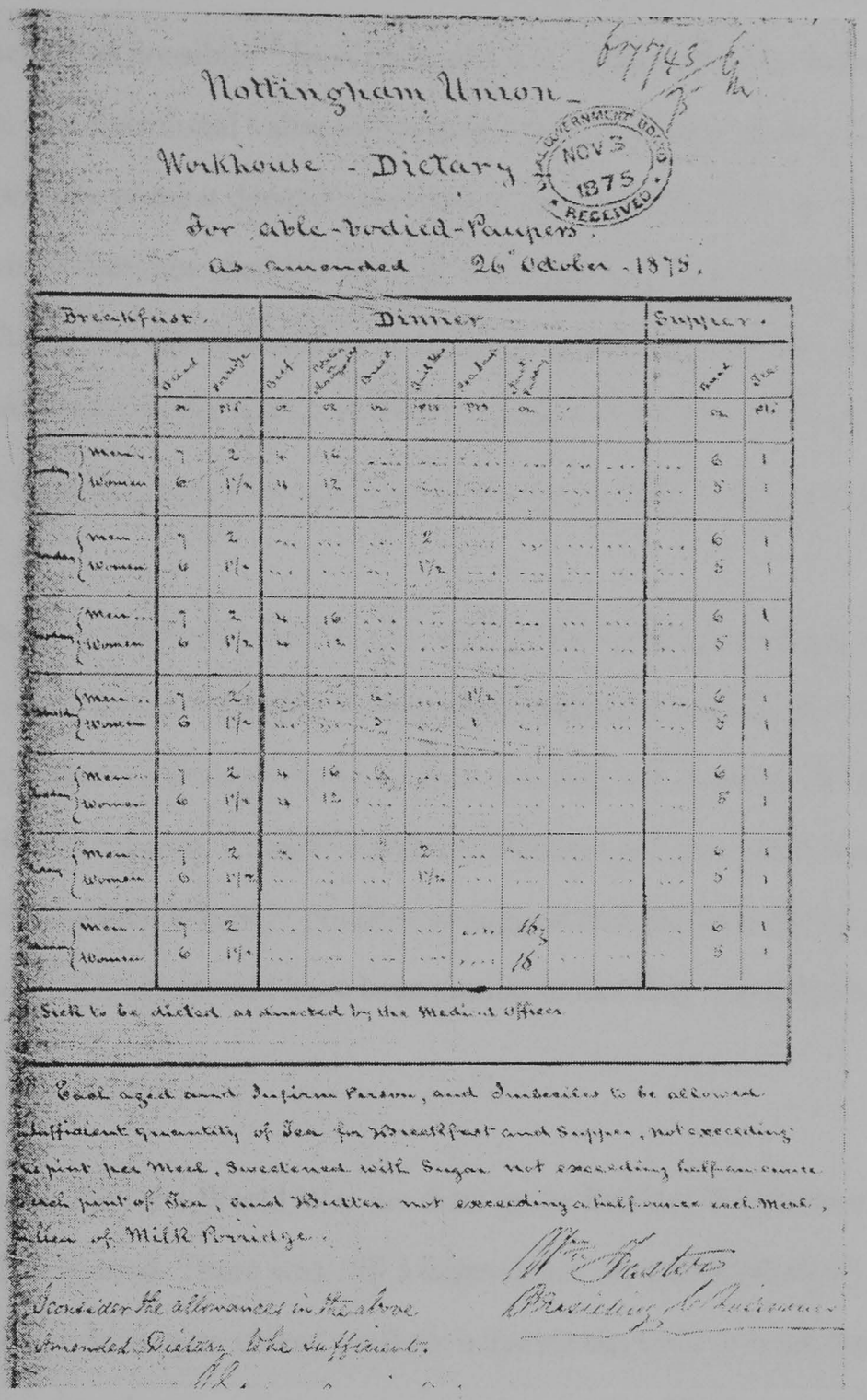
Dinner on Saturdays Suet Pud. same quantities as Mon. soup but without bread Dog meat & Cheek Guard

Source: PRO MH 12/9450

Other evidence, in the form of dietary tables from institutions such as the workhouse or prison have been used to corroborate the limited primary material. The diets were monotonous both in terms of the actual food as well as the repetition each day. The 'House Dietary' of the able-bodied paupers for the Nottingham Union for the period 1854-55 is a good example, (see Figure 5-2). Its composition is repetitious and made up of mainly carbohydrate with protein, in the form of beef, being given on only two days. There is no suggestion of vegetables or fruit being included and apparently the Guardians were completely satisfied with this dietary.[36] The 'Workhouse Dietary' for 1875 is similar, apart from 'potatoes or other vegetables' are included as a separate item and there is the inclusion of pea soup.[37] (see Figure 5-3)

36. PRO MH12/9450, Poor Law Union correspondence, Nottingham Union House Dietary and letter 339/7 dated 14 September 1854
37. PRO MH12/9464, Poor Law Union correspondence 1875

Figure 5-3: Nottingham Union Workhouse Dietary for the able-bodied, 1875



Nottingham Union.

Workhouse - Dietary

For able-bodied-Paupers.

As amended 26th October 1875.

GOVERNMENT OFFICE NOV 3 1875 RECEIVED

	Breakfast.		Dinner.								Supper.		
	Bread	Gruel	Bread	Boiled Beef without bone	Bread	Suet Pudding	Bread	Potatoes			Bread	Gruel	
	oz.	Pts.	oz.	oz.	oz.	Pts.	oz.	oz.			oz.	oz.	Pts.
Sunday Men	7	2	4	16	...	...	...	...	...	...	...	6	1
Sunday Women	6	1½	4	12	...	...	...	...	...	...	...	5	1
Monday Men	7	2	...	...	...	2	...	...	...	...	...	6	1
Monday Women	6	1½	...	...	...	1½	...	...	...	...	...	5	1
Tuesday Men	7	2	4	16	...	...	...	...	...	...	...	6	1
Tuesday Women	6	1½	4	12	...	...	...	...	...	...	...	5	1
Wednesday Men	7	2	...	...	4	...	1½	...	...	...	...	6	1
Wednesday Women	6	1½	...	...	3	...	1	...	...	...	...	5	1
Thursday Men	7	2	4	16	...	...	...	...	...	...	...	6	1
Thursday Women	6	1½	4	12	...	...	...	...	...	...	...	5	1
Friday Men	7	2	...	...	...	2	...	...	...	...	...	6	1
Friday Women	6	1½	...	...	...	1½	...	...	...	...	...	5	1
Saturday Men	7	2	...	...	...	...	...	16	...	...	...	6	1
Saturday Women	6	1½	...	...	...	...	...	12	...	...	...	5	1

Sick to be dieted as directed by the Medical Officer

Each aged and Infirm Person, and Imbeciles to be allowed sufficient quantity of Tea for Breakfast and Supper, not exceeding ½ pint per Meal, Sweetened with Sugar not exceeding half an ounce each pint of Tea, and Butter not exceeding a half ounce each Meal, Gallon of Milk Porridge.

Wm Pastler
Presiding Mr Guardian

I consider the allowances in the above Amended Dietary to be sufficient.

Source: PRO MH 12/9464

The full impact of these diets are best understood, if we examine the preparation of the various dishes. Bulky vegetables, such as carrots, turnips and onions, were used in the preparation of such dishes as Irish Stew, Pea soup and Potato pie, but the amounts used would have a limited impact on the health of the inmates. The only fruits to be used were currants and raisins, used in the preparation of bread pudding and currant bread. The remaining food was made up of quantities of flour,

suet, cheap meat, sugar and treacle, mainly carbohydrates, to give energy and fill the inmates as cheaply as possible.[38] Suet puddings were enhanced with rhubarb when it was in season. The nutritional value of the Irish Stew could vary quite considerably because the quantity of meat depended on the amount of leftovers from previous meals. Fish was sometimes used but the type and quantities were not given. A local newspaper alleged that the Nottingham workhouse used 1,650 eggs per week, 200 of which were consumed by the staff. It is hard to imagine how the other 1,450 were used since most of the meals would not account for the use of eggs in their preparation.[39] (see Figure 5-4)

The meals served in the workhouse were primarily to give energy to the inmates, in order that they were able to carry out certain tasks such as the men breaking 10 cwt of rough granite per day and the women washing and cleaning. It followed that the men received the greater quantities and that children and the infirm were given slightly different menus. It is only possible to suggest that the food the inmates received in the workhouse would have been similar to that they would have partaken at home.

Even after the First World War the diets in the Basford Workhouse do not appear to have improved. There was still a dependence on carbohydrates for energy-giving food. Vegetables were served on three separate days but in what form is unknown. It is interesting to note that margarine has replaced butter as the fat content of the menu. Similarly jam and cake are included on two days, replacing treacle as the sweet ingredient of the menu. (see Figure 5-5)

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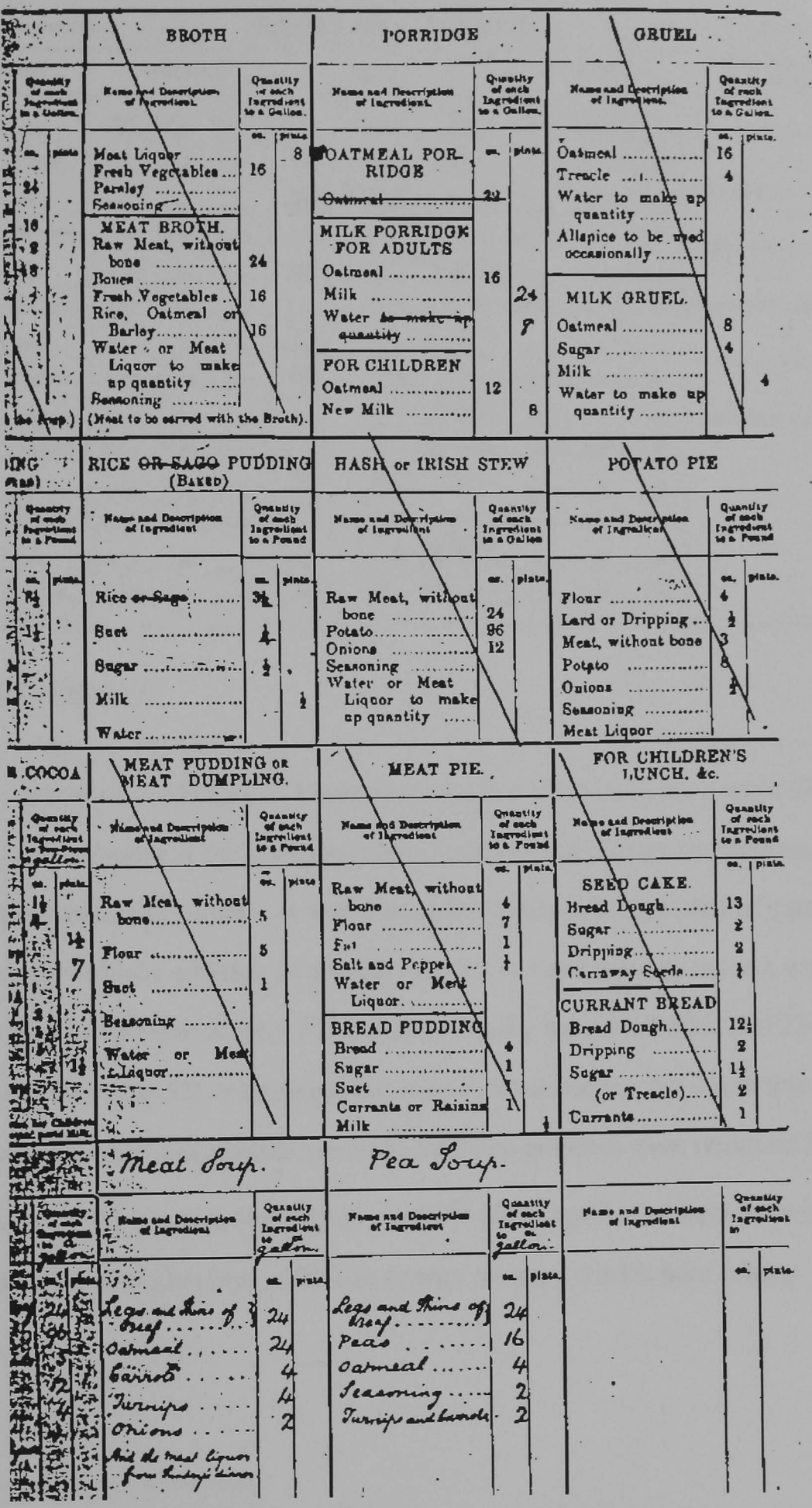
38. PRO MH12/9490 Poor Law Union correspondence 1893
39. *Nottingham Evening Post*, 10 July 1906 p.3, col.2

Figure 5-4: Nottingham Union Workhouse Dietary preparation of meals, 1875



BROTH			PORRIDGE			GRUEL		
Quantity of each Ingredient in a Gallon.	Name and Description of Ingredient.	Quantity of each Ingredient to a Gallon.		Name and Description of Ingredient.	Quantity of each Ingredient to a Gallon.		Name and Description of Ingredient.	Quantity of each Ingredient to a Gallon.
oz. pints		oz. pints			oz. pints			oz. pints
	Meat Liquor	8		OATMEAL PORRIDGE			Oatmeal	16
24	Fresh Vegetables	16		~~Oatmeal~~	~~24~~		Treacle	4
	Parsley						Water to make up quantity	
	Seasoning						Allspice to be used occasionally	
16	MEAT BROTH.			MILK PORRIDGE FOR ADULTS				
8	Raw Meat, without bone	24		Oatmeal	16		MILK GRUEL.	
48	Bones			Milk		24	Oatmeal	8
	Fresh Vegetables	16		Water ~~to make up~~ quantity		8	Sugar	4
	Rice, Oatmeal or Barley	16		FOR CHILDREN			Milk	4
	Water or Meat Liquor to make up quantity			Oatmeal	12		Water to make up quantity	
	Seasoning			New Milk		8		
	(Meat to be served with the Broth).							

~~RICE OR SAGO~~ PUDDING (BAKED)			HASH or IRISH STEW			POTATO PIE		
Quantity of each Ingredient in a Pound	Name and Description of Ingredient	Quantity of each Ingredient to a Pound	Name and Description of Ingredient		Quantity of each Ingredient to a Gallon	Name and Description of Ingredient		Quantity of each Ingredient to a Pound
oz. pints		oz. pints			oz. pints			oz. pints
			Raw Meat, without bone		24	Flour	4	
7½	Rice ~~or Sago~~	3½	Potato		96	Lard or Dripping	½	
11½	Suet	½	Onions		12	Meat, without bone	3	
	Sugar	½	Seasoning			Potato	8	
	Milk	½	Water or Meat Liquor to make up quantity			Onions	½	
	Water					Seasoning		
						Meat Liquor		

COCOA	MEAT PUDDING OR MEAT DUMPLING.		MEAT PIE.			FOR CHILDREN'S LUNCH, &c.		
Quantity of each Ingredient in a gallon	Name and Description of Ingredient	Quantity of each Ingredient to a Pound	Name and Description of Ingredient		Quantity of each Ingredient to a Pound	Name and Description of Ingredient		Quantity of each Ingredient to a Pound
oz. pints		oz. pints			oz. pints			oz. pints
1½	Raw Meat, without bone	5	Raw Meat, without bone		4	SEED CAKE.		
4	Flour	5	Flour		7	Bread Dough	13	
14	Suet	1	Fat		1	Sugar	2	
7	Seasoning		Salt and Pepper		½	Dripping	2	
1	Water or Meat Liquor		Water or Meat Liquor			Caraway Seeds	½	
2			BREAD PUDDING			CURRANT BREAD		
5			Bread		4	Bread Dough	12½	
1½			Sugar		1	Dripping	2	
			Suet			Sugar	1½	
			Currants or Raisins		1	(or Treacle)	2	
			Milk		½	Currants	1	

Meat Soup.			Pea Soup.					
Quantity of each Ingredient in a gallon	Name and Description of Ingredient	Quantity of each Ingredient to a gallon	Name and Description of Ingredient		Quantity of each Ingredient to a gallon	Name and Description of Ingredient		Quantity of each Ingredient in
oz. pints		oz. pints			oz. pints			oz. pints
24	Legs and Shins of Beef	24	Legs and Shins of Beef		24			
96	Oatmeal	24	Peas		16			
12	Carrots	4	Oatmeal		4			
12	Turnips	4	Seasoning		2			
4	Onions	2	Turnip and Carrots		2			
	Add the meat liquor from the Kitchen							

Source: PRO MH 12/9490

Figure 5-5: Basford Union Workhouse Dietary 1920

Poor Law Institution. **BASFORD UNION.** November, 1920.

Classes 2 and 4.		BREAKFAST			DINNER			SUPPER			ADDITIONAL MEAL Classes 2a and 4a.
		Bread	Margarine	Tea or Coffee	Bread.	Roast Meat.	Vegetables.	Bread	Margarine Cake	Tea	
SUNDAY -	Men	8 ozs.	½ oz.	1 pt.	4 ozs.	4½ ozs.	12 ozs.	8 ozs.	½ oz. 2oz	1 pt.	4 ozs. Bread 1½ ozs cheese
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	4 ozs.	8 ozs.	6 ozs.	½ oz. 2oz	1 pt.	or
MONDAY -	Men	8 ozs.	½ oz.	1 pt.	Bread. 4 ozs.	Boiled or Tinned Meat. 4½ ozs.	Vegetables. 12 ozs.	8 ozs.	½ oz.	1 pt.	4 ozs. Bread 1 oz. Dripping
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	4 ozs.	8 ozs.	6 ozs.	½ oz.	1 pt.	or
TUESDAY -	Men	8 ozs.	½ oz.	1 pt.	Bread 4 ozs.	Meat Stew. 1½ pts.	Farinaceous Pudding. 8 ozs.	8 ozs.	½ oz.	1 pt.	2 ozs. Bread ½ pt. Milk
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	1 pt.	8 ozs.	6 ozs.	½ oz.	1 pt.	or
WEDNESDAY	Men	8 ozs.	½ oz.	1 pt.	Bread 4 ozs.	Fish. 10 ozs.	Vegetables 12 ozs.	8 ozs.	½ oz. less 1/2	1 pt.	2 ozs. Bread ½ pt. Cocoa
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	8 ozs.	8 ozs.	6 ozs.	½ oz. 1/2	1 pt.	or
THURSDAY	Men	8 ozs.	½ oz.	1 pt.	Bread 4 ozs.	Pea Soup 1½	Farinaceous or Suet Pudding. 8 ozs. or 4 ozs.	8 ozs.	½ oz.	1 pt.	2 ozs Bread ½ pt. Broth
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	1	8 ozs. or 4 ozs.	6 ozs.	½ oz.	1 pt.	or
FRIDAY -	Men	8 ozs.	½ oz.	1 pt.	Bread 4 ozs.	Shepherd's Pie. 16 ozs.	Haricot Beans 6 ozs.	8 ozs.	½ oz.	1 pt.	½ pt. Porridge 1 oz. Sugar
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	12 ozs.	4 ozs.	6 ozs.	½ oz.	1 pt.	
SATURDAY	Men	8 ozs.	½ oz.	1 pt.	Bread 4 ozs.	Lentil Soup 1½ pts.	Farinaceous or Suet Pudding 8 ozs. or 4 ozs.	8 ozs.	½ oz.	1 pt.	
	Women	6 ozs.	½ oz.	1 pt.	4 ozs.	1 pt.	8 ozs. or 4 ozs.	6 ozs.	½ oz.	1 pt.	

Source: NAO PUB/3/5/1

The prison or the House of Correction was the other institution most likely to have been used by some of the working-class. Evidence from these institutions, for the middle of the nineteenth century, reveal that most of the diets consisted of oatmeal, gruels or soups with the addition of a small amount of meat once or twice a week. Bread also featured predominantly in the meals, usually between 112oz and 224 oz per week and potatoes were the main vegetable used in the dietaries. No doubt this was the result of the 1822 Millbank penitentiary scandal when potatoes were removed from the diet and many of the inmates developed scurvy.[40] Once again, the diets were intended to fill the prisoner and give him sufficient energy to carry out his hard labour.

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40. J C Drummond and A Wilbraham, *The Englishman's Food. A history of five centuries of English diet,* new revised edition (1958), p 366 and Valerie Johnson, 'The diets of the local prisons 1835 to 1878', in D J Oddy and D S Miller, *Diet and health in modern Britain,* (Beckenham, 1985). NAO C/QAG/5/95, dietaries Nottinghamshire House of Correction, Southwell, 1857 and LAO DE/1844/9 extracts from rules and regulations for government of prisoners of County of Leicester, 1850

Schoolchildren and Nutrition

A particularly worrying factor for the authorities, highlighted by the 1904 enquiry[41], was the number of schoolchildren who were attending school undernourished and unable to cope with learning.[42] This was not a new situation because charities had been providing meals for needy children since the mid-nineteenth century. The Headteacher of the Coventry Road Board School at Bulwell had requested help in feeding 1,500 children during a particularly bad period.[43] Some meals had been free, others were self-supporting - better-off parents were supposed to make a contribution towards the cost of the food at least in an attempt to prevent the spread of pauperism. However, it was not pauperism that was at the root of the problem, rather that of poverty since many parents could not afford to pay a farthing, let alone one penny.[44] Such an example was described by a Nottingham resident who upon approaching the Board of Guardians for assistance, was treated like a criminal in court, and was then given only 12s a week, of which 6s 6d went on rent.[45]

Nevertheless, the committee's report recommended that charities should continue with the provision of meals and should they be unable to cope, then the local authority should intervene.

The government's reaction to the report was one of delaying tactics and another enquiry, an Inter-Departmental Committee on the Medical Inspection and Feeding of children attending Public Elementary Schools, 1905. Nonetheless, despite sympathy for the children, the government was not prepared to increase rates to pay for the provision of meals because this would be interpreted as extending provisions to the poor and would intimate that the state would provide for all their material needs.

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41. *Physical deterioration*, PP.1904, CD2210 (XXXII)
42. *ibid.* evidence of Dr Alfred Eicholz, HMI of Schools p. 20 and Dr. MacNamara, MP for Camberwell, p. 454
43. *ibid.* evidence of Mr Libby, Headmaster, Board School, Walworth, p. 299 and *Nottingham Evening Post*, 15 September 1893, p.4, col.2
44. Hurt, 'Feeding the hungry schoolchild', in Oddy and Miller, *Diet and Health,* p. 179
45. Nottingham Oral History, (NLSL), A65, female born 1897

Eventually there was a compromise with the passing of the Education (Provision of Meals) Act, 1906. The Board of Education stressed that the Act was not extending the provision of poor relief, rather, that this provision was purely an *educational* one enabling children at elementary schools to participate in learning who would otherwise be unable to take full advantage of the education offered.[46] Even as late as May 1935, Evening Post reported that the provision of meals continued to be on a purely educational basis by stating, 'children attending school who were unfit through malnutrition and were unable to make use of education because of the want of food.'[47] State provision of meals had begun, the passing of the act enabled progressive authorities, such as Bradford, Manchester and London, to extend schemes already in operation.

The Joint School Attendance and Elementary Schools Standing Sub-Committee recommended that the provision of meals act should be immediately adopted by the Nottingham City Council and pointed out that although there was no chronic need for the provision of meals, isolated cases were occurring in the city and that there was no existing agency to attend to the matter. The Act was adopted by the Council on 4 March 1907[48] and the Board of Education authorised the Local Education Authority to spend money out of the rates (half-penny in the £), up to the year ending 31 March 1908 to meet the cost of providing the food. The Canteen Sub-Committee was set up to deal with children who needed to be fed with the result that after the first two months of the scheme, 21 children had been fed with 383 breakfasts and 425 dinners at a total cost of £7.4.8d. The average cost of the meal was 2d while the sum of only 2 shillings had been recovered from one parent towards the cost of the meals.[49] By October a further five children had been fed but the number of meals had

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46. See discussion in B J Swinnerton, 'The health of working class in Leeds and Bradford 1900-1940', (University of Leeds PhD thesis, 1994), p. 157
47. *Nottingham Evening Post*, 8 May 1935, p.8, col.5
48. NAO CACM/ED/1/4, 15 February 1906 and 5 March 1907
49. *ibid.* 8 July 1907

almost doubled and the costs had increased by about 30 per cent, the amount recovered from parents rising to 15s 1d.[50] The obvious success of the scheme can be gauged by the figures for 1908, the number of children had increased to 317, representing 116 families, and over 10,000 breakfasts and dinners had been provided at an average cost of 2.08d per meal.[51] The daily average of meals provided were 281.[52]

Despite the criticism of the working-class diet by various authorities, the meals provided by the committee were not so different from the monotonous, 'bulk' foods which many of the poor ate at home (see Table 5-1 and Table 5-2). However, the committee felt great satisfaction in submitting the following two samples, which they could provide at 2.2d per meal.

Table 5-1: Canteen sub-committee sample 1of meals for poor schoolchildren

Breakfast	Bread and dripping with tea, cocoa, coffee or milk. Toast and dripping in winter
Dinner	Stew with potatoes and bread or soup with suet pudding. Also milk pudding frequently

Source: NAO CCACM/ED1/4

Table 5-2: Canteen sub-committee sample 2 of meals for poor schoolchildren

Day	Breakfast	Dinner
Monday	Bread and butter, milk or cocoa	Meat and potatoes and pudding
Tuesday		Meat and potatoes, pie and custard
Wednesday		Meat and potatoes and pudding
Thursday		Meat and potatoes pie and pastry
Friday		Meat and potatoes and pudding

Source: NAO CACM/ED/1/4

50. *ibid.* 7 October 1907
51. *ibid.* 12 October 1908
52. *Nottingham Evening Post*, 13 July, 1908, p.3, col.3

Perhaps the introduction of a regular intake of meat and milk provided more nutrition to the child than the food eaten at home but, on such a low budget of 2.2d per meal, it is difficult to accept that these meals were of such a high standard especially after the authorities had been advocating so frequently that the poor could improve their diet.

The emergence of the School Meals Service and the Mother and Child Welfare Services both in 1908, was a two-pronged attack on the tragic waste of young lives. The former was initially more precise and successful, probably because it was supported by an Act of Parliament, whereas the Maternity scheme developed much more slowly, having no legislative enforcement until later. Swinnerton suggests that any facilities provided for mothers were provided for the good of the baby and not the mother. [53] It was also much easier to administer the school service because the children were under the supervision of the local authority whereas the under-school age child may not even have been registered and were scattered throughout Nottingham.

The advent of the School Medical Services in 1908, the direct result of the Education (Administrative Provisions) Act 1907, required Local Education Authorities to arrange for the medical examination of all children admitted to or expected to leave elementary school in any year. The two groups were known as 'Entrants' (under 6 years) and 'Leavers'(12 years and over). Despite this rule, others were referred by teachers to the medical officer.[54] The apparent ease with which inspection changed to treatment is discussed in some depth in J David Hirst's article on the growth of the school medical services.[55] He suggests that there was an underlying expectation of such a change and that much of the credit for the widening of the Act was due to Sir

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53. Swinnerton, 'Health of the working class' p. 84
54. W M Frazer, *A history of English public health, 1834-1939* (1950), p. 324
55. J David Hirst, 'The growth of treatment through the school medical service, 1908-18', in *Medical History*, 33 (1989), 318-342

Robert Morant, the permanent Secretary to the Board of Education. Inspection would be of little use if it could not be followed up by treatment so there was little opposition to treatment provided that the defects treated were related to the needs of the child's education. The estimated cost of treatment and the employment of extra staff was £1 m and the question was asked who would be responsible for payment?[56]

Part of the process of trying to educate parents in better child care was to encourage parents to allow their child to be examined and if necessary, to seek medical advice. As with any new law and especially one which was as intrusive as this, some parents were not pleased to have 'busybodies' interfering into the private life of the family. The Evening Post expressed the opinion that inspection was a good idea but that initially too much should not be expected.[57] Parents could refuse to allow their child to be examined and frequently did so. The 1911 report indicates that in that year there were 67 instances of parents refusing examination and in all but three cases, they were 'leavers'. However, in 1912, it was noted that there were fewer refusals and those that did were from better-class homes, with the probability of having their own family doctor. As with all bureaucracy there were mishaps. The Evening Post, received a complaint saying that a letter had been sent to a home for the parent to attend the examination which was then carried out without the parent being present and the child sent home with a letter stating the child needed dental treatment.[58]

An initial difficulty for those involved in carrying out the inspections and treatment, was to define what illnesses encroached on the education of the child. In his first Annual Report as School Medical Officer, Boobbyer, was in little doubt that whatever the illness, poor nutrition was a key factor and spent some considerable time in explaining 'Nutrition'. He commented, 'The determination of what constitutes

56. *Nottingham Evening Post*, 16 April 1908, p.4, col.5. *Nottingham Evening Post*, 21 April 1908, p.7, col.1
57. *Nottingham Evening Post*, 18 July 1908, p.5, col.5
58. NAO CACM/ED/12/1/1, Medical Inspection of Children Committee Reports, 30 June 1909

good, average or poor nutrition is a very difficult one.' It is interesting to read Boobbyer's comments in the light of present day interest in the link between height and health,[59] '...too much importance should not be attached to the child's weight, if small...the attempt to express nutrition in terms of weight and height would be unsound.' [60] More importantly was the child's apparent well-being; its muscular development for its size and healthy skin which would indicate the type of diet.[61]

Similar problems occurred to Paton and Findlay in their studies of child life in Scotland during 1919 and 1923. Their findings led them to the conclusion that the small size and weight of the slum child was the result of poverty, not necessarily the result of a lack of income, suggesting other factors had an impact. They found there was an absence of a significant correlation between income, height and weight and concluded that hereditary growth impulse played a part and that slum children tended to develop in a similar way to its parents.[62] More recent works, cited in A E Bender, suggest that other factors will affect food intake and stated, 'Height, so often used as an index of nutritional status, can depend on birth weight and differences persist throughout childhood;...'[63]

However, an efficient measure as to what constituted good nutrition was difficult to calculate. George Newman, the Chief Medical Officer of the Board of Education, conceded that it was difficult to assess nutrition and told School Medical Officers that they should classify the nutrition of schoolchildren as 'good', 'normal', 'below normal' and 'bad'.[64] Dr Hutchinson commenting on a paper dedicated to

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59. See for example R Floud, K Wachter and A Gregory, *Height, health and history. Nutritional status in the United Kingdom, 1750-1980* (Cambridge, 1990)
60. *ARSMON*, 1919 p. 31
61. Dr Hutchinson, *Proceedings of the Royal Society of medicine,* Epidemiology and State Medicine, 28, (1934-5), p.728
62. Paton and Findlay, 'Poverty, nutrition and growth,' pp. 301-305
63. A E Bender, 'Nutritional status of schoolchildren', in *Proceedings of Nutritional Society,* 33 (1974), p. 49
64. John Welshman, 'School meals and milk in England and Wales, 1906-45', *Medical History,* 41, 1 (1997), p. 9

nutrition suggested that there was a good deal of confusion over the subject and he made the point that good physique and good nutrition were not the same thing, and the reliability on heights and weights were of little use. He believed nutrition was not necessarily about diet, as malnutrition was often a secondary symptom of other failings.[65]

Nottingham's School Medical Officer stressed the point that to carry an ideal standard of nutrition from one poor school to another would reduce the average quite considerably but the system of "good, average and poor" categories should be adopted with a certain amount of flexibility.[66] The common ground between the provision of school meals and medical examination centred on the question of nutrition. The reliance on the School Medical Officer to select those children who were considered for free meals, on the proven basis of poverty and malnutrition, kept the Board of Education satisfied because their cases were seen to be educational and not a form of poor relief. The teacher was the ideal person to select the most needy child through having a better knowledge of the child's financial history. Nevertheless, the Board of Education tended to go for the impressionistic and subjective estimates of the School Medical Officer. According to Charles Webster, school meals operated on a deterrent basis and only about 2 per cent of the school population enjoyed school meals by 1939.[67]

In his first report as School Medical Officer, Boobbyer reported that the nutrition of city children compared favourably with those of the county and the 2224 boys examined, of all ages, 7.5 per cent were grouped under 'Poor nutrition', and of the 2403 girls examined, 6.8 per cent were placed in the same category. This is no real

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65. Hutchinson, *Proceedings of the Royal Society of Medicine*, p. 728
66. *ARSMON,* 1909
67. Webster, 'Health, Welfare', p 214; 'Health of the Schoolchild during the Depression', in N Parry and D McNair, eds. *The Fitness of the nation - Physical and Health Education in the Nineteenth and Twentieth Centuries* (1983), p. 75 and Hurt, 'Feeding the Schoolchild', p. 182

indication of how well these particular children were being fed but it does however, question the general assumption that girl's diets were of an inferior quality to those of boys. Boobbyer goes on, '...many children in our poorest districts are underfed, both in quantity and quality. The mother, being engaged in work, often relies on the small provision shops for the dinner and seldom prepares the food herself. Children in such homes also suffer from irregular and broken hours of rest, due to the noisy surroundings in which they live.'[68] The two diseases which featured prominently in the examinations were measles and whooping cough, both diseases were affected by and had an effect on malnutrition and the mucous membrane precipitating diarrhoea.

From 1909, the School Medical Service scheme developed its own identity and by 1911 schools were categorised into 'better', 'medium' and 'poorer class' schools the categories of 'good', 'normal' and 'bad' being given to the schoolchild's nutritional state. Analysing the information from the 1911 report indicated that the majority of children attended the 'medium class' schools. In all three school categories, approximately three-quarters were classed as having an 'average' nutritional status. In the better class schools, about 5 per cent more girls had a good nutritional status compared to boys; in the medium class schools boys and girls were about the same status; in the 'poorer class' schools, girls had a slightly better nutritional status. This information is questionable and gives no real indication what constituted a good or bad nutritional status. Bearing this in mind, we can perhaps suggest that the generally accepted belief that girls received the smallest share of the food is not borne out by these figures in fact, the contrary is true, if we use this data as a means of gauging nutritional status.[69]

These classifications, however, led to problems because they were not uniform and varied according to the School Medical Officer. Added to this, the classifications

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68. *ARSMON,* 1909
69. *ARSMON*, 1911, the data from Table VIII, State of Nutrition has been used to suggest this

were tenuous as to how the School Medical Officer classified nutrition and the methods by which he identified those children suffering from malnutrition.[70] The ad hoc method of classification led to large variations in the percentage of children classified as suffering from malnutrition. Nottingham had few school children recorded as malnourished and most of these were 'entrants' perhaps indicating that 'leavers' had reached an optimum nutrition by means of school meals or because they were no longer the responsibility of the education department. By the end of 1934 the Board of Education had attempted to rectify this vagueness, the new system being divided into excellent, normal, slightly sub-normal and bad. The judgement had to be made on not just a single factor but on the general appearance and demeanour of the child as well as a physical examination of the body.[71]

At the established school clinics on London Road and Clarendon Street the principal complaints which were dealt with were: erosion of visual refraction, inflammatory affection of the eyelids and conjunctiva, ringworm,[72] impetigo, pediculosis, scabies and chronic otorrhoea (ear discharge). Many of these infections would be due to uncleanliness, and the failure to seek medical advice at the outset of problems,[73] in addition to lack of a good diet. Uncleanliness and inadequate clothing were often accompanied by disease and infestations[74] and the Board of Education acknowledged that there was a considerable underestimation of these conditions.

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70. B J Harris, 'Medical Inspection and Nutrition of Schoolchildren in Britain 1900-1950', (University of London, PhD thesis, 1989), p. 118. The definition of malnutrition is complex. It can range from overt malnutrition, as in the cases as seen in Ethiopia, or the more ill-defined diseases which cause poor health, such as rickets - veiled malnutrition. In the early twentieth century it was assumed that a diet which did not lead to clinically recognisable symptoms of malnutrition was an adequate one. A slight departure from the 'optimum' in food may lead to a state of nutritional instability, which is increased when hygiene factors or infectious processes are unfavourable. McCollum and Simmonds, *Newer Knowledge of Nutrition*, p. 212
71. *ibid* p. 120
72. For a graphic description of the treatment of this see the transcript to Nottingham Oral History, (NLSL),A23
73. Nottingham Oral History, (NLSL), A53, and A47, which state that doctors were only consulted for inoculation and charged 5s a visit
74. Nottingham Oral History, (NLSL), A73, resident born 1901

Although there were no specific facilities for checking teeth, it was noticed that the poorest children did not suffer from dental caries because they ate the rough/hard food which was better for the teeth and mouth. Later dental examinations in 1913 revealed a gloomy picture on the state of children's teeth in Nottingham. Over 44 per cent of the children examined had seriously defective teeth (i.e. four or more teeth with decay). Dental decay was perhaps one of the more obvious indications of poor nutrition. As one elderly resident remembered the only time you bothered with teeth was when you had toothache.[75] In their final report on dental decay in children, the Medical Research Committee reported that there was a positive improvement in the permanent teeth if Vitamin D was added to the diet during the period of development. The investigations also revealed that a relatively high Vitamin D content of the food could do much to diminish the incidence of caries in fully erupted, permanent teeth, but its influence was more pronounced if it was given during the period of development.[76]

Rickets could be less obvious but nevertheless, was indicative of a faulty diet. It has already been noted that rickets could be the underlying cause of disease, predisposing an individual to infection and, if death occurred it was attributed to the infection and no mention was made of the part played by the nutritional defects.[77] Boobbyer was in no doubt that the bad period of trade which the town experienced during 1913 was having a serious effect on children. He attributed the numerous cases of illnesses such as septic condition of the mouth, chronic gastric disturbance, bilious attacks, constipation, everted costal margins and proterberant abdomen to the lack of a sufficiently varied diet, which was almost exclusively carbohydrate, usually white bread with an absence of milk. The poverty which existed in the town during 1912 and 1913 may have had an influence on the fact that 450 children were fed during the

75. Nottingham Oral History, (NLSL), A89
76. PRO FD/4/211, Committee for the investigation of Dental Disease, 'The influence of diet on caries in children's teeth. Final Report', *Medical Research Council, (Special Report Series)* 211, (1936)
77. Titmuss, *Birth, poverty and wealth. A study of infant mortality* (1943), pp. 85-86

school holidays of 1913 and that meals were provided 5 days a week and during school holidays during the period 1914 and 1915.

The period during and immediately after the First World War, exposes some discrepancies about the nutritional state of the non-combatant population. The optimist, Jay Winter declares, '...such evidence of war conditions leading to impaired health is overshadowed by many indications of the positive effects of the mobilisation of the industrial population after 1914.'[78] Earlier evidence had shown that, by 1918, the percentage of Nottingham children entering school in a poorly nourished condition was less than half than that of 1913.[79] Table 5-3 shows that the number of children fed at the beginning of the war was nearly one third more than in 1913, the year preceding the outbreak of hostilities. A gradual decline is visible in the provision of meals and those receiving them during 1915-1919, maybe due to the fact that at the outbreak of hostilities, provision was made to dispense school meals on a grand scale in order to defray any possible unrest or socialist backlash.[80] By the end of the war Table 5-3 indicates that the number of meals and the number of children being fed had been halved suggesting that the need for feeding children had been removed. Welshman is sceptical of such data and concluded that whilst fewer children received school meals during the war, it is not known if this was a reduction in demand or a response to local authority cuts.

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78. J Winter, *The Great War and British People* (1985), p. 244
79. J Winter, 'The impact of the First World war on civilian health in Britain', *Economic History Review*, Series 2, 30 (1977), p. 501
80. Hurt 'Feeding the schoolchild', p. 182

Table 5-3: Number of children fed and meals dispensed

	1914-14	1914-15	1915-16	1916-17	1917-18	1918-19
Individual children fed	687	1,794	1,026	723	668	334
Number of breakfasts	51,938	115,292	86,033	51,703	45,238	21,567
Number of dinners	56,794	127,153	98,533	59,400	65,176	35,062
Total meals	108,732	242,445	184,566	111,103	110,414	56,629

Source: ARSMON, 1919

The optimistic view of Winter that 'nutritional levels rose' and 'wartime diets maintained pre-war calorific levels'[81] is supported by data in Table 5-3. However, examination of the data in Tables 5-4 and 5-5 tells a different story and are at odds with Table 5-3 and is more in line with Welshman's view that the war had little impact on existing levels of child health.[82]

The system of recording heights and weights of the children was part of the work of the School Medical Officer and, although this method was challenged and found to be flawed as a sound way of checking for malnutrition, Webster suggests that Newman and his allies were committed to an anthropometric method of medical inspection because they considered this gathering of vital statistics, so important.[83] An examination of three years, two before and one after the Great War tend to present a pattern which we would expect i.e. children's heights and weight tended to decrease with the poorer-class of school and that children were both taller and heavier in the better-class of school. Viewing height only, we can see that in all the categories, except the better-class boys, the heights decrease between 1911 and 1919 and this may be indicative of an insufficient diet. Examination of the weight table perhaps tells us

81. Winter, *The Great War,* p. 244 and Winter, 'The impact of the First World War', p. 500
82. Welshman, 'School meals and milk', p. 11
83. Webster, 'Health of the schoolchild', p. 80

more. In three categories, better- and medium-class girls and poorer-class boys all have increased weights between 1911 and 1913, perhaps partly due to the introduction of the 1911 National Insurance Bill which went some way to helping poor families. The girls' weights, however, decreased by 1919, whereas the boys' weight increased slightly. The better-class boys stay more or less static during the war period, whilst the poorer girls' weight falls significantly. The fact that boys' weight increased reflects the belief that males always had the greater portions of food in the household and that whilst the head of the household was away at the Front, the boys received his share. The girls of the poorer-class schools may well have fared badly throughout the period, simply because of sex-differentiation within the household. The data from Table 5-4 and Table 5-5 give conflicting views, within the tables and with Table 5-3.

Table 5-4: Height (in inches) of Entrant children (without shoes) in the years 1911, 1913 and 1919

Better class schools	**5 year old boys**	**5 year old girls**
1911	41.52	41.5
1913	41.45	41.32
1919	42.14	40.94
Middle class schools	**5 year old boys**	**5 year old girls**
1911	40.87	40.7
1913	40.8	40.5
1919	40.32	40.2
Poorer class schools	**5 year old boys**	**5 year old girls**
1911	39.56	39.54
1913	39.56	39.41
1919	38.98	39.05

Table 5-5: Weight (in pounds) of Entrant children (in ordinary clothes and without shoes) for years 1911, 1913 and 1919

Better class schools	**5 year old boys**	**5 year old girls**
1911	40.02	36.64
1913	40.68	39.74
1919	40.66	37.63
Middle class schools	**5 year old boys**	**5 year old girls**
1911	39.1	37.9
1913	39.1	38.1
1919	38.13	37.52
Poorer class schools	**5 year old boys**	**5 year old girls**
1911	37.02	37.21
1913	37.58	36.66
1919	37.79	35.85

Source: ARSMON, 1911, 1913, 1919

The use of the school meal system as a way of deflecting unrest was again raised during the 1921 miners strike because the authorities were averse to providing meals for children of men who were on strike.[84] Nevertheless, officials were aware of the possible conflict that could be triggered if rationing of any sort was brought in; for the strikers themselves, it was one way of existing until a return to work.[85]

Throughout the inter-war period Newman's attitude towards the provision of school meals was cautious, to say the least. He wanted to ensure that the system was not abused and was confident that the rationing of meals that had been introduced during 1921-22, had not affected the health of the schoolchildren. Newman had previously singled out the mother's ignorance and lack of nurture for children being malnourished rather than shortage of food. His single-mindedness led him to the

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84. *The Times*, 29 August 1921, p.13, col.7, reported that the Nottinghamshire Education Committee had sent a bill to the Notts. Miners Association for £2,025 for meals supplied to their children during the stoppages and which they had promised to repay.
85. Hurt, 'Feeding the schoolchild', p. 181

assumption that the masses of statistics gathered, recorded and compiled by the School Medical Officers, were a good indication that the health of schoolchildren had not been affected by the industrial depression. It is not surprising that he should place so much emphasis on the 'findings' of those who were carrying out the duties under the School Medical Services. The service was the pride of the School Health Service and together with the school meals service were seen as part of a new welfare benefits scheme.

During the inter-war period, Nottingham provided 5 feeding centres for children. The meals were generally provided free of charge to those who could not afford them and they seemed to be the majority because in 1929, the total cost of providing the meals was £2,339.5.6d of which only £275.1.10d was recouped from the parents and the Board of Guardians. Nearly a decade later in 1937 the cost of providing the meals was £3,023.2.8½d of which only £111.14.9d was recovered.

Table 5-6: Numbers of children fed and meals dispensed

	1926	**1929**	**1933**	**1935**	**1936**	**1937**
Individual children fed	1,392	1,108	1,537	1,630	1,593	1,995
Number of breakfasts	n/a	n/a	79,853	93,719	86,156	73,942
Number of dinners	n/a	n/a	168,494	184,053	194,017	177,870
Total Meals	177,226	172,199	248,347	277,772	280,173	251,812

Source: ARSMON 1926-1937

Although the number of children being fed rose, the amount of meals being provided increased by a far greater number (see Table 5-6) suggesting that those in need of relief, remained fairly constant but their demands were becoming more severe. A comparison with Table 5-3 indicates that more children were being fed and that considerably more meals were being provided accordingly. The cost of each was now approximately 3d.[86] Webster claims that they were forced down from 7d during the

86. *Nottingham Evening Post*, 8 May 1935, p.8, col.5 and my calculations using figures

First World War for financial reasons and consequently the meals were often inferior and similar to those eaten at home being high in carbohydrates and low in proteins and vitamins and consisting of items such as hash, potato pie, stew, soups and bread and jam,[87] not dissimilar to those described earlier. In the Report of 1934 the School Medical Officer reproduced the home diet of a child in junior school in the city (see Figure 5-6). He stressed that these diets were inadequate and continued that it was 'distressing to feel that any of our citizens are trying to grow up into adult life on such dietaries'.

Figure 5-6: Home diet of child in junior school in Nottingham 1934

Diet 1

Breakfast: tea/coffee, bread and lard;

Dinner: bread and lard, sometimes jam pudding;

Tea: bread and lard or jam;

Supper: nil.

On Sunday bacon and tomatoes added at breakfast and meat and potatoes to the midday meal.

Diet 2

Breakfast: bread and lard (sometimes fried potatoes);

Dinner: sausage and toast, potatoes, cabbage, jam dumplings;

Tea: brown bread and butter;

Supper: bread and butter.

Diet 3

Breakfast: toast and butter;

Dinner: tea, sometimes potatoes and tomatoes, no pudding;

Tea: toast, occasionally cake;

Supper: chips.

On Sundays sausages may be added to breakfast and other meat to midday meal.[1]

Source: ARSMON, 1934

87. Webster, 'Health of the schoolchild', p. 75 and 'Health, Welfare', p. 214

Malnutrition had been a serious problem nationally before the First World War, affecting between 15 and 20 per cent of the school population but by 1925, it had fallen to just 5 per cent and according to the records by 1932 it had been virtually eliminated.[88] However, these statistics were not all as they seemed, and there was a serious rift between the government and certain members of the medical profession over the causes of poor nutrition. The gathering of the information for processing was not standardised and the ministry was aware that "the returns are compiled from individual figures which will not bear detailed examination." [89] According to Welshman and Webster, the Board "increasingly avoided the issue of nutrition". [90] Eventually the individual School Medical Officer was obliged to determine cases by the 'state of the skin, the lustre of the hair, the appearance of the eyes, the colour of the mucous membranes and the alertness and attitude of the child.'[91] Dr Wyche, Nottingham School Medical Officer in 1926, commented that a small minority of children were habitually underfed, filthy and neglected but the majority received a sufficient diet which was often ill-selected. He acknowledged that a substantial proportion, not less than one-fifth of the school population, suffered needless detriment to their health and physique through a plurality of causes, among which were insufficiency of suitable food, fresh air and direct sunlight and a lack of skilled supervision and routine medical oversight. Of the 4,402 'Entrants' that were inspected in Nottingham that year,18.9 per cent required treatment, and of the 3,220 'Intermediates', 19.5 per cent needed treatment. The evidence suggests that the gravity of the cases were considerably understated. Over 22,000 children inspected had dental defects, of which 68.4 per cent required immediate treatment. Routine inspections revealed 42 cases of rickets which needed immediate treatment and a further six were to be kept under observation. A special investigation revealed 108 cases needing treatment and a further 27 needed to be kept under observation.[92]

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88. Webster, 'Healthy or Hungry Thirties?', p. 112
89. PRO MH 56/53, memo by CWM, dated 9 November 1933
90. Welshman, 'School Meals and Milk', p 21 and Webster 'Health of the schoolchild', p. 80
91. Hutchinson, *Proceedings of the Royal Society of Medicine*, p. 728
92. *ARSMON,* 1926

The following year, 1927, the percentage of 'Entrants' requiring treatment had gone down by two per cent, although the numbers examined had remained static but the percentage of 'Intermediates' had risen by four and half per cent. The number of children with dental defects had also risen to 71.3 per cent. Wykes expressed disquiet at the fact that nearly 17 per cent of five year-old children entering school were in need of medical treatment, for rickets and dental decay, the sequel to the faulty diets of the pregnant and nursing mother and also the child itself. He was of the opinion that a correctly chosen diet would dramatically reduce the number of dental caries.[93]

The fact that the number of 'entrants' who needed medical treatment were apparently becoming fewer may suggest that welfare services in the form of Mother and Baby Clinics, were now providing a positive contribution to the health of the pre-school child, an age group previously neglected. Why the number of intermediates should have risen is unclear, but it may be to do with older children needing more food to ensure their growth rate.

The 1928 report for Nottingham shares the optimistic view expressed by Newman and the Ministry of Health, that malnutrition was being reduced. There was some fine tuning as to the exact meaning of malnutrition. The report makes the distinction between malnutrition, other than from the lack of food, had markedly decreased whereas, malnutrition, (under-nutrition) caused by insufficiency of food, was now practically never seen. However, an increase in both dental defects was noted, as well as the number of all school children needing medical treatment, the largest increase being the leavers, up by four and a half per cent.

School Medical Officers' attitudes to malnutrition varied greatly and the subsequent results from the number of cases of malnutrition was so diverse to make it

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93. *ARSMON,* 1927 and *Nottingham Journal*, 9 January 1934 p. 9, col.4. Attempts to reduce the cases of rickets included the provision of cod liver oil in conjunction with ultra-violet radiation

farcical. It was obvious even to those die-hards in the ministry that the returns on malnutrition were not comparable and, in 1933, Dr R H Simpson was appointed to head an enquiry on behalf of the Board of Education and the Ministry of Health into this matter. The results of his enquiry were not published but there was a cosmetic change in the method of recording.[94]

The pressure that was now being brought to bear over diets and nutrition, proved to be irksome for the Ministry particularly when the British Medical Association published its own dietary standards which were considerably higher than those produced by the Ministry's Advisory Committee. Translated into monetary terms; a man's minimum allowance was 5s 11d and a child under two years, 2s 8d. This conflict was picked up in the Nottingham Journal, noting that the Advisory Committee were in dispute over the controversy on the subject of cost and character of a proper minimum diet.[95]

The appointment of Sir Arthur McNalty as Chief Medical Officer (1935) resolved little policy change but he did concede that there were flaws in the assessment of nutrition. The 1935 report reflected this uncertainty and gives the impression that the authorities were seeking ways to hide the real extent of malnutrition by emphasising the question concerning malnutrition, for example, the School Medical Officer commented, 'subnormal nutrition is probably a combination of several factors...that the lack of food is by no means the sole cause of the subnormality of these children.' He further commented that, 'It is remarkable how frequently improperly fed children somehow pull through with sufficiently well-developed bodies.[96]

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94. Welshman, 'School meals and milk', p. 17
95. *Nottingham Journal*, 10 January 1934, p.6, col.2
96. *ARSMON*, 1935

The Depression period, also known as the 'Hungry Thirties', has been well documented.[97] Aldcroft's optimistic view suggested that increases in real incomes and wages and the advent of the community services suggested that the country was better fed and clothed and that statistics showed an overall improvement in health and well-being of the population. Winter makes the point that there was no direct correlation between economic insecurity and mortality.[98] These views concur with those appearing in the Nottingham School Health Reports and which played down the consequences of this lean time. The subject of malnutrition is treated cautiously and it was thought that sub-normal nutrition was not synonymous with under-nourishment but due to a lack of management, such as, unhealthy living conditions, irregular hours, emotional strain, even rapid physiological growth.[99] This view was in step with the Board of Education's claims that the Depression was not responsible for health problems. Over the next few years a 'slight but definite improvement' in the general standard of nutrition was noted.[100]

The pessimists, such as Webster and Mitchell, however, see a clear link between the deprivation caused by unemployment and low wages in the inter-war period and the problems of health. Mitchell in her study suggests that, 'The national demographic picture thus postulates the possible connection between economic conditions and sheer survival for sections of the population in Britain.'[101]

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97. *ARSMON,* 1935 p. 12 and 1936 p. 10; Welshman, 'School Meals and Milk', p. 14 and p. 20; Webster, 'Healthy or Hungry', p. 121; Margaret Mitchell, 'The effects of unemployment', p. 113
98. D H Aldcroft, *The Interwar Economy: Britain, 1919-1939* (1970), p. 375. J M Winter, 'Infant mortality, maternal mortality, and public health in Britain in the 1930s', *Journal of European Economic History*, 8 (1979) p. 440
99. *ARSMON,* 1934 and 1938. See also Nottingham Oral History, (NLSL), A73 where a teacher describes children coming to school undernourished and others who did not attend because they had no clothes to wear
100. Figures quoted over the previous years had been produced by the same people, so that the standards had remained the same.
101. *ibid.* p. 109

Table 5-7: The state of nutrition of schoolchildren by percentages

	1935	1936	1937	1938	1939	1940
Excellent	9.3	7.2	7.1	7.6	6.8	8.45
Normal	72.17	74.83	79	80.2	78.91	72.3
Sub-normal	18.4	17.5	13.4	12.4	13.78	17.75
Bad	0.12	0.52	0.2	0.4	0.51	1.5

Source: ARSMON 1938 and 1940

The Ministry fought to salvage its image in this period by using the alleged falling number of malnourished children (Table 5-7) to emphasise its position that there was nothing to connect low income and malnutrition.[102] In any case, to have increased unemployment rates would have been an admission of failure on the part of government and would have put the unemployment rate level with those of the unskilled worker in employment.

Although Nottingham did not suffer the worst excesses of the Depression that areas such as the north-east experienced, it was still a low-waged town with pockets of poverty distributed throughout. Short-time working created severe problems for many families who were existing on an average of £2.10s.0d a week whilst the basic needs wage was £2.13s.2d.[103] One female resident recalled that her grandfather in 1935, was earning £2.12s.0d a week emptying toilets; another remembered a lot of people who were living in poverty in the 1930s.[104] In 1935 the Public Assistance committee reported an increase of 14.3 per cent in payments and a 13 per cent increase in the actual number of recipients.[105]

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102. Mayhew, '1930s Nutrition', p. 452 and Mitchell, 'The effects of unemployment' p. 114
103. Colin Griffin, 'The identity of a twentieth century city', in J V Beckett, ed. *A Centenary History of Nottingham*, (Manchester, 1997), p. 425
104. Nottingham Oral History, (NLSL), A12, female born 1913 and A84
105. *Nottingham Guardian (Daily Guardian),* 26 February 1935, p. 4, col.3

However, the government's optimistic view was continually being attacked and particularly with the publication of John Boyd Orr's Food, Health and Income. He expressed the opinion that until 10s per adult was spent, those on low incomes would suffer less than optimal nutrition. He also noted that half the persons, whose income per head per week was less than 10s, were children under 14 and that between 20 and 25 per cent of the children in the country were in the lowest income group.[106] He further went on that the average diet in the lower income groups was inadequate for perfect health and the 'evil effects of poor diet' are accentuated in children.[107]

On the other hand, the figures produced for the city (see Table 5-7) compared favourably with those from the county where there was no organised school feeding in the county elementary schools. Although conditions in rural areas could be as bad as in urban areas, it is thought that rural areas on the whole were better provided in terms of food and living conditions. Dr C Tibbits, senior School Medical Officer for Nottinghamshire was quoted as saying, 'The picture is not unfavourable'. Nutrition examinations show 87.6 per cent of the children to be normal; 7.5 per cent slightly sub-normal; 4.6 per cent excellent and only 0.16 per cent bad.[108]

By 1940 the School Medical Reports claimed that good employment in the area had kept the problem of poor nutrition to a minimum and it was hoped that this would continue. A cautionary note was sounded about some children who had suffered during the period when the schools were on short time but would probably have suffered at anytime and the main object was to ensure that the children's food should remain adequate.[109]

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106. John Boyd Orr, *Food, Health and Income: a report on a survey of adequacy of diet in relation to income,* Second Edition (1937) p. 27
107. *ibid.* p. 44
108. *Nottingham Evening Post*, 1 November 1939, p.3, col.3
109. *ARSMON, 1940.* The definition of adequate is not embraced in the report.

School milk was the other contribution to ensure that schoolchildren received an improvement in their nutrition but the main reason for promoting milk was more to do with concern for the dairy farmers who were facing a crisis of over-production. In the 1920s milk was still considered to be an unpopular beverage, especially amongst the working-classes and this is hardly surprising when one considered the notoriety of its condition. Fresh milk tended to be substituted either with or by sweetened condensed milk, which was more palatable to the families of the working class and having a longer 'shelf-life' than fresh milk, so a revolution was necessary to elevate its status in the eyes of the country.

A combination of social and scientific experiments laid the foundations for raising the popularity of milk. The experiments of Dr Cory Mann, whose Medical Research Council study of 1926 had shown the benefits of feeding milk to boys from a children's home, was followed by work carried out by Dr John Boyd-Orr who found a correlation between an added milk diet and the extra growth of children. He believed that if more milk was consumed by poorer children it would improve deficiencies in their diet and there would be a rapid improvement in their health.[110] Moreover he found that separated milk produced the same benefits as whole milk so there was no necessity for wasting milk after other dairy products had been produced.[111]

Milk could not be publicised widely until it was seen to be clean and healthy and Orr suggested this could be achieved by improving both the condition of the cattle and the conditions in which the milk was collected. There had been some slow progress in this matter from the early part of the twentieth century and in 1915, the National Clean Milk Society was founded, campaigning for stricter controls over producers and retailers of milk.[112] One further obstacle which had to be overcome was

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110. Alan Jenkins, *Drinka Pinta. The story of milk and the industry that serves it* (1970), p. 77
111. Francis McKee, 'The popularisation of milk as a beverage during the 1930s', in Smith, ed. *Nutrition*
112. Jenkins, *Pinta,* p. 45

to prevent the spread of bovine tuberculosis from cattle to man. Despite there being clear evidence that some milk from cattle was infected many farmers still refused to accept that this was the case and used this argument against pasteurisation which they claimed was unnecessarily expensive and that the milk lost some of its natural qualities in the process.

School children had been given milk before 1906, but this scheme had been on a purely local basis. The formation of the National Milk Publicity Council in 1920 marked the beginning of a national campaign to promote milk to the whole population. By 1927 they were promoting sales of milk in schools at a cost of 1d for a one-third pint of milk and by the 1930's the number of children taking up this offer was around one million. At this price, the cost of providing one pint of milk to the local authorities would have been far less than having to provide school meals and probably more nutritious. In 1934 all previous schemes were superseded by the Milk Act of that year, making milk available to children in elementary schools at a price subsidised by the government and the newly established Milk Marketing Board. The cost of the milk, still provided in one-third pints, was reduced to ½d per day. The Board of Education circularised local education departments by recommending the scheme but there were some members in the Ministry who were less than convinced of the benefits of milk.[113] There was less than universal take-up of school milk and in 1936, less than half the elementary schoolchildren were taking advantage of the scheme. Fewer children in rural areas and in the depressed areas received school milk but this was blamed on the indifference of parents and children alike. There was still the stigma of selection due to signs of malnutrition, in order to receive free milk and therefore many of the very needy children did not receive milk. There were calls from various pressure groups and in particular the Children's Minimum Council, for more free milk to be

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113. PRO MH56/40. Memo from Chief Medical Officer citing Moll's view on milk consumption. A memo suggests that excessive amounts of milk (¼ pint per child) may be injurious to health, promoting the enlarging of the liver, spleen and flabbiness

distributed and by 1939, over three-quarters of schools were providing milk and over half were receiving free or subsidised milk.[114]

Nottingham Education Board appears to have made a good response to the issue of milk provision and immediately took the initiative in 1933. There had been concerns expressed in the Reports about how much milk children drank even before 1934. The School Medical Officer suspected that only small quantities of milk was given to the children at home, despite it being essential in the diet and this was not helped by the Medical Officer expressing some concern about the cleanliness of milk offered for sale. The following year when the new scheme began, the School Medical Officer having commented on the difficulty of compiling a reliable report on nutrition, felt there was a need to improve the diets of children because he believed that very few children ate eggs, meat was only eaten once a week and cups of tea provided the only milk. In other words children were not eating enough of the accessory foods needed for growth.

A survey carried out in Nottingham during 1934 into the quantity of milk consumed, revealed that income levels and the amount of milk consumed were linked. Table 5-8 and Table 5-9 show there was a decrease in average consumption of almost 45 per cent between the highest to the lowest incomes, indicating that purchasing power was a vital factor in consumption. From a dietetic standpoint it is generally assumed that families with children have a greater milk requirement than families without children. The evidence from Nottingham indicated, however, that childless couples consumed more liquid milk per head suggesting that there were other demands on the household money in all groups with children and that milk, which was comparatively expensive, was not a priority. It was also shown that the larger the

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114. Welshman 'School Meals and Milk', pp. 19-20; Hurt, 'Feeding the schoolchild', pp. 189-190; McKee, 'Popularisation of milk', p.129; Frazer, *Public Health*, p. 407 and Drummond and Wilbraham, *The Englishman's Food*, p. 447

family the less likely fresh milk would be purchased and in a family of eight with unemployment, all the milk purchased would be milk substitutes.[115]

Table 5-8: Liquid Milk consumption by persons classed in occupational groups

Groups	Milk consumed (pints per head per week)
Middle class	4.1
Good working class	3.1
Poor working class	2.3
General average	3.3

Table 5-9: Comparison of amounts of liquid milk consumed by families with, and families without children

Milk consumed (pints per head per week)		
Groups	**Childless families**	**Families with children**
Middle class	4.6	3.8
Good working class	3.5	2.9
Poor working class	3.4	2.1

Source: S M Makings, Journal of the Ministry of Agriculture, XLII, 5, 1935

The medical profession agreed that children should have at least one pint of milk a day, but, aware that this was this wishful thinking, decided that it was better for every child to have school milk. The selection of children eligible for milk was usually made by the Medical Officers at the physical clinical examination on the grounds that the children were suffering from bad or subnormal nutrition or were considered by a teacher as one who would benefit from school milk The report makes the distinction that recommendations were on medical grounds and not on poverty but it stressed, that if it was felt poverty existed, it was unwise not to act until there were signs of malnutrition. Unfortunately mistakes were made and children who deserved milk

115. S M Makings, 'Some aspects of liquid milk consumption', *Journal of the Ministry of Agriculture*, XLII, 5 (August,1935) p. 426

failed to receive it and some who were already receiving milk at home were supplied with school milk. From April 1934 over 20,000 children had been surveyed and of these only 10 per cent had been recommended to receive free milk, and of those, just over half had actually been having the milk. There were various reasons for this; some schools preferred to use dried milk; parents alleging the child was unable to take milk; parent's ignorance or hardship. The teachers played an active role by attempting to persuade parents of the benefits of milk which was in contrast to earlier years when it was the School Medical Officer only who could recommend children to receive schoolmeals. During 1936, 18,020 children had purchased milk at ½d and 1,356 had received free milk. In addition 1,316 children had received a dried milk preparation at 2½ d per week and 52 had received it free of charge.[116]

Welshman and Webster have been particularly critical about the way in which school milk was distributed, especially in South Wales and other depressed areas, indicating the great diversities spent on nutritional supplementation.[117] The evidence for Nottingham is an example of this diversification because there do not appear to be any outstanding conflicts, only a solid attempt to increase nutritional levels. This is reflected in the 1935 Report which states, '...with confidence' that The Milk scheme and the Feeding Centres were available to help families where serious under-feeding was habitual and health problems existed'.[118]

The subsequent reports suggested an upward trend in nutrition and consequently better health but it was tempered with a cautionary note that there were still a number of children who were below the normal standard. At the outbreak of the Second World War employment had improved, as had many children's' diets, but the danger lay in the insidious ill-health affecting many of the working people.[119]

116.*ARSMON,* 1936
117.Welshman, 'School Meals and Milk', p. 20; Webster, 'Health, Welfare', pp. 204-230
118.*ARSMON,* 1935
119.ARSMON, 1940

Conclusion

The humiliating defeat of the British army in South Africa during the Boer War pressured the government into setting up an enquiry into the physical condition of the nation. The subsequent report in 1904 was the first acknowledgement that there was widespread ill-health among the working-classes. Two high profile enquiries by Booth and Rowntree in the last two decades of the nineteenth century had already revealed the extent of poverty in two major cities and the 1904 report revealed a link between the poor environmental conditions and an unhealthy citizenry.

At the same time, the end of the nineteenth century saw a growing interest in scientific experiments into nutrition, but until the discovery of vitamins in 1912, diet and nutrition were equated with energy producing carbohydrate foods - quantity rather than quality. The Victorians believed the problem of insufficient or incorrect diet to be the responsibility of the mother and it was her lack of education and mismanagement that was the cause of so many children being inadequately fed. The Victorians failed to accept that inadequate wages, poor housing and insanitary conditions was reflected in the widespread ill-health among the working class.

The examination of the few diets available for Nottingham reveal that they consisted of mainly carbohydrates, proteins and fats, with very few vegetables and fruit; the accessory foods. These monotonous, starchy diets are mirrored in the evidence of the diets used in the workhouse and prison planned to give bulky, energy-giving food.

The discovery of vitamins and the later interest in the new knowledge of nutrition began to connect much of the ill-health from diseases and illnesses, such as measles, phthisis and rickets, with poor diets and particularly, poor diets during childhood.

The school medical reports for Nottingham, which began in 1909, revealed a strata of children suffering from ill-health, previously undetected because of the lack of medical examination. The introduction of the Administrative Provisions Act proved to be a crucial piece of legislation as it permitted schoolchildren to be medically examined. It had been initially thought that there were few desperate cases, but this was soon disproved. Their plight was not always obvious from cursory examinations, and placed under the scrutiny of a full examination, a substantial number were found to have rickets, defective dentition, defective eyesight and to be suffering from illnesses such as ringworm, conjunctivitis and impetigo.

The schoolmeals provided did not appear to be any better in nutritional value than those received in the home but evidence indicated that there was a slow upward trend in the health of some schoolchildren until the 1920s. Nevertheless, there were anomalies which give conflicting information. During the mid-1930s a gradual improvement in health is again visible, suggesting an improvement in diet but, by the onset of the Second World War, there appeared to be a decline. This is contrary to the Webster *et al.* view that diet during the Depression was inadequate, resulting in widespread ill-health. During this period the government was continually having to defend its optimistic view that ill-health was not the result of the unemployment and hardship which the country experienced during the 1930s a view which was dealt a severe blow with Boyd Orr's publication[120] that standard diets indicated that the average diet in the lower income groups were inadequate for perfect health.

The introduction of milk at school was an attempt to further improve health and once again Nottingham Education Authority was swift to provide milk, despite Boobbyer's caution over its cleanliness. This was a sensible move as a survey carried out in 1934 in Nottingham revealed that poorer families with children consumed less milk than better-off couples without children.

120.Orr, *Food, Health and Income*

The conclusion that we must draw from this chapter is that although there was hardship and ill-health among certain sectors of the population in Nottingham at the beginning of the twentieth century, the implementation and introduction of school meals and milk helped to reduce this trend in Nottingham children. It is interesting to see that the education department in Nottingham was quick to adopt the two acts whereas other departments, Housing for instance have been seen to be very sluggish in taking up statutory legislation. Perhaps the action of the Education Committee demonstrated a new attitude towards the less well-off.

Chapter 6

Disease and Health

Introduction

This chapter concentrates on the infectious diseases which had a direct affect on the gastro-intestinal and respiratory tracts, and which were affected by or had an influence on the nutritional status of individuals. The diseases include cholera, typhus and typhoid (enteric fever), the latter being the two 'filth diseases' associated with insanitary living conditions. Cholera and typhus are spread by the intestinal excretions through the agency of water, food or contaminated utensils. The other diseases are respiratory tuberculosis (phthisis), measles and whooping cough, infections which are spread by the droplet method through secretions from the carrier; coughing, sneezing and spitting. Rickets is the odd one out because although not infectious it is caused by a deficiency of vitamin D, and has been linked to measles and whooping cough.[1]

All the diseases were influenced by environmental conditions and as such were recognised by nineteenth century observers as being preventable. They were all, with the exceptions of phthisis and rickets, designated as miasmic diseases in the registrar-general's classification.[2]

Measles, whooping cough and rickets affected mainly children. Measles and whooping cough were killers and both could be endemic and epidemic.[3] Phthisis and typhoid were considered adult diseases often resulting in death.[4]

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1. Anne Hardy, 'Rickets and the rest: child-care, diet and the infectious children's diseases, 1850-1914', *Social History of Medicine,* 5, 3 (December, 1992), 388-492
2. Anne Hardy, *The Epidemic Streets. Infectious disease and the rise of preventative medicine, 1856-1900* (Oxford, 1993), p. 3
3. Hardy, *Epidemic Streets*, p. 9 and 29
4. Infant diarrhoea has not been included in this chapter as it will be dealt with separately in the chapter dealing with Infant mortality.

This chapter aims to explain the aetiology of the diseases during the period 1850-1939. The nosology of diseases in the early nineteenth century was often confused and may have distorted the death figures for certain diseases for example typhus and typhoid were considered to be the same disease until 1869 whilst the diagnosis and recording of phthisis, was often confused with bronchitis.

By isolating the districts where each of the diseases caused the most devastation in a particular year, it will be possible to cross-check the information with the location of poor housing and poorly managed excrement removal. If the two show a correlation then we can suggest that the environment played an integral part in the death rates from the diseases.

Having established when and where the diseases were to be found, this information can be measured against any structural changes which were happening in Nottingham, such as slum clearance and improvements in sanitary conditions, which are addressed in chapters two and three. If there is an obvious reduction in death rates at the same time that environmental improvements were underway then Szreter's 'social intervention' may be applicable. If the opposite is the case, in other words, environmental improvements were not taking place but the death-rates were falling then other reasons have to be sought.

In this chapter it will be established that nutrition affects the outcome of disease. Substantial evidence suggests that, in many diseases, the survival or death depends on the nutritional state of the individual.[5] The following table gives a list of infectious diseases believed to be influenced by nutritional status:

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5. Sumit Guha, 'The importance of social intervention in England's mortality decline: the evidence reviewed', *Social History of Medicine*, 7, 1 (April, 1994), p. 104

Table 6-1: Infection and Disease

Influence	Disease
Bacterial	Tuberculosis
	Bacterial diarrhoea
	Pertussis (whooping cough)
Viral	Measles

Source: S J Ulijaszek, 'Nutritional status and susceptibility to infectious disease', p. 139.[6]

There is a close relationship between typhoid and public health measures and typhoid could well have been dealt within the chapter on public health. However, the majority of the evidence on the disease's prevalence and fatalities is to be found between 1889 and 1914, the period after the introduction of public health acts in the 1870s when public health was changing to private health and for this reason it was decided to discuss all the diseases together in one chapter. The same consideration applies to phthisis; the investigations undertaken by Boobbyer into the link between housing and phthisis suggest they could have been studied in the chapter on housing. In this case it was felt that there were factors other than housing contributing to the high death rates thereby allowing a clearer picture to emerge.

The majority of the figures expressed are for deaths only, the exception is typhoid fever. Death figures only reveal part of the ill-health which prevailed in Nottingham, as the number of cases of a particular disease could have affected a greater or lesser number of people. Rickets is a good example, where the death rate was very low but the number of cases were far more numerous than had been thought. It is only possible to see part of the picture, and the underlying morbidity can only be speculated upon.

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6. S J Ulijaszek 'Nutritional status and susceptibility to infectious disease' in G A Harrison and J C Waterslow eds., *Diet and disease in traditional and developing societies*, 30th Symposium Volume of the Society for the study of Human Biology (Cambridge, 1990)

Adult Diseases

Cholera and typhus

Cholera and typhus were both influenced by environmental conditions. They were both epidemic in Nottingham in the first half of the century, but by the 1870s had diminished in importance to the health authority.

Cholera, regarded as perhaps the most important disease to instigate sanitary reform, had swept through Britain in 1832, travelling at speed and creating devastation wherever it visited. There was a high percentage of fatalities, between 40-60 per cent of those contracting the disease.[7] The disease is spread by the faecal-oral route influenced by a lack of cleanliness, diet, personal hygiene, public and private sanitation and it was these factors which gave it such a powerful influence. In Nottingham an emergency Board of Health was appointed but as soon as the epidemic had subsided it was disbanded but later reformed in 1847 as the Sanitary Committee. The committee was later to claim that as a result of their efforts, Nottingham was virtually untouched by the later cholera epidemics. Buildings had been demolished to allow air to circulate - the miasmic answer to the problem of controlling the spread of infectious diseases.[8]

Until the isolation of the cholera bacillus in 1883 by Robert Koch, medical opinion had been divided over the prevention of the disease. The miasma theory succeeded because it was tangible; the piles of rotting excrement and rubbish, giving off filthy impregnated air were very visual and their removal would surely result in less pollution. The task must have seemed insurmountable, particularly as epidemics called for immediate action, but at least it appeared that the authorities were taking action.

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7. Anthony S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), p.118
8. J V Beckett, ed. *A Centenary history of Nottingham* (Manchester, 1997), p. 243

Typhus and typhoid (enteric fever) were, until the middle of the nineteenth century regarded as the same disease and until 1869 were both included under the heading "fever" in the Registrar-General's returns. They were clinically indistinguishable at the time but their aetiology bears no similarity. Typhus is a rickettsial disease, spread mainly by the faeces of the body louse, being rubbed into broken skin. Typhus has been associated with famine, but more likely to be recognised as a disease associated with dirt and overcrowding. Hardy argued that it had close links with social dislocation and local economic problems and is therefore of an epidemic nature, unlike typhoid which is endemic. A lack of poor personal and household hygiene is common in both typhus and tuberculosis. Both diseases are dependent on domestic and working conditions, cleanliness, ventilation and personal hygiene and the economic fluctuations of society.[9]

The decline of typhus from the 1870s onwards has been explained in parallel with a variety of sanitary improvements, including water supply, drainage, diet and better housing, the latter dislodging it from its chosen habitation. However, Luckin concluded that the decline in typhus was complex and could not be explained in easy terms.[10] There is also a view that by the 1870s the natural history of the disease was changing. This is not without support as there was a widespread decline in typhus, though not uniformly, where sanitary improvements had not been made, a view apparently not favoured by Szreter.[11] This can be illustrated using Nottingham as the example. Figure 6-2 shows that there was a decline, if somewhat erratic, in the disease over the period of 1852 -1870. Little had been achieved in improving sanitary conditions in Nottingham during this time. The two obvious upward trends of 1861-2

9. Hardy, *Epidemic streets*, p. 191
10. Bill Luckin, 'Evaluating the sanitary revolution: typhus and typhoid in London, 1851-1900', in R Woods and J Woodward eds. *Urban disease and mortality in nineteenth century England* (1984), p.118
11. Wohl, *Endangered lives,* p. 126; Simon Szreter, 'The importance of social intervention in Britain's mortality decline c. 1850-1914: A re-interpretation of the role of public health', *Social History of Medicine,* 1, 1 (April, 1988), 1-37

and 1865-7 maybe accounted for by a nation-wide epidemic between 1861-1867 [12] and by the 1870s the population of Nottingham had also increased by about one-third.

The only details available on the distribution of the disease in Nottingham is shown in Table 6-2 and refers to the wards shown in Figure 6-1. It is interesting to see that the death figures in the Park ward during 1853-58, were comparable to those in the Byron, St Ann's and Exchange wards. The Park ward had a far greater percentage of better-class housing, which by association would have had a better water supply and drainage. Luckin has suggested that improved drainage schemes, which began in the 1840s, would have transported large quantities of refuse from the urban area to rural areas, the liquid filtering into the water sources, and may well have been responsible for the increase in mortality from water-transmitted infections. The evidence from Nottingham suggests that there may well have been a connection between the supply of water to the ward and the unusually high death figures.[13] By 1886, typhus was no longer recorded in the Annual Health Reports. [14]

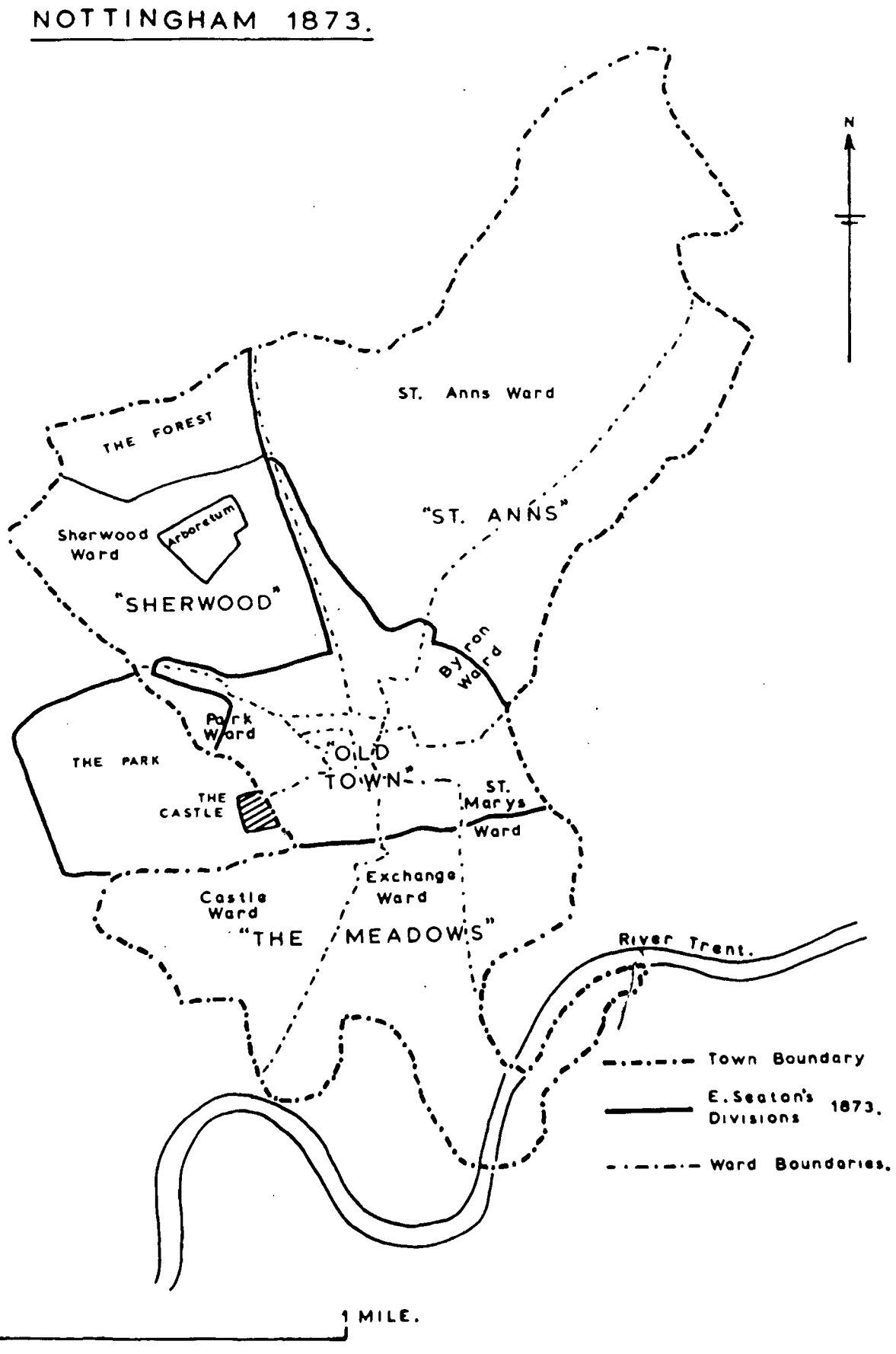
Table 6-2: Distribution of deaths from typhus in Nottingham, 1853-8

	Byron	St Ann's	Sherwood	Park	Castle	Exchange	St Mary's
1853	5	6	1	11	2	2	6
1854	3	1	0	10	2	6	5
1855	9	8	3	6	2	3	2
1856	0	1	0	0	0	5	2
1857	2	7	2	2	3	2	1
1858	9	1	1	7	1	5	3

Source: Sanitary Committee Reports 1853-1858.

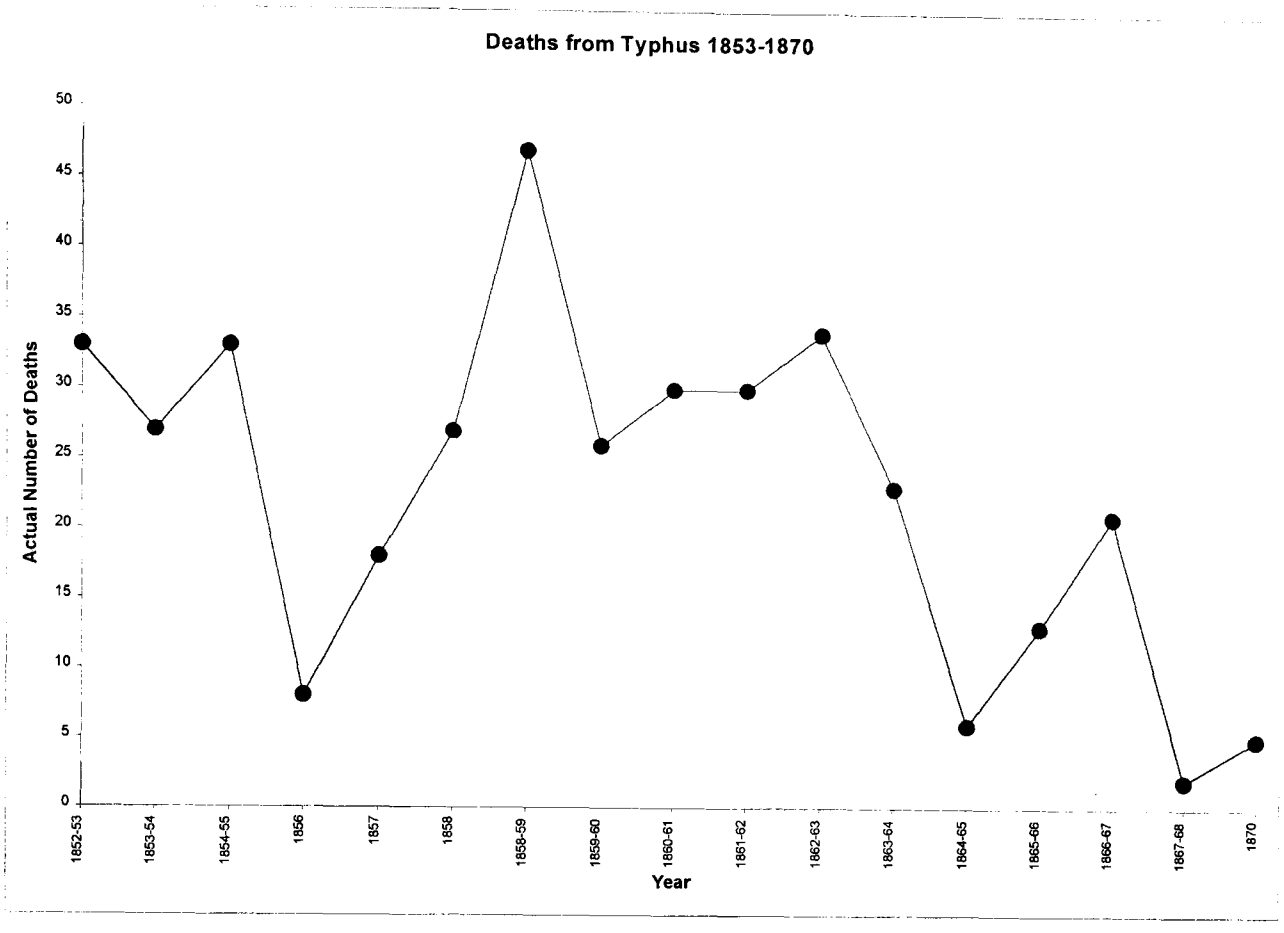
12. Charles Creighton, *A History of Epidemics in Britain. Volume 2*, Second Edition (Cambridge, 1965), 2, p. 209
13. Luckin, 'Typhus and typhoid', p. 112
14. *ARMOH*, 1885 and 1886

Figure 6-1: Nottingham 1873 - Ward Map



Source: CJ Thomas Geographical aspects of the growth of the residential area of Greater Nottingham in the twentieth century', I (University of Nottingham, PhD, 1968)

Figure 6-2: Deaths from typhus in Nottingham 1853-70



Typhoid or enteric fever

Like other diarrhoea diseases, typhoid or enteric fever[15] was considered a miasmic disease. Described by Dr Trench, Medical Officer of Health for Liverpool as 'born of filth', it could be contracted by a 'whiff of tainted air' from an untrapped drain or from drinking water impregnated with sewage. Typhoid was unimpressed by social class, posing difficulties for the authorities in understanding how it was spread - in 1873 William Budd was of the opinion that the danger was in drinking water contaminated through typhoid-infected sewers; Charles Murchison in 1884, saw the problem of accumulated refuse decomposing in confined spaces giving off poisonous gases; Max von Pettenkofer's theory was that 'the presence of the specific germ in the soil; a susceptible population predisposed to infection; and a soil saturated with

15. Bill Luckin, 'Typhus and typhoid', p. 105 and Hardy, *Epidemic streets*, p.153. Difficulties are experienced in mortality rates for typhoid, because of its confusion with typhus until 1868. A third category is continued fever. The consensus is that classification is of limited statistical importance and there is evidence in favour of redistributing the mortality attributable to typhoid, which is followed in this research.

organic matter, together with conditions of porosity affected by temperature and moisture or by the rise and fall of the ground water.'[16]

In truth there was probably an element of all three theories in its spread. The Murchison view was a miasmic assumption but, however erroneous, the preventative efforts of clearing cesspools, manure heaps, closing polluted wells and improving sewage management went some way to easing the problem. Von Pettenkofer's view of saturated soil was not misplaced either because in 1865, the Sanitary Committee of Nottingham complained that many of the new houses erected in the Meadows area, part of the newly enclosed areas, were being affected by damp and water impregnated with the contents of sewers and cesspools.

The poor quality of water supplies in the earlier part of the nineteenth century was always under suspicion. Francis Hill has highlighted the problems of unclean water which beset Lincoln during the nineteenth century. The failure of that corporation to tackle the problems of sewage removal had allowed liquid filth to contaminate well-water used for drinking and an outbreak of typhoid fever in 1905 was traced to the water supply.[17] The growth of urban areas, together with greater supply of water, led to higher levels of mortality from typhoid. However from the 1830s, parts of Nottingham had been fortunate to receive a clean water supply from filtration beds on the River Trent and at no time was the supply of water to the town in question.[18]

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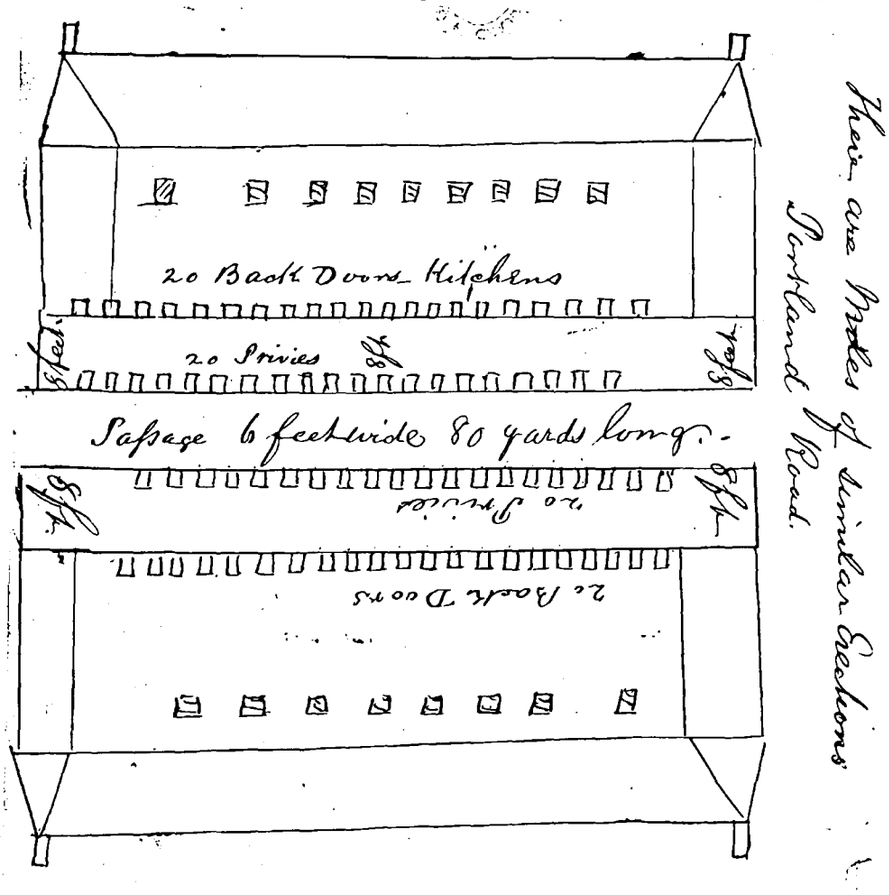
16. Jeanne L Brand, *Doctors and the State. The British medical profession and government action in public health 1870-1912* (Baltimore 1965), p. 54; Hardy, *Epidemic streets*, p.165 and W M Frazer, *A history of public health 1834-1939* (1950), p. 81
17. Sir Francis Hill, *Victorian Lincoln* (Cambridge, 1974), p. 157, 165 and Chapter 7; Frazer, *Public Health,* p. 295.
18. Frazer, *Public Health,* pp. 379-80. There is one further way of spreading the disease, through a carrier, who may be immune to the disease, which added to its mystery. A person could be apparently healthy and yet remain infectious for months and years afterwards

The confusion between typhoid and typhus in the mid-1900s veiled the true extent of typhoid and it was only after 1868, when the two diseases were finally separated that typhoid was shown to be on the increase. So it must have been great relief when Boobbyer in 1915 was able to comment on its decline saying, "It is difficult to realise that enteric fever which till the end of the first decade of the recent century was a veritable scourge of the city."[19]

Figure 6-3: John Morley's sketch of Portland Road



Source: PRO MH 12/9462

Figure 6-3 shows a sketch from John Morley's letter sent to the council complaining about property built on council land, in which he states that the privies were only emptied twice a year.[20] The extensive use of pail closets in the poorer

19. *ARMOH,* 1915.
20. See PRO MH12/9462. A letter dated 1873 sent to the council complained of the sanitary conditions. Property built on corporation land on Raleigh and Portland Streets had their privies emptied only twice a year and culinary preparation took place only 8 feet away from the privies.

districts had already prompted Seaton to link night-soil removal with the prevalence of infant diarrhoea. Whitelegge, Seaton's successor, was conscious of the detrimental effect pail closets had on spreading disease but was prepared to look to other possible sources when an outbreak of typhoid occurred. However, he could find no connection with milk or other food supplies and although defective drainage was found, there was no direct link found between it and the disease. In June1887 the Health Committee requested enquiries to be made into the relative merits of tub and water closets and their cost in other large towns. The following September, the committee authorised the Medical Officer to find 'suitable' properties to experiment with flushing closets similar to those used in Birmingham[21] even though the benefits of water closets had been known as early as 1854.[22]

By March 1888, Whitelegge reported a large increase in typhoid fever, which was abnormal for that time of year,[23] and in an attempt to minimise the risks of cross-household contamination during February and June 1889, over 800 steel pails with India rubber bottoms were ordered but this exercise did not alleviate the problem of the offensive ashpits and privies which still existed in considerable numbers around the town. The Health Committee was informed of complaints arising from offensive ashpits close to the dwellings in Alfred Street, Manvers Street, Robin Hood Street and Camden Street.[24]

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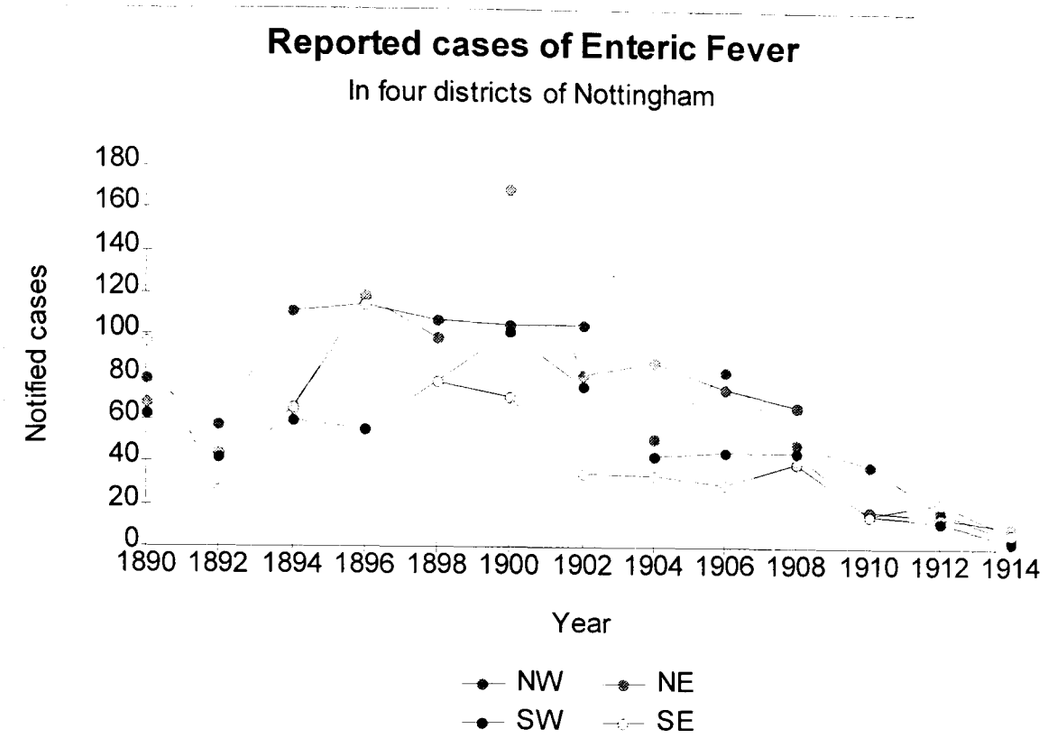
21. NAO CACM/45/12. Health Committee Minute Book 12, 10 June 1887, 1 July 1887 and 30 September 1887. True water closets were flushed with fresh water and the excreta was washed away immediately, waste-water closets, used waste water which stayed in the basin until more was thrown down
22. *SCR,* 1854 and *ARMOHLGB*, Twentieth Report, PP.1890-91, C6461 (XXXIV) p.185 describing difficulties of water closet systems
23. NAO CACM/45/12, 23 March 1888
24. *ibid.* 1 March 1889

Figure 6-4: Reported cases of enteric fever, 1890-1914



Source: Annual Health Reports 1890-191

By August 1889 (see Figure 6-4), when Boobbyer became Medical Officer, Nottingham was suffering from a high rate of mortality from typhoid, particularly in the densely populated areas of the town. In a great many of the reported cases of typhoid, sanitary defects were discovered and removed, but as epidemiology was still in its infancy it was difficult to prove a connection between the defects and the spread of the disease. The areas which suffered the highest number of cases were Radford, the north-west, Sneinton and the south-east, all areas with a substantial number of pail closets. Boobbyer was adamant that the use of pail closets to the exclusion of all other forms of waste disposal, and more importantly, the mass of material which needed to be removed daily, was the cause of so many cases of typhoid. Seaton had previously commented on the removal of night soil to the wharf on Leenside, near to a densely populated area. According to Boobbyer about 50,000 tons of night soil - the dejecta from the pail closets - was exported from the town annually.[25]

25. *ARMOH,* 1893

The 1890s saw typhoid affecting all parts of the town, especially the north-west and Bulwell, which was unusual because both areas were less densely populated. Hazel Street, Bulwell was a street of well-built modern, attached, 5-bedroomed houses occupied by coal miners who were earning good wages, had the most noticeable incidents during the summer and autumn. The street had good drainage and paving but its one failing was that of pail closets, although these were in good, clean repair[26] so it was assumed that the problem was caused by poor excremental removal management.

Plate 6-1: Pleasant Place, Millstone Lane c.1919, showing communal pail closet cubicles

By 1896 there was no question in Boobbyer's mind that the source of the endemic typhoid in the town was the direct result of the waste removal system and the cleansing of the pails. He dismissed the suggestion that milk and water could be the source of the infection.[27] Unlike other towns, Nottingham had an exceptionally good

26. *ARMOH,* 1893
27. P Boobbyer, 'Typhoid Fever in Midden Towns', *Public Health*, (1896-7), p. 380. Creighton, *History of Epidemics*, p. 222, has also written that the medium of milk was a possibility but that it could not be responsible for the bulk of the disease

water supply both in terms of quality and abundance.[28] The proportional incidence of the disease upon houses with pail closets was more than four and a half times greater than that upon houses with water closets. A summary of the town covering a period of ten years from 1887 to 1896, showed that 1 in 120 houses with pail closets suffered from typhoid fever; 1 in 37 houses with midden privies suffered from typhoid fever and 1 in 558 houses with water closets suffered from typhoid fever,[29] a clear message that the use of pail closets was linked to the spread of typhoid. Boobbyer's concern regarding the prevalence of the disease and its suspected link with pail closets, hit a chord with the Local Government Board who wrote to the council asking what they proposed to do about the problem. The reply was that in future pail closets would be replaced by water closets.[30]

28. *Royal Commission on the State of large towns and populous districts,* Second Report, PP.1845, 610 (XVIII), Appendix Part II, p. 252. T McKeown and R G Record, 'Reasons for the decline of mortality in England and Wales during the nineteenth century, *Population Studies*, XVI (1963), p.116 who consider the improvement in mortality from typhoid was due to improved water supplies
29. *ARMOH, 1896,* p. 41
30. PRO MH 12/9505. Letters dated 17 August 1896 and 18 August 1886

Plate 6-2: Finch Street, showing closets under living quarters c.1912

Over the next two years it was clear that the distribution of typhoid was concentrated in the poorer neighbourhoods of almost all districts, with the following localities suffering the most; Poplar, Sneinton (south-east), New Lenton, Old Radford (south-west), New Radford (north-west).[31] Boobbyer used his local experience of the fever to state categorically that the disease was endemic in thickly-inhabited and poor

31. New Lenton, Old Radford and New Radford had been incorporated into the borough of Nottingham in 1877, and much of the housing was already in a poor condition

urban districts using pail closets and that infection was more liable to be spread from person to person.[32]

The highest recorded incidence of the fever both for cases and deaths, was in 1899. The disease occurred sporadically in the poorer neighbourhoods but especially in New Radford, Sneinton and the Meadow Platts. During July and August there had been exceptionally hot weather with little rain and by September about 320 cases grouped into a small area, apparently spreading from local foci. There were other parts of the town, namely the Park, the Forest neighbourhood and the north of Mansfield Road which were almost totally free suggesting that a local condition was causing the problem and Boobbyer was confident that the poor management of the pail system was the culprit. Infant diarrhoea followed a similar pattern.[33]

In 1902 typhoid was affecting the north-west, the south-east and south-west districts of Nottingham and once again the Park and the central business area were unaffected by the disease. Boobbyer was at a loss to understand why the disease was not more evenly distributed despite so much communication between the different classes suggesting a specific source was the cause. Boobbyer once again brought to the attention of the council the need to convert to the water closet system but new obstacles were raised as to whether the water supply and the farm at Stoke Bardolph could cope with an increase in sewage.[34]

By 1908 Boobbyer had further evidence to support his demand to change over to water closets. A Local Government report showed that Nottingham had a 45 per cent higher rate of incidence compared to Leicester which had begun its conversion to water closets in the 1890s and by 1895 had doubled the number of water closets to pail

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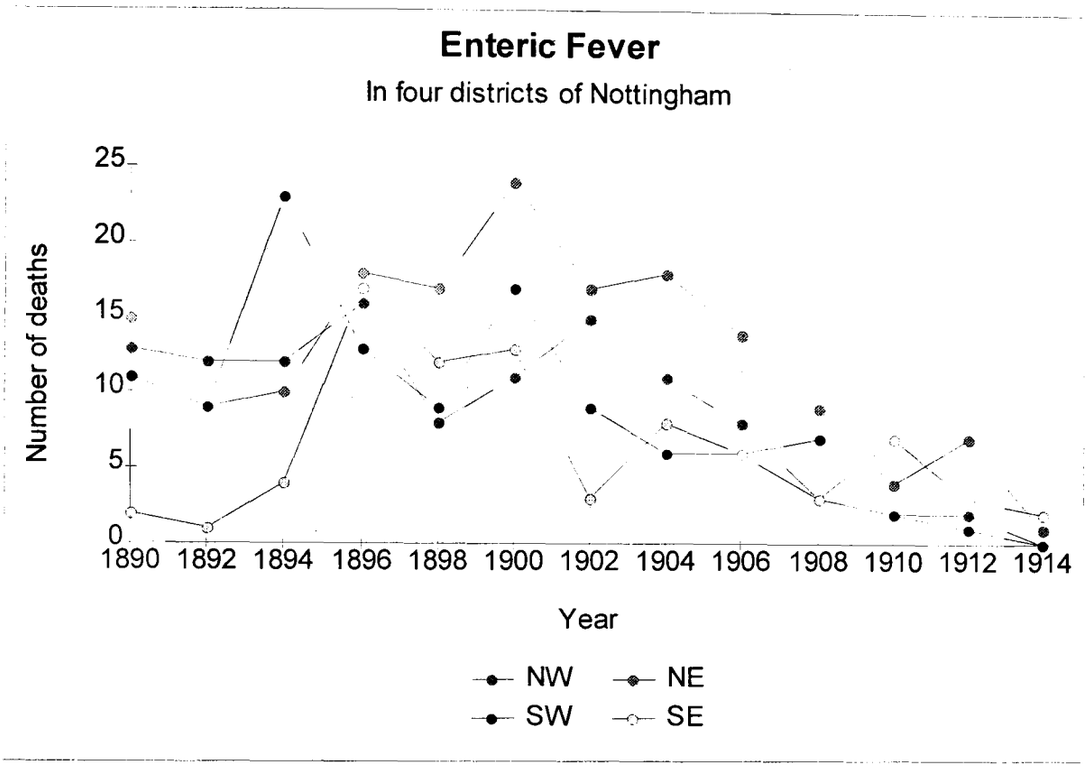
32. *ARMOH,* 1898
33. *ARMOH,* 1899, pp. 36-38
34. *ARMOH,* 1906

closets and privies.[35] This compared to 7,200 water closets and 40,225 pail closets in Nottingham. To emphasise his point that the removal of excrement was the problem, Boobbyer had eliminated the shellfish supply source which was the same for both towns.[36]

Figure 6-5: Deaths from enteric fever



The interpretation is that Nottingham corporation, unlike Leicester, was reluctant to implement the conversion to water closets on the grounds of cost. Nottingham Corporation was prepared to pay lip service to the notion in 1895 when they agreed that the pail system was no longer acceptable, but they were not prepared to spend money on a scheme whereby all the old pails were rapidly replaced. When the Borough Surveyor estimated that a saving of £10000 per annum could be made by the implementation of water closets,[37] they allowed the change to be carried out piecemeal on houses with a rental of £18.00 per annum which left out a majority of low rental

35. *ARMOHLGB,* Thirty-eighth Report, PP.1909, 4935 (XXIX) p. xxvi; Wohl, *Endangered lives,* p. 95; Malcolm Elliott, *Victorian Leicester* (1979), p. 69 and Lawrence Wright, *Clean and decent* (1963), p. 216
36. *ARMOH,* 1910
37. Wohl, *Endangered lives*, p. 100

housing.[38] It would seem that the introduction of the water closet was spacially biased towards the wealthier districts.

The problem lay not necessarily in the pail system but the inherent defects of its management which was incidental to its use among the poor. The use of wooden pails instead of steel was one defect. In 1900, Nottingham was the only large town where the wooden pail was extensively used. The normal cleansing of these pails caused obvious problems and when the dejecta was from infected households, the pails should have been cleansed and the contents disposed of correctly and by failing to do this allowed fever to be disseminated to surrounding houses and neighbourhoods.[39] The method of scavenging whereby liquid or solids from the pails could seep into the soil (already contaminated with filth) was another serious hazard of using the pail system. Boobbyer saw the problems with this method of excreta removal as twofold: the accumulations of faecal matter in the vicinity of dwellings was not only insanitary and a physical mischief but was also a moral evil. A better environment would, in the long run, exert a physiological and educational influence on the poor.

The sex-differential for typhoid suggests that the disease was greater for males than females but this was not always the case and Hardy suggests that there was a swifter decline in typhoid mortality in females than males.[40]

The seasonal pattern of typhoid is associated with the autumnal period. Typhoid made its appearance during long, hot spells which emphasised the necessity the well-managed removal of excrement.[41] It was under these conditions that the 'house' fly developed and did its damage by contaminating food and water.[42] The

38. NAO CACM/45/12, 9 December 1887 and *NBR*, 2 July 1894
39. *ARMOH*, 1896 and Philip Boobbyer, 'Enteric fever and conservancy methods', *Public Health*, (1896), p. 403
40. See *ARMOH* 1902 and 1911 enteric fever tables and Hardy *Epidemic streets*, p. 187
41. Creighton, *History of Epidemics*, p. 217

accumulation of human excreta added to by the large amount of animal droppings left on the roads and paths of the town.[43] From Table 6-3 and Table 6-4, two facts emerge, the first being that wet and cold weather conditions reduced mortality from typhoid and second, the disease is liable to reoccurrence during hot, dry weather. It was noticeable that in years when it was cold and wet the number of typhoid cases was reduced e.g. 1903, 1907 and 1909, whereas in 1901 and 1902, exceptionally hot years, the numbers increased. Nevertheless, the influence of rainfall and temperature could be overridden by other influences.[44]

Table 6-3: Number of cases from enteric fever*, 1901-1911

1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
531	375	201	297	255	285	231	237	157	103	207

Table 6-4: Number of cases and deaths in each quarter from enteric fever[a], 1911

Period	1st quarter	2nd quarter	3rd quarter	4th quarter
cases	37	20	80	70
deaths	7	3	5	11

a.enteric fever = typhoid fever

Source: Annual Health Reports 1901-1911

According to Luckin the hospitalisation of patients had an influence on the spread of typhoid. He argued that for London, the spread and mortality from outbreaks was reduced by the extension of hospital provision to nearly all but the pauper.[45]

42. See Ian Buchanan, 'Infant feeding, sanitation and diarrhoea in colliery communities, 1880-1911', in D J Oddy and D S Miller, eds. *Diet and Health in Modern Britain* (1985), pp. 148-177; *ARMOH,* 1889, for an explanation of Dr Ballard's theory on flies and seasons and Naomi Rogers, 'Germs with legs: flies, disease and the new public health', *Bulletin of the History of Medicine,* 63 (1989), 599-617, for a change in attitude to this pest.
43. See F M L Thompson, *Victorian England: the horse-drawn society*, an inaugural lecture (22 October 1970) p.10. Hardy, *Epidemic streets,* p. 186
44. Hardy, *Epidemic streets,* p. 187
45. Luckin, 'Typhus and typhoid', p.117

Boobbyer had suggested there was a strong correlation between the use of the Isolation hospital and a decline in typhoid.[46] He was also aware, that too many patients were sent to hospital when the fever was at its worst and had they been hospitalised earlier, treatment may have been more effective. Both the Isolation hospital (Bagthorpe) opened in 1891 and the General hospital were used to treat about 250 patients.[47]

The benefit of water closets was demonstrated in Boobbyer's 1913 report in which he showed that the extent of typhoid in houses with water closets was nearly five times lower than those in houses with pail closets.[48] Boobbyer suggested that the conversions should gather apace especially in areas where the houses were of sound quality but unfortunately, the conversions did not go as fast or as systematic as Boobbyer would have wished. Nevertheless, by 1915 the number of cases of typhoid had declined to thirty and between 1916-1918 very few cases occurred, and those were brought home by soldiers. By the 1920s the average number of cases were seventeen which, when compared with the figures for the last five years of the nineteenth century, showed a remarkable decline.

Major Greenwood distinguished three phases in the decline of typhoid in England and Wales; a significant fall between 1875 and 1885, coinciding with improvements in drainage and water supply; between 1885 and 1895, the decline was halted and after 1900 there was a further fall with the role of carriers being recognised and the importance of hospitalisation of patients.[49] However, Nottingham does not fit easily with this or with the remarks of Szreter, (see Figure 6-5) Luckin and Hardy, all of whom saw the period after 1870 experiencing a significant decline in typhoid with the improvements in water supplies.[50] Boobbyer had been at a loss to understand why

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46. *ARMOH,*1897
47. *ARMOH,* 1907
48. *ARMOH,* 1913, 1 in 1311 houses with pail closets and 1 in 5423 houses with water closets
49. Major Greenwood, *Epidemics and crowd diseases. An introduction to the study of Epidemiology* (1935), pp. 157-8

there were so many cases for a '...clean, well-sewered town like Nottingham with a pure water supply...'[51] And later saw no other option than '... to fall back on the conservancy system of excremental disposal...'[52]

Hardy noted that much of the reduction in typhoid incidence after 1870 could be attirbuted to improving domestic water supplies, rising standards of domestic hygiene and the contribution of the preventative services.[53] The period 1893-1900 saw a consistently high rate of cases and deaths which can partially be explained by the growth of the borough after 1897, and only after 1908 is there a significant decline.

It is difficult to see, given the timing of sanitary improvements in Nottingham, how Szreter's 'social intervention' in the form of improved public health played a significant role in the reduction of typhoid. From the available evidence, the balance of probabilities perhaps lies with an improvement in domestic hygiene and *education* for women in areas such as clean food-handling. An alternative suggestion is that better nutrition reduced morbidity and promoted a healthier individual with an immune system capable of fighting off diseases, albeit ones, such as typhoid, the decline of which was usually associated with improvements in sanitation.[54]

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50. Szreter, 'Social intervention', p. 25. Luckin, 'Typhus and typhoid' pp. 112-7 and Hardy, *Epidemic streets,* pp.159-165 and 172-181
51. *ARMOH,* 1896
52. *ARMOH*, 1900
53. Hardy, *Epidemic streets*, p. 189
54. John Woodward, 'Medicine and the city: the nineteenth-century experience', in Woods and Woodward, *Urban disease,* p. 68 and Sally Sheard, 'Nineteenth century public health. A study of Liverpool, Belfast and Glasgow', (University of Liverpool, PhD thesis, 1994), p. 93

Respiratory Tuberculosis

During the nineteenth century tuberculosis, in all forms, was the leading killer.[55] Respiratory tuberculosis was also known as phthisis affecting the adult population, and being most lethal in early adulthood, from the age of 15 to 35 years. It accounted for nearly 13 per cent of the total mortality. Victims were from all classes of life, but the disease was far more devastating among the poorer classes many of whom lived in wretched, over-crowded dwellings and were under-nourished. Those suffering from extra-pulmonary tuberculosis were usually infants and young children. Human tuberculosis is spread by the droplet method -the bacilli being disseminated through the expelled sputum of sufferers by coughing or spitting.

For the first three-quarters of the nineteenth century, tuberculosis was believed to be hereditary - for many it was a fact of life, an inherited constitutional disease but after 1882 with the identification tubercle bacillus by Robert Koch, a more scientific approach was adopted in fighting the disease. Until then, medical men had, within their limited powers, tried to ameliorate the conditions which they believed encouraged the disease. With the growth of insalubrious urban areas, particularly in the 1850s and 1860s, the miasmic theory was where medical and lay persons looked for their answers. The plausible argument for disease being spread by 'breathing foul air' was endorsed by persons of such character as Florence Nightingale.[56] This theory continued even into the latter decades of the century, when Seaton commenting on the 'havoc' caused by consumption reflected, "For however imperfect our knowledge of the causation of this disease may be, it should always be remembered that it flourishes most under bad air." He advocated sanitary measures in the fight against consumption.[57]

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55. Gillian Cronje, 'Tuberculosis and mortality decline in England and Wales, 1851-1910', in Woods and Woodward, *Urban disease*, p. 83
56. See F B Smith, *The retreat of tuberculosis 1850-1950* (1988), p. 31 and Greenwood, *Epidemics and crowd diseases* p. 353
57. *ARMOH*, 1882

As a result of the stigma related to the belief of hereditary transmission, secrecy surrounded the number of actual cases and Hardy said that families would give false addresses or move house to avoid medical enquiries, which consequently led to concealment and collusion played out by the families and their medical attendants, which in turn led to an unspoken non-interventionist policy towards tuberculosis until the last two decades of the nineteenth century.[58] This attitude may have some bearing on its reportage in Nottingham. Although mentioned in the Sanitary Committee Report of 1853, it was never dealt with in-depth in the health reports until 1898. Hardy has noted that the disease did not feature prominently among the recorded concerns of preventative officers.[59]

There was some confusion, before the twentieth century, as to what constituted respiratory tuberculosis and what did not.[60] Until the tubercle bacillus was discovered, diagnosis was based on analysis of the symptoms, which were not readily identifiable as phthisis.[61] In 1898 it was reported that '...many diseases which are ascribed to tuberculosis, such as tabes menesterica ...Observations in the post mortem room have not infrequently ...disproved a previous diagnosis of tabes...Chronic catarrh of the bowel in young children frequently simulates the latter disease.[62]

The age-specific pattern for respiratory tuberculosis was in the period of early adulthood, during the 'industrial' years of life. In 1900, 21.2 per cent of deaths occurred between the ages of 35 and 45 years; 15.2 per cent between the ages of 25 and 35 years; and 16.2 per cent between the ages of 15 and 25 years. Boobbyer later claimed that three-quarters of cases were among people in their 'working period' of

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58. Hardy, *Epidemic streets*, pp. 229-30. In 1913 Boobbyer believed that the real figures for tuberculosis were three times higher than those available.
59. Hardy, *Epidemic streets,* p. 228
60. Smith, *Retreat,* p.11
61. Linda Bryder, 'Not always one and the same thing: the registration of tuberculosis deaths in Britain 1900-1950', *Social History of Medicine*, 9, 2 (1996), p. 254
62. *ARMOH,* 1898

life[63] and particularly so for males. The death rates in 1905 for both sexes over the age of 15 years was for males, 2.408 per 1,000 and females 0.881 per 1,000 so the general trend of sexual differentiation in tuberculosis was for male deaths to exceed female deaths.[64] However, it should not be assumed that this incidence applied throughout, there were obscure differences and the age and sex-specific patterns are complex. Although the earlier years tend to show that in Nottingham, a greater number of males were dying from phthisis and tabes mesenterica it is not a general trend by any means. The number of females dying from phthisis exceeds the number of male deaths in the age group broadly from 5 to 50 years which is in keeping with the general trend of England and Wales, during the period.[65] This differentiation has been explained in terms of the onset of puberty in females as well as the demands of frequent pregnancies and childbirth. Although Woods and Shelton, whilst accepting that repeated pregnancies and exertions of labour may have accelerated the development of tuberculosis, they believed the women were already infected.[66] Another factor was the difference in the standard of living among girls from boys because of their earning power.[67] However, figures for 1914 went against the trend, both in terms of a general increase and also a 25 per cent increase in female deaths, (see Table 6-5) excesses which could not be easily explained. Boobbyer must have been disheartened by this increase, in view of his campaign to create better housing and sanitary conditions over the past two decades. He noted that although there was a general trend for a reduction in mortality, the current figures did not reflect the beneficial effects of reforming influences, such as sanitation. The increase in mortality may have been due to the effects of pneumonia, but according to Boobbyer the figures showed that other factors linked to poverty, apathy and intemperance may have played their part. Whatever the

63. *ARMOH,* 1912
64. See, Smith, *Retreat,* Hardy, *Epidemic streets*, chapter 'Tuberculosis', Cronje 'Tuberculosis'
65. *SCR,*1858-68; Smith, *Retreat*, p. 17 and Cronje, 'Tuberculosis' p. 84, table 4.1
66. R Woods and N Shelton, *An atlas of Victorian mortality* (Liverpool, 1997), p. 107
67. Cronje 'Tuberculosis' p. 89 and H Handford, 'Menstruation and Phthisis' *British Medical Journal,* (22 January,1887) p.153

sex-specific differentials, there was an overall decline of mortality from phthisis in Nottingham, as well as England (see Table 6-6).

Table 6-5: Deaths from tuberculosis in Nottingham, 1913 and 1914

Year	1913	1914
Male	222	232
Female	157	204

Source: Annual Health Reports 1913-14

Table 6-6: Death rate from phthisis, in 5-yearly periods, 1856 to 1885, and in single subsequent years, Nottingham and England

Year	Nottingham	England
1856-1860	3.22	2.57
1861-1865	3.19	2.53
1866-1870	2.78	2.45
1871-1875	2.42	2.22
1876-1880	1.85	2.04
1881-1885	1.99	1.82
1886	1.61	1.72
1887	1.43	1.59
1888	1.42	1.46

Source: Annual Health Report 1889.

Despite a fall in cases and deaths in 1899, Boobbyer obviously felt it necessary to do something more constructive than had so far been done. The hereditary explanation was kept alive because it made more sense of what was known[68] and doctors clung to this diathesis, resisting Koch's findings. Fortunately, Medical Officers seemed to look further, and in Manchester and Oldham in 1888 the respective Officers

68. Smith, *Retreat,* p. 36-7

had both begun to take radical action against its spread.[69] Boobbyer was also spurred into action in 1892-3 when he recommended practical tasks to minimise the spread of the disease by the distribution of handbills.

Figure 6-6: Prevention of tubercular consumption handbill 1892-93

Borough of Nottingham. Prevention of Tubercular Consumption.

This disease is infectious, and liable to spread among persons living in contact with those suffering from it.

Where the lungs are principally affected, the spit of the patients contains most of the poison. This should be received into a vessel containing a strong solution of Carbolic Acid (1 of Carbolic to 20 of Water), and all washing materials and utensils soiled by the patients should be soaked in the same solution before being washed.

Consumptive patients should always sleep alone.

The rooms of consumptive patients should be aired every day, and disinfected and cleaned at least once a month.

In case of the death or removal of any consumptive patient, the Health Department will undertake the disinfection of the infected house and materials.

PHILIP BOOBBYER,

Guildhall, Nottingham. *Medical Officer of Health.*

Although phthisis mortality generally had no seasonal pattern and was not influenced by climatic conditions, there did appear to be a tentative link between the winter and spring seasons, inasmuch that this was the time when other diseases were prevalent, e.g. measles and influenza. The presence of these diseases must have had some bearing on the case and death rates of phthisis, the body would be already severely debilitated to fight tuberculosis. Dr Arthur Latham reporting in 1907 to the Local Government Board said, "(phthisis)...does not and cannot take place unless a man happens to be susceptible...his vitality has been so lowered by his surroundings, by disease, or by quality or quantity of food that he is powerless to resist infection, although previously immune."[70] Woods and Shelton suggested that children weakened by measles or whooping cough, would be more likely to succumb to phthisis in adulthood.[71]

69. Hardy, *Epidemic streets*, p. 255
70. *ARMOHLGB,* Thirty-fifth Report, PP.1907, Cd3657, (XXVII), report by Dr A Latham on Tuberculosis and Sanatoria p. 4
71. Woods and Shelton, *Atlas of Victorian mortality*, p. 108

There was an increase in the number of cases of phthisis during 1895 and 1902 after an influenza epidemic struck the borough. Similarly in 1900 the number of fatal cases of phthisis and tuberculosis increased aggravated by the low temperatures and higher than average rainfall that year. Phthisis sufferers would confine themselves indoors to keep warm and dry which necessitated keeping the doors and windows closed, preventing through ventilation. Phthisis was often associated and confused with other respiratory diseases such as bronchitis, pneumonia and influenza[72] so whilst discussing the frequency of phthisis and its apparent rise or fall, this confusion should be borne in mind.

It has already been indicated that the case fatality was higher for males than females but, from investigations which Boobbyer instigated during the early years of the twentieth century, there were also differences within the two sets of figures. Employed males over the age of 15 years were twice as likely to suffer than those who were unemployed. The rates in 1903 were, 2.408 per 1,000 among occupied men, whereas the rate was nearly halved for unemployed males. However, for those occupied in a workplace with over 500 employees, the rate was 2.00 per 1,000.[73] For adolescents under 15 years, the rate for the unemployed was 1.496, but only 0.2 within the age group 10 to 15 years. The presumption is that the remainder of the deaths must have been in the age range 0-10 years and in that case, the cause of death was most likely to have been extra-pulmonary tuberculosis rather than respiratory tuberculosis (phthisis). There was no mortality from tuberculosis for those casually employed under 15 years. These findings suggest that the work place may have been instrumental in spreading phthisis.

However, the *type of employment* was not necessarily such a significant factor in the rates, much more depended on the *conditions* of work and this was particularly

72. Hardy, *Epidemic streets*, p.215; Smith, *Retreat*, p. 21 fn.13 and 14; Szreter, 'Social intervention', p.13 and 16
73. *ARMOH*, 1902 and 1903

so in relation to men's work. The rates for tuberculosis in Nottingham for different occupations were: Mason 11.7, painter 4.3, upholsterer 5.0, boot makers 5.2, costermonger 7.6, general labourer 7.4, messenger 0.5, gardener 0.9, railway steward 0.5, coal and other like dealers 1.5.[74] The inference from these figures is that certain occupations which involved using hazardous materials, likely to attack the lungs of the worker, were more at risk than those with more general jobs. The mystery is, why did the coal dealer have a better chance than the costermonger who was not dealing with hazardous materials? Perhaps the explanation is that poorly paid occupations such as labourer and costermonger, attracted tubercular men who were compelled to gravitate to lesser-paid work.[75] Smith lists shoemakers, masons, tailors and printers as being among those subject to high phthisis morbidity and mortality and states that as well as being subjected to the inhalation of fine particles and harmful vapours, these trades often involved long irregular hours in cramped conditions and the dust created by their work made them continually hawk and spit.[76] Two female residents of Nottingham had to stop work in the textile trade, on the advice of a doctor because of the effects of bits of cloth "bunging them up".[77] Hardy cited evidence which held the belief that dried sputa survived indefinitely in dust which could be linked to poor sanitary conditions and the importance of cleanliness.[78] In Table 6-7, it can be seen that people working in unhealthy atmospheres or with hazardous material, for example, laundries, stationery manufacture, needle and pin makers are more likely to contract phthisis than those in other trades. Lace manufacture, although more hazardous for women, does not appear as high as for those working with silk.

In 1900 Nottingham was at its peak as a lace manufacturer and the industry was a major employer for both men and women. However, the 1903 Health Report

74. *ARMOH*, 1903
75. Cronje 'Tuberculosis' p. 99
76. Smith, *Retreat,* p. 212.
77. Interviews Nottinghamshire County Council Oral History, (NLSL), A2, female born 1889 and A7, female born 1912
78. Hardy, *Epidemic streets*, p. 259

suggests that where men and women of a similar age and social circumstances were employed side by side in industry, there was a large differential in the death rates, usually in favour of the women. Boobbyer adds, 'It must not be inferred from this that local male death rates for tuberculosis are greatly higher, but only that the female death rates are for the most part exceptionally low.'[79] In 1906 an enquiry found that evidence of sickness and death did not support the theory that working in the factory conditions was harmful. This belief was strengthened by the report of the Registrar-General, Dr John Tatham, that the phthisis death rate among lace and hosiery workers was practically stationary.[80] The Evening Post reported that the view of a 'Phthisis Scourge' and prevalence of consumption amongst lace-girls was "alarmist". There was, indeed, a substantial difference in favour of women working in the lace and hosiery trades. The disparity was striking with the mortality of men working in the lace trade being 1.8 per 1000 and women at .9 per 1000. In hosiery the figures were 2.3 and 1.75 respectively. Nevertheless, the report goes on, phthisis was still rife in the city and eleven of the 76 deaths occurring the previous week were due to this disease.[81]

Table 6-7: Death rate per 1000 of males and females from tuberculosis in various trades

Occupation	1st quarter		2nd quarter		3rd quarter		4th quarter	
	Male	Female	Male	Female	Male	Female	Male	Female
Furrier/skinner	58.84	-	-	-	-	-	-	-
Stationery man.	210.52	-	-	-	-	-	-	-
Silk-undefined	120.16	-	-	-	-	-	-	-
Needle/pin	-	-	108.12	-	-	-	-	-
Well/mine sinker	-	-	59.72	-	-	-	-	-
Machinists	-	-	-	101.28	-	50.64	-	101.28
Artisan	90.40	-	113	-	45.2	-	22.6	-
Bus conductor	-	-	-	-	95.24	-	-	-
Lace	1.87	2.86	2.83	1.98	0.93	1.43	2.83	1.98
Launderers	-	-	-	-	-	-	71.44	-
Textile dyers	-	-	-	-	-	-	43.48	-
Costermonger/hawker	-	-	-	77.48	-	-	-	-
Boot/shoe man.	12.68	31.4	-	31.4	8.46	-	8.46	-

Source: Compiled from the Annual Health Report 1902

79. *ARMOH*, 1903.
80. *ARMOH*, 1907
81. *Nottingham Evening Post*, 4 July 1907, p.5, col.1

The interest shown by Boobbyer in the high rates of phthisis within Nottingham, led him to monitor its incidence from 1907 until 1915, by measuring the fatalities within houses of various rentals. Boobbyer presumably associated the location of phthisis with the abundance of poor quality housing in Nottingham (see Table 6-8).

Table 6-8: Deaths occurring in houses of various rentals in Nottingham, 1907-15

Rental of house	1907	1908	1909	1910	1911	1912	1913	1914	1915
2s-3s	11	17	16	15	10	10	11	10	14
3s-4s	66	64	61	48	45	46	39	42	43
4s-5s	72	79	65	63	73	66	75	71	80
5s-6s	102	101	98	127	105	81	103	95	103
6s-7s	41	41	44	43	51	61	41	59	40
7s-8s	16	14	18	20	13	16	15	26	26
8s-9s	14	8	6	6	11	10	11	11	8
9s-10s	4	4	4	8	4	8	3	2	6
above 10s	5	7	11	7	6	8	2	5	9

Source: Annual Health Reports 1907-1915

The results of these surveys are not quite those expected. If it is accepted that the majority of phthisis victims came from the poorer-classes it would be expected that the majority of deaths would occur in the cheaper rentals, the 2s to 4s band.[82] The argument for the lower rentals having the greatest fatalities was that the adverse social conditions they experienced favoured the spread of phthisis. Poor housing was one factor which influenced the incidence of the disease, through the dilapidated condition of the housing and the overcrowding which occurred within the houses. The report on Physical Deterioration noted that about a quarter of all of the lower social classes lived more than two to a room in occupancies of less than five rooms. They had a consumption mortality rate of over 2 per 1,000.[83] It is possible that the reason for the middle-band rents experiencing the higher number of phthisis deaths is that these houses were the older and larger properties but of a slightly better-class, and divided

82. This was the rent band discussed during the period after enclosure which could be afforded by the poor.
83. Smith, *Retreat,* p. 168-9

into separate living areas, housing several families, and thus increasing the risk of overcrowding and the spread of phthisis.[84]

A second factor was diet and how much of the earned income would be spent on food. The third factor was occupation and this is possibly where the answer lies. The reason for the higher rental families to have a proportionally greater number of deaths is precisely because they were in work. It has previously been shown that employed males, especially those who worked with hazardous materials, had a greater risk of tuberculosis than their unemployed counterparts. An alternative reason is perhaps they were employed in higher paid jobs such as printers, tailors or masons and were able to rent better accommodation because they were in receipt of a regular income. However, they probably spent more of their income on rent, which was a non-negotiable expense, and not so much on food and thus having a poorer diet than those who lived in squalor but ate proportionally better.[85] A fourth reason may be that of sufferers, unable to continue in full employment, drifting downwards into occupations which had a tendency towards tuberculosis and unable to afford a sufficient diet, the result being they were put more at risk than previously.[86] Finally, it may be that the evidence from the very cheap dwellings was flawed, inasmuch as those living in that type of accommodation may well have been elusive and reluctant to give information. Not all, but certainly some of them would have been the 'nomads' and 'derelicts' that Boobbyer referred to when commenting on the common lodging houses.[87]

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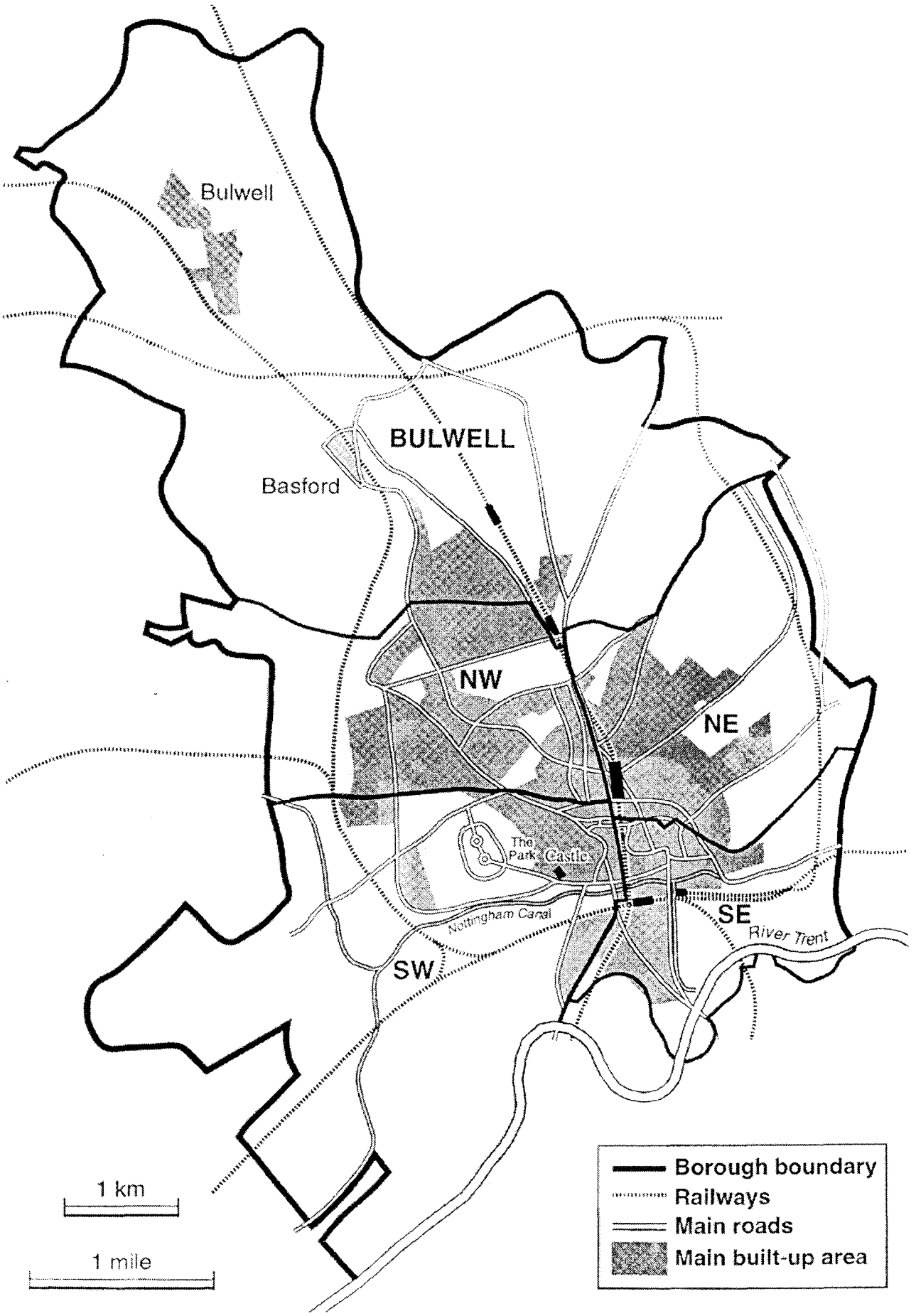
84. Hardy, *Epidemic streets,* pp. 240-5
85. See Hardy, *Epidemic streets,* p.246, She states that printers were well-paid but had a high rate of phthisis and well-paid artisans of St James's were also 'ravaged' by tuberculosis.
86. Arthur Newsholme, 'Inquiry into...the reduction in the death rate from phthisis', *Journal of Hygiene*, vi, (1906), p. 309 as quoted in Smith, *Retreat,* p. 169
87. Nottingham Oral History, (NLSL), A81, resident born 1906

Figure 6-7: Map showing built-up areas of Nottingham c.1890-1900



Throughout his reports, Boobbyer constantly reminded the corporation that the neighbourhoods which suffered the highest number of respiratory tuberculosis morbidity and mortality contained areas of insanitary, cramped housing, and industry, (see Figure 6-7, Table 6-9 and Table 6-10). As in the case of typhoid it would seem that there was some constant cause or causes for phthisis to remain consistent in these areas. In 1909 Boobbyer concluded that within the city tuberculosis as a public health problem was 'purely a matter of poverty and unhealthy environment'.[88] The working-class dwelling was the principal habitat of tuberculosis and following his housing investigation he was able to draw attention to the close correspondence between numbers of deaths from phthisis over a three-year period and the rental of houses. The results were; 74.3 per cent of all deaths occurred in houses where the rental was between 2s and 5s; 87.3 per cent occurred in houses of rentals of 6s or less; 93.5 per cent occurred in houses where the rental was 8s or less.[89] By 1910, the number of occupied houses in the city was 65,000 and over three-quarters were let at rentals of 10s or less. The incidence of fatal cases of phthisis in those houses of 10s rental or less was equal to 98 per cent of all the cases. In other words a person living in a house of less than 10s a week rental was nearly seven times more liable to contract fatal phthisis than one living in a larger house.

Boobbyer had made an ally in the Housing Committee chairman, Dr Milner whose impassioned speech entitled the 'White Sepulchre' saw the scourge of consumption remaining whilst poor housing remained. Another member of the Housing Committee Sir Edward Fraser, added his weight to the issue by placing the blame on the council who were not prepared to deal with the housing problem *en masse*, because the cost would be too much.[90] In 1915 Boobbyer claimed that the proportional number of deaths in or belonging to houses of rental above £26 per annum, or 10s a week, was only about one-fifth of that in houses of lower rental, and in

88. *ARMOH*, 1909
89. *ARMOH*, 1909
90. *Nottingham Daily Express*, 5 July 1910 p.6, col.1

the seven years prior to 1914 the average was between one-sixth and one-seventh. Shirley Murphy, Medical Officer of Health for London County Council, had earlier reached the conclusion that whatever other reasons might contribute to phthisis, there was ample reason to believe that the dwelling and its manner of occupancy were very important in the prevalence of the disease.[91] Although Boobbyer conceded that better housing was needed for the poor and that the problem was more to do with the class of house rather than the place, he was also aware that there were other contributory influences, linked to poverty and that education would have to be part of the fight against the disease. The connection between the prevalence of tuberculosis and the living conditions of the poorly paid had been established and was the basis for preventative work. Boobbyer told a local newspaper that, 'People will not believe that phthisis is an infectious complaint and that their habits as a rule contribute to its spread.'[92] The responsibility now lay with the individual.

Table 6-9: Deaths from phthisis in various wards of Nottingham, 1853-70

Ward /Year	Byron	St Ann's	Sherwood	Park	Castle	Exchange	St Mary's
1853	33	61	19	19	28	21	35
1854	38	69	29	31	26	34	21
1855	44	66	21	28	15	21	21
1866	52	73	36	23	31	37	14
1867	20	90	43	17	23	26	17
1870	55	93	37	19	19	23	24
Total	242	452	185	137	142	162	132

Source: Sanitary Committee Reports 1853-1870.

91. MOAR LCC, (1898) p 48, as quoted in Hardy, *Epidemic Streets,* p. 242
92. *Nottingham Evening Post*, 4 July 1907, p.5, col.1

Table 6-10: Deaths from phthisis in various wards of Nottingham, 1885-1887

Ward/ Year	Bulwell	St Ann's	Basford	Byron	Exchange	Lenton	Park	Radford	Sherwood	Wilford
1885	13	64	22	44	82	19	24	76	25	5
1886	17	76	26	37	96	17	23	72	24	3
1887	14	65	30	45	64	19	17	80[a]	-	2
Total	44	205	78	126	242	55	64	228	49	10

a.Radford now includes the former sub-district of Sherwood.

Source: Annual Health Reports 1885-1887

Part of that *education* process lay in the battle for the notification of the disease. Local tuberculosis prevention was given a boost in 1898 with the foundation of the National Association for the Prevention of Tuberculosis. Its patronage by HRH the Prince of Wales helped to bring tuberculosis into the open and dispel some of the more widely held myths about its prevalence and spread. One of the most important factors resulting from Koch's discovery was the fact that it was a preventable disease.[93] In her work on tuberculosis in the twentieth century, Bryder suggests that a social reform movement should have been the authorities response to the new findings - the conditions which propagated tuberculosis should have been attacked and overall poverty should have been the focus of the propaganda of the National Association for the prevention of tuberculosis. Unfortunately it was not and the old middle-class assumptions of the poor being intemperate, ignorant, lazy and profligate were very often the focus for the scare tactics of the authorities.

The ideas of responsibility and education had already been adopted in the welfare movements for mothers and babies, which began in the same period. The interest generated by the anti-tuberculosis campaign and the infant welfare movements had its roots in the concern for national efficiency. Concern had been expressed about the physical condition of the people by both sides of the argument, social investigators

93. National Association for the prevention of tuberculosis Bulletin, 11/5 (1948), pp. 177-8, as quoted in Linda Bryder, *Below the Magic Mountain. A social history of tuberculosis in twentieth-century Britain* (Oxford, 1988), p. 16

Booth and Rowntree, liberal reformer C F G Masterman and eugenicists and social Darwinists such as Karl Pearson. This concern was intensified after the Boer War of 1899-1902 when it was revealed that no more than two out of five of the population were fit to bear arms.[94] The Physical Deterioration Committee of 1903, was made aware of the high tuberculosis rates in urban slums but, rather than concentrating on this, it chose to focus attention on the health of children an age group with a relatively low tuberculosis incidence apart from extra-pulmonary tuberculosis. To have highlighted the possibility that phthisis was the result of poverty would have been an admittance of failure of their responsibilities on the part of the government.

Children were targeted in the anti-tuberculosis campaign[95] particularly in the fight against bovine tuberculosis because children were the group being encouraged to consume more milk. In the lengthy report on tuberculosis in the city throughout the period following the Great War, reference is made to the beliefs of some medical men that tuberculosis is 'implanted in childhood, and awakened to activity by some accidental condition,... later on.' Boobbyer was unconvinced by this, and believed that greater emphasis should be placed on the protection of infancy and childhood. Whilst he did not disagree on more protection being given to children, he was not alone in realising that a principal source of infection for persons of all ages was the result of the advanced tuberculosis case being nursed at home. Whilst this practice was allowed to continue, particularly in the homes of the poor, phthisis would be a danger to the family and the community.[96]

Nottingham, like many other localities, began its campaign against tuberculosis in 1898 with the foundation of the National Association for the prevention of tuberculosis. In 1900, the Duke of Devonshire donated some land close to Mansfield

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94. Maj.Gen. Sir John Frederick Maurice, 'National health, a soldier's study.' *Contemporary Review,* LXXXIII (1903), 41-56
95. Bryder, *Magic Mountain*, p. 22
96. *ARMOH*, 1916-28, p. 169

specifically for the erection of a sanatorium with 24 beds was completed in 1901. Unfortunately this type of sanatoria was not to be made available for the people of the lower classes - precisely those who were in most need! In the same year Boobbyer advocated that the improvement of the dwellings and their surroundings were needed before curative measures could be successful.

Boobbyer saw the Nottingham Sanatoria, as 'at once a school and a hospital'.[97] Patients were not treated just for their illness but were also educated in a healthier lifestyle. The problem, of course, had been that non-pauper labourers only could enter the hospitals whereas those who were classed as paupers, had to enter the Poor Law workhouse, and because of their loathing of the Unions, this in turn caused problems creating an 'underworld' for the disease. However, in 1911 the National Health Insurance Act specified that special hospital treatment was to be provided for tuberculosis victims. There had been provision of beds for phthisical victims at the City hospital (Bagthorpe) since 1903 and by 1916 there was space for up to 136 patients.

Boobbyer envisaged that the voluntary notification of cases would help in the fight against tuberculosis. He claimed that it was only on the death of a victim that the authorities were informed of the disease and he believed that voluntary notification could be achieved more easily than compulsory notification. Voluntary notification had been implemented in Sheffield, Manchester, Brighton and Liverpool between 1892 and 1903 as a step towards compulsory notification. The problem of compulsory notification was twofold; the practicalities of isolation hospitals, removal from employment and school were enormous, and secondly many doctors were not entirely happy to diagnose tuberculosis because of its peculiar nature.[98]

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97. *ARMOH*, 1908
98. Smith, *Retreat,* p. 68 and Hardy, *Epidemic streets*. p. 261-2

Further attempts by Boobbyer to make the disease notifiable were rewarded with some measure of voluntary notification by the adoption by the Local Government Board in 1908 of the Public Health (Tuberculosis) Regulations. This applied to cases of pulmonary tuberculosis occurring among the inmates of Poor law institutions or persons under the care of the district Medical Officer. However Nottingham failed to adopt compulsory notification until the 1913 Act.

As well as the sanatorium institution for the treatment of tuberculosis, there was also an attempt to reach a wider public through the setting up of dispensaries. The first such dispensary in England having been founded in Paddington, London. Nottingham established its first dispensary on North Church Street in 1912[99] together with the appointment of a tuberculosis officer, Dr J R Edward. The clinic was extended and provided X-ray treatment from the inter-war period. The dispensaries were to provide diagnosis and health education, but not treatment,[100] which may have encroached on the territory of the doctor. Boobbyer claimed that there was some tension initially between the doctor and the department dealing with tuberculosis. [101] By law, the doctor was supposed to notify any cases of tuberculosis and inform the TB officer of progress of a patient but this was not carried out with any regularity.[102]

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99. Later transferred to Gregory Boulevard
100. For a full account of tuberculosis provision see *ARMOH*, 1916-28
101. *ARMOH*, 1916-28
102. *ARMOH,* 1916-1928, pp.167-8

Table 6-11: Average rate of death from phthisis and other tuberculosis diseases in Nottingham

Death rates	Year
3.60	1850s
3.22	1856-1860
1.81	1891-1900
1.69	1901-1905
1.68	1906-1910
1.60	1911-1912
1.70	1914-1918
1.16	1920-1925
1.10	1928

Source: Annual Health Reports 1914 and 1916-28

In 1908 the Nottingham Evening Post reported that there was decline in consumption mortality[103] and by the beginning of the First World War, the death rates of tuberculosis and phthisis in Nottingham indicated a downward trend although somewhat erratic. Table 6-11 shows how the death rates had fallen from the mid-nineteenth century. Boobbyer calculated that between the years 1860 and 1900, the average death rate fell by upwards of 40 per cent.

103.*Nottingham Evening Post*, 6 August 1908, p.3, col. 2

Table 6-12: Death rates per 1,000 of Population in Nottingham, 1912-19

	1912-14		1915		1916		1917		1918		1919	
	Nottingham	England & Wales	Nottingham	England & Wales	Nottingham	England & Wales	Nottingham	England & Wales	Nottingham	England & Wales	Nottingham	England & Wales
Phthisis	1.16	1.29	1.23	1.18	1.32	1.26	1.37	1.40	1.32	1.54	1.22	-
All others	1.52	1.41	1.56	1.54	1.78	1.62	1.76	1.80	1.84	1.92	1.57	-

Source: Annual Health Report 1916-1928

Szreter's main critique of McKeown's thesis[104] centres on the decline of respiratory tuberculosis[105] and questions the reliability of McKeown's figures which support his argument. Whilst McKeown's data may be flawed, and we can only go along with Szreter's suggestion that they are, it does indicate a general decline commencing around the mid-nineteenth century and continuing into the twentieth century and the death rates in Nottingham confirms this trend.

Nevertheless, it is also clear that there were exceptions to the general trend, especially during the First World War, particularly among young women and this increase continued afterwards in areas of depression and unemployment.[106]

The figures in Table 6-12 show that the general mortality from tuberculosis and phthisis both in Nottingham and in England, increased during the years of the war compared to the lower rates of 1912-14. The greatest increase was among women in the working period of life, which is probably explained by the extensive industrial employment of women in place of men away at the war front. The decrease afterwards may be explained by the substitution of peace-time, with improved supplies of food

104. Thomas McKeown, *Modern rise of population* (1976)
105. Szreter, 'Social intervention', pp. 10-17
106. Bryder, *Magic Mountain*, p.109. This was related to women taking over men's work during the war

and developments in sanitation and housing accommodation. By 1928 tuberculosis accounted for 8.5 per cent of the whole mortality from all causes as compared to 10-11 per cent earlier in the century.[107]

During the inter-war years it became noticeable that the deaths from phthisis constituted a somewhat larger proportion of the total number of deaths from other types of tuberculosis. The probability is that either the improvements in the supply of milk was significant in reducing the spread of bovine tuberculosis or the later disruption and deterioration of conditions during the re-housing period of the late 1920s precipitated an increase in the unventilated, overcrowded conditions in which phthisis thrives.

Banks, the new Medical Officer, commented that social and economic factors were influential in the spread of phthisis and that such a chronic illness, lasting years, often resulted in poverty and family difficulties conditions under which phthisis thrived.[108] Nevertheless, a positive newspaper article claimed that despite the war and industrial depression there had been an all-round improvement in health and both types of tuberculosis were steadily decreasing, due to higher standards of living, diet and the recognised importance of vitamins.[109]

Banks concentrated on the work of the dispensary and latterly X-ray examinations. The stigma and secrecy surrounding phthisis remained and an enquiry into the health services in Nottingham, in 1932, revealed that tuberculosis was still not adequately notified in the city.[110] According to Edwards, the TB officer, the Poor Law Infirmary was still the most suitable place for patients, rather than the sanatoria perhaps due to the doctors wanting to show results in terms of cure, whereas the

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107.*ARMOH*, 1916-28
108.*ARMOH,* 1932
109.*Nottingham Evening Post,* 27 May 1935, p.2, col.3
110.PRO MH 66/785, p. 120

incurable were sent off to the Poor Law Infirmaries to die. Smith noted that the one agency which isolated advanced cases and provided a bed and care was the Poor Law Infirmary and believed that as late as 1938, the Poor Law hospitals were filled with consumptives, with one third of them dying there.[111]

Childhood Diseases and Illnesses

Measles, whooping cough and rickets

Measles and whooping cough are not diseases which you would automatically associate within the context of diseases affected by or having an effect on the nutritional status of a person. Nevertheless it will be shown that they were both affected by nutrition and both were epidemic in nature. Both attacked the under five age group where most fatalities occurred in children of this age group. However whooping cough is more likely to be fatal in infants under twelve months, whereas measles is more likely to be fatal between twelve and twenty four months, when an infant's immunities are low. In 1911, 57 per cent of the total deaths from whooping cough occurred in the age group of under 1, whereas the occurrence between the ages of 1-5 years was 43 per cent, and similarly in 1914, 44 per cent of the total deaths from the disease occurred under the age of one year.[112] This can be demonstrated from the individual death figures for specific years as seen in Table 6-13.

Figures from the late nineteenth century until 1914 indicate that measles and whooping cough were proportionately more significant in the causes of death of infants between 0-2 years, with one exception, that of infantile diarrhoea, so the attention paid to these two infections was not mis-placed.

111.Smith, *Retreat*, pp. 238-9
112.*ARMOH,* 1911 and 1914

Table 6-13: Deaths from measles and whooping cough in specific age groups in Nottingham 1859-1914

Age	0-1 year		1-5 years		5-15 years	
Year	Measles	Whooping cough	Measles	Whooping cough	Measles	Whooping cough
1859	20	7	151	38	18	1
1863	1	20	15	31	0	4
1868	20	17	56	14	2	0
1885	24	53	76	60	12	3
1890	20	18	30	24	2	5
1895	1	16	0	16	0	1
1900	12	20	32	37	1	2
1905	48	19	174	42	10	0
1910	8	36	41	27	5	0
1914	26	30	109	31	10	3

Source: Sanitary Committee Reports and Annual Health Reports 1859-1914

This age-differential may also be explained by the fact that in whooping cough, the younger the infant the more serious the disease is likely to be. Babies have no immunity to the disease and are therefore, especially vulnerable.[113] Hardy noted that the increasing concentration of whooping-cough fatalities among the under fives, towards the end of the nineteenth century may have indicated a small but significant improvement in general levels of nutrition at a time when the overall mortality from the disease was falling sharply.[114]

Whooping cough was believed by the Victorians to be a disease which was suffered mainly by the poorer classes. In 1878 the Lancet reported that nearly all fatalities from the disease were among the working classes.[115] An essential element

113. Hardy has commented that when a child reaches its second year there is an decrease in the attention given to it by the mother, partly because of the child's own beginnings of independence and also the very real probability of another pregnancy or birth of another child, which may have led to the elder child's nutritional requirements being neglected.
114. Hardy, *Epidemic streets*, p. 22
115. 'Epidemic fatalities of whooping cough in London', *Lancet*, (29 June,1878) 945

for its prevalence within this group was the domestic living conditions. In the overcrowded dwellings the young infant would be at a greater risk from infection, given that elder children within the family would bring home the disease and the subsequent nursing care given in poorer families was limited.[116] The cramped unventilated living conditions were a breeding ground for the disease. There is also evidence to suggest that there was a correlation between the size of house and whooping cough mortality. An investigation in Aberdeen in the 1890s showed that the disease was three and a half times more fatal in children living in one-roomed houses than to children living in houses of five or more rooms.[117]

These observations can be confirmed to some degree by the spatial death rates in Nottingham. From Figure 6-7 it can be seen that the north-east and south-east districts of Nottingham contained a large amount of working class housing. The Medical Officer reported that the north-east district was the district principally affected and commented, ".. much of the gravity of complications are due to the living conditions so common in the north-east and south-east areas."[118] In the years 1896 and 1898, the north-east averaged 30 deaths per year, whereas the south-west district, which was less densely-populated district only had six deaths recorded from whooping-cough. From Table 6-14, it is possible to see where the worst incidences were concentrated.[119]

From the beginning of the 1900s, the north-east district had a high number of deaths from whooping cough but other areas, namely the north-west and south-east were also beginning to show higher figures, probably due to the fact that they were

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116. Nottingham Oral History, (NLSL), 43 p.18 one resident born in 1924, claimed the cure for whooping cough was to hold a child over boiling tar to inhale the fumes
117. James S Laing, 'Whooping cough: its prevalence and mortality in Aberdeen', *Public Health,* 13, (1901-2) p. 595
118. *ARMOH,* 1890 and 1891
119. It can be seen from *Table 6-14,* that from 1899 figures for the in districts of Basford and Wilford are not shown, this is due to a change in registration districts whereby the two districts were incorporated into Bulwell and south-west, respectively.

becoming high-density housing areas as a result of city boundary changes. As a general trend, high figures appear in most districts in the same years, for example 1903 and 1907.

Table 6-14: Deaths from whooping cough in Nottingham registration districts, 1896-1914

District/year	Bulwell	Basford	NW	NE	SW	SE	Wilford
1896	10	4	13	33	6	22	1
1898	-	5	18	30	6	8	1
1899	6	-	12	18	7	11	-
1900	15	-	19	39	7	14	-
1901	5	-	11	35	16	29	-
1902	6	-	7	8	9	7	-
1903	23	-	24	12	16	17	-
1904	12	-	25	29	11	14	-
1905	10	-	3	19	3	26	-
1906	3	-	10	13	8	6	-
1907	35	-	43	26	21	6	-
1908	13	-	10	17	8	16	-
1909	9	-	13	16	8	13	-
1910	24	-	20	8	4	7	-
1911	6	-	9	10	6	8	-
1913	10	-	13	10	6	3	-
1914	11	-	22	20	5	6	-

Source: Annual Health Reports, 1896-1914

Whooping cough is essentially a winter and spring disease, although there is no proven correlation between mortality and the severity of winter conditions. Dr Laing's enquiry into whooping cough in Aberdeen revealed that whooping cough was more prevalent in the spring. [120] Leonard Findlay showed evidence that the incidence of rickets increased during the spring, and whooping cough was more likely to be fatal in

120. Laing, 'Whooping cough', p. 588

the spring and winter.[121] The details in Table 6-15 indicate that spring or the first quarter was generally the worst period for deaths from the disease.

The winter and spring months would be particularly dangerous, when damp, cold unventilated living conditions prevailed and secondary bacterial invasions would be likely. Approximately 90 per cent of deaths in children under 3 was caused by secondary pneumonia.[122] In his report of 1908, Boobbyer suggested that more care must be exercised because of the permanent damage caused to certain important organs, heart and lungs, which would leave a patient open to secondary infection.[123] It was known that improved nursing care and a good diet were requisites for a full recovery from the disease.[124]

There is no evidence to suggest that sanitary improvements had any effect on mortality rates of whooping cough but as Hardy concluded in her survey of London boroughs, it was in the districts which saw the greatest social and structural changes that enjoyed the greatest fall in whooping cough mortality.[125] Julie O'Neill also suggests that general improvements in housing and public health in Nottingham were effective in improving life expectancy, particularly for mothers and children.[126]

The medical interest during the nineteenth century in whooping cough was only cursory, partly because of the ignorance of its aetiology. There was little preventative action taken and Hardy claims that there was an apathy by the authorities towards the disease, their emphasis being on treatment rather than prevention. Boobbyer in 1898, complained that little had been done to check the spread of the

121. Leonard Findlay introduction in M Ferguson, 'A study of the social and economic factors in the causation of rickets', *Medical Research Committee (Special Report Series)*, 20, (1918), pp. 17-8
122. Hardy, *Epidemic streets*, p.13
123. *ARMOH*, 1908
124. Hardy, *Epidemic streets,* p. 16
125. Hardy, *Epidemic streets*, p. 26
126. Julie O'Neill, "Family Life in the Twentieth Century" in Beckett, ed. *Centenary,* p. 514

Table 6-15: Number of deaths from whooping cough in specific seasonal quarters of the year in Nottingham, 1896-1914

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
1896	0	10	24	55
1898	13	14	5	32
1899	34	13	4	3
1900	4	3	35	52
1901	66	22	5	3
1902	8	7	8	14
1903	15	32	22	23
1904	32	23	19	17
1905	46	10	1	4
1906	19	12	6	3
1907	57	32	19	23
1908	22	22	12	8
1909	42	9	1	7
1910	9	22	19	13
1911	12	21	4	2
1913	26	8	5	3
1914	13	13	18	20
Total	422	273	207	282

Source: Annual Health Reports, 1896-1914

disease and later, in 1905, he observed that because of its, 'eminently infectious nature and large mortality...it should be treated more seriously'.[127] He had also remarked in 1892 that the closure of schools, (four in this case), increased the risk of the spread of the disease as had happened with the prevalence of measles in the same year.

One further factor which was important in the study of whooping cough, was the nutritional status of the patient. It has been shown that the greatest number of deaths from the disease occurred under the age of one year. The stamina of a child would have significant bearing on the development of the disease. Although the

127.*ARMOH,* 1898 and 1905

disease does not seem to be more severe in malnourished children, they would be less able to fight off an infection[128] Whooping cough often followed epidemics of measles and vice versa[129] and the successive effects of these two diseases on poorly nourished infants resulted in fatalities. Whooping cough had a 'tedious convalescence' and a side effect of that was the disturbances of nutrition with a decrease in appetite and failure to absorb food.[130] In 1926 there was a 30 per cent increase in the death rate from whooping cough, which was mirrored in a similar increase in the fatalities from diarrhoea. The previous year, 1925, there had been a significant increase in the number of deaths from measles. It will be shown later that measles can trigger off diarrhoea and this data emphasises the delicate balance of childhood immunity, which can be devastatingly disrupted by poor nutrition.[131] In his conclusions, McKeown noted that:

> "...knowledge of the relation between malnutrition and infection has been extended considerably ...by the World Health Organisation in developing countries, where infectious diseases are still predominant ...no doubt that malnutrition contributes largely to the high level of infectious deaths...These effects are not restricted to respiratory and intestinal infections ...; mortality is still high from measles and whooping cough...The problems are particularly serious in infancy... The deficiency is due mainly to lack of calories and proteins."[132]

Whooping cough in the nineteenth century posed many questions, but there were certain factors which could not be ignored. These were, that the disease affected the very young and vulnerable; it was an extremely unpleasant disease which racked the body of even the strongest constitution; overcrowding had a critical influence on the spread of the disease; and the nutritional state of the patient was critical in the recovery. Whooping cough deaths in Nottingham during the period 1916-1928 show a

128. David Morley, *Paediatric priorities the developing world* (1973), p. 238
129. Hardy, *Epidemic streets*, p. 21
130. S J Ulijaszek, 'Nutritional status and susceptibility', p.137
131. PRO MH/66/785
132. McKeown, *Modern rise*, p. 135

tendency to decline, but there were years when there were considerable increases and it was to be a further two decades before this infant killer could be said to be under control through immunisation.

Of the two diseases most closely associated with whooping cough, measles tended to follow a similar pattern.[133] (Figure 6-8 and Figure 6-9) The years, 1906-7 show this particularly clearly. Investigations into the relationship of the two diseases showed that whooping cough paved the way for measles, rather than vice versa.[134] Like whooping cough, measles was an 'accepted' childhood disease against which there was very little to be done to prevent it. However, by the 1890s concern was expressed about the endemic nature of the disease in urban areas.

Early winter and especially spring, were the seasonal times of measles mortality. In 1907, a serious epidemic occurred at the beginning of March and continued throughout June, accounting for 88 per cent of all the deaths.[135] As in the incidence of whooping cough, there may be some correlation between poorly-ventilated, damp, overcrowded domestic living conditions and the frequency of respiratory complications associated with measles; secondary respiratory infection was often the cause of death.

133.*ARMOH,* 1892, 1896,1897,1901,1905, 1908,1909 and 1914

134.Laing, 'Whooping cough', p. 591

135.*ARMOH,* 1907 and Medical Officer of Health Reports, *British Medical Journal*, (4 June 1887) 1249, stated measles was prevalent in November and December of the previous year

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In her discussion of measles, Hardy presented two factors, malnutrition and overcrowding, which were contributory to the high levels of measles mortality in England during the nineteenth century and early twentieth century. The McKeown argument that 'rising standards of living reduced chronic malnutrition which had impaired resistance to the disease' is strengthened by that of David Morley, whose work with childhood infections in developing countries has led him to believe that the change in measles fatality in the west has come through improved nutrition.[136]

The recognised link between measles mortality and malnutrition is one which has some substance in the nineteenth century. Charles West[137] had already drawn attention to the disruption of the epithelium, caused through measles. Morley, more recently has described how the 'extreme susceptibility of the mucous membranes, caused by the persistence of the cough, the supervention of bronchitis, or the occurrence of ulcerative inflammation of the fauces and larynx on the decline of the rubeloid eruption, very frequently, extends to the intestinal canal and gives rise to diarrhoea.' In other words the effect of measles can trigger off diarrhoea in the patient which, in an already weakened infant, could have very serious consequences on its subsequent recovery.[138] Today, measles in the developed world is rarely fatal but still is in developing countries, particularly in severely undernourished children and usually from a secondary infection. Morley stated that 'the malnourished child may have a mortality 400 times higher than his well-nourished counterpart with measles.'[139]

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136. D C Morley, 'Nutrition and infectious disease', in E J Clegg and J P Garlick eds. *Disease and urbanisation* (1980), p.40
137. Charles West *Lectures on the Disease of Infancy and Childhood*, Seventh Edition (1884) in Morley, *Paediatric priorities,* p. 216
138. It has been noted that the effect of pathogens in a malnourished body can alter the character of the skin and mucous membranes, which normally afford a high degree of protection against pathogens. The mucosal response of the patient to pathogens is particularly noticeable in diseases which affect the gastro-intestinal and respiratory tracts such as measles, tuberculosis and diarrhoea and including whooping cough. So although measles was the stated case of death, diarrhoea and even respiratory infection were more probable causes. See Ulijaszek, 'Nutritional status and susceptability' pp 137-8; D S Miller, 'Nutrition Surveys', in D J Oddy and D S Miller, eds. *The making of the modern British diet* (1976), p.210 and Robert May and Rory Anderson, 'Population Biology of Infectious Disease, part II', *Nature*, 280 (1979), 455-461
139. Morley, *Paediatric priorities,* p. 207

However, Hardy is cautious about the connection between 'severe measles'- which is characterised by a dark rash - malnutrition and the milder form of measles present in England in the second half of the nineteenth century; 'severe measles' was found in only exceptional circumstances. She concluded that after 1850, chronic malnutrition was not 'a considerable contributor to measles mortality'.[140]

McKeown noted that studies carried out by the World Health Organisation showed that malnutrition contributed largely to the high level of infectious diseases, and the population were more prone to infections and suffered more seriously when they were infected. Moreover, infectious diseases have an unfavourable effect on the nutritional state and the interaction between disease and malnutrition leads to a vicious cycle which is characterised by poverty. Diseases such as measles and whooping cough are particularly serious in infancy before the child has developed its own natural defence mechanism.[141]

Measles began to decline after the First World War and both Deborah Dwork and Jay Winter have suggested that, at this time diets began to improve and welfare policies and social subsidies had an important effect on increasing income within the working-class family.[142] McKeown observed that although effective immunisation was available today, for both measles and whooping cough, it was questionable whether vaccination would have been effective on a malnourished population[143] and in the late nineteenth and early twentieth centuries there was no effective immunisation available for either disease.

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140. Hardy, *Epidemic streets,* pp. 41-2. She also warns about the danger of applying recent experiences to problems of the past
141. McKeown, *Modern rise,* p. 135
142. Deborah Dwork, *War is good for babies and other young children* (1987) and Jay Winter, *The Great War and the British People* (1985). Hardy, *Epidemic streets,* p. 35
143. McKeown, *Modern rise*, p.135

The other argument for the prevalence of measles was the question of overcrowding, an issue raised by Peter Aaby.[144] This argument must be considered, in view of the acute infectious and highly communicable nature of the disease. McKeown also suggested that overcrowding was a possible factor in the continuation and even rise of the disease throughout the nineteenth century because, '...the aggregation of populations which occurred in the nineteenth century created optimum conditions for the survival and spread of the virus.'[145]

This was never more obvious than after the introduction of compulsory public elementary education in 1870. The problems of prevention were aggravated and the question of 'school influence' became a hotly debated subject with Medical Officers divided as to whether or not to close schools.[146] The Medical Officer for Newcastle, Henry Armstrong had no faith in school closures, whereas A Campbell Munro, for Jarrow was strongly in favour of school closure. Boobbyer, was unsure of the value of closing schools. And it was not only the medical profession who thought this way. A father of five wrote to the local newspaper criticising the Education Department for encouraging attendance and obtaining grants, despite the rise in epidemic diseases, concluding, 'the record attendances were being bought at a terrible price[147]

The British Medical Journal reported that despite infected children being excluded from school, the Nottingham Health Committee felt that knowing conditions at home, the closure of schools was likely to increase the disease rather than diminish it.[148] Boobbyer although recognising the seriousness of the disease and the need to check its spread seemed helpless in his efforts to combat it. On more than one occasion he said that school closures had little effect as a preventative measure but accepted that

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144. Peter Aaby et al, "Overcrowding and intensive exposure as determinants of measles mortality", *American Journal of Epidemiology,* 120 (1984), 49-59
145. McKeown, *Modern rise,* p. 85
146. Hardy, *Epidemic streets,* p. 49-50
147. *Nottingham Evening Post,* 17 July 1908, p.5, col.1
148. 'Schools as disseminators of infection', *British Medical Journal,* (4 June 1887) 1249

'exclusion of contacts and susceptibles diminishes the spread'.[149] Because of the higher mortality rate in the under five age group, the Board of Education in 1904, decided they would not insist on the provision of school accommodation for children under fives.[150] To give some idea of the problem that measles caused in Nottingham during the three year period 1911-1913, schools were closed on account of the disease for more days than closures for all the other diseases put together.

There was a conviction among the authorities that overcrowding and low economic status increased measles fatalities.[151] This was witnessed in Nottingham during the 1890s with the disease affecting the Byron and Exchange wards of Nottingham and the densely-populated north-east district, later gravitating to the south-east district and the rest of the borough. (See Figure 6-7) By 1905 more than half of the total number of deaths occurred in these two districts.[152]

Hardy observed that slum clearance may have been responsible for upsurges in measles fatalities in specific years owing to the social dislocation and further overcrowding caused by the demolition of buildings and the failure to re-build property of a rateable value available for the poor.[153] The slum clearances of the late 1890s in the Charlotte Street area and those which occurred in order to make way for the construction of a railway line from Colwick may have been partially responsible for the increased number of deaths in Nottingham.

In an investigation carried out for the Medical Research Committee into the relationship between housing conditions and the incidence of measles in Glasgow, James Halliday discovered that children who lived in the tenement buildings which

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149. *ARMOH*, 1914
150. *ARMOH,* 1904.
151. Creighton, *History of epidemics*, p. 665; 'Schools', *British Medical Journal,* (4 June 1887) 1249
152. *ARMOH*, 1889, 1892 and 1905
153. Hardy, *Epidemic streets*, p. 38

dominated much of the poorer areas of Glasgow, were exposed to measles at an earlier age of life and the case fatalities were highest between the ages of one and five years. Conversely where there were housing schemes with each house having its own entry door, the disease affected the predominantly school age children.[154]

Housing in the older parts of Nottingham was of poor quality, but unlike Glasgow, there were not the number of tenement blocks, however, the housing was centred around courtyards with many homes sharing one entry, so there was a similarity in shared facilities. The influence of this type of housing which prohibits sunlight and fresh air filtering into the dwellings, conditions favourable to miasma, exacerbated the spread of measles and was even more profound when the buildings were poorly constructed and over-crowded.

Examination of the fatalities from measles in Nottingham would concur with other age-specific findings.[155] Throughout the nineteenth and early twentieth centuries the greatest number of deaths occurred between the ages of one and five years but there were also high incidences of measles occurring among school children. Very few occurred after school age in the early teens. Children between two and five years of age were vulnerable as they had no recourse to medical services. Cyril Banks, Medical Officer, noted that toddlers between these ages were 'lost' to the welfare centres[156] and Peretz also found that two to five year olds were excluded from the Mother and Baby clinics and school clinics and that during periods of recession this age group was the most neglected.[157]

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154. J L Halliday, 'An inquiry into the relationship between housing conditions and the incidence and fatality of measles', *Medical Research Committee (Special Report Series)*, 120, (1928), p. 31
155. Hardy, *Epidemic streets*, p. 30
156. *ARMOH,* 1936
157. E Peretz, 'Local authority maternal and child welfare services in England 1919-1939', (University of Middlesex, PhD thesis, 1994) p. 94

Hospitalisation of measles cases never really gained much favour with health officials, although by the 1870s there were some doctors who considered the disease to be sufficiently serious to necessitate hospital treatment.[158] The arguments against hospitalisation included, the amount of physical space required during an epidemics was prohibitive, the complications of confining measles patients in institutions, where there was the threat of other serious diseases, as most patients were young children, their stay in hospital would be difficult because they would be away from their mothers.[159]

Although measles did not become a notifiable disease under the Infectious Diseases Notification Act, 1889,[160] there was a consensus among the medical profession that notification would have had an impact on the prevention of the disease. Boobbyer commented in his earlier reports that simple notification would have sufficed claiming, that through the closure of schools, large numbers of cases had been brought to their attention which would have otherwise gone unnoticed.[161]

The third illness in this section is rickets. This may not appear to have much in common with the former two diseases but Hardy has commented, "...rickets was the hidden agenda, for it plainly played a role in determining deaths from whooping cough."[162] Writing in the Lancet, Stanley Graham said, "...there is abundant evidence to show that...rickets greatly dispose to infection" and believed that rickets was preventable and if that was the case, then it was logical to assume that if rickets was reduced infections would occur less frequently and there would not be the fatalities.[163] Rickets was an urban disease, occurring in all social classes, but particularly the poor.

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158. Hardy *Epidemic streets,* p. 48
159. *ARMOH,* 1891 and 1914
160. On 27 November 1915, measles became a notifiable disease throughout England
161. *ARMOH,* 1898
162. Hardy, 'Rickets and the rest', p. 391
163. Stanley Graham, 'Death in the first month and the first year', *The Lancet*, (15 June 1940), p. 1107

It was a childhood disease occurring in the age group nine to twenty four months. The symptoms are softening of bones, particularly the spine and bow legs, and it is associated with a deficiency of Vitamin D, found in liver, fish-liver oils, dairy products, egg yolk, margarine. A special substance in skin cells is converted to Vitamin D when exposed to sunlight and, for this reason rickets has also been known as an environmental disease caused by sunlight deprivation. The building practices of the period contributed to the number of children suffering - tenement accommodation, dark courtyards and narrow alleys all prevented sunlight from penetrating.[164]

Rickets was a disease which was more prevalent in large towns, and industrial and mining areas. A survey undertaken by the British Medical Association in 1891, showed the distribution of rickets and concluded that it existed nearly everywhere, but predominantly in urban and industrial areas.[165] Nevertheless rachitic and non-rachitic children lived in the same districts, the same streets and very often the same houses thus concluding that rickets cannot be attributed to just bad housing but another element, the lack of care from the mother, was responsible for rickets.[166] According to contemporaries, the failure of poor parents to correctly nurse their children suffering from any of the three diseases played a significant role in the fatalities. As with measles and especially whooping cough, rickets was seasonal and made its appearance in winter or spring.[167]

The great strain that whooping cough inflicted on a body already reduced in stamina and exhaustion from rickets was a real threat to survival. In 1919 Professor Mellanby wrote that there was definitely reduced resistance to diseases in the rachitic child. He went on, 'even though the disease itself does not kill...dietetic problems are

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164. The 1904 and 1905 Health Reports, refer to rickets being a 'slum disease'.
165. Isambard Owen and others, 'Geographical distribution of rickets and other diseases in the British Isles', *British Medical Journal*, (19 January, 1889), p.114
166. Ferguson, 'Causation of rickets', p. 79
167. Ferguson, 'Causation of rickets', p.56

the key to the situation.'[168] Boyd-Orr later commented that children with rickets showed a higher incidence of complications and death rate from diseases such as whooping cough and measles, than do those in the same environment without rickets.[169]

Medical Officers and other authorities involved with infant mortality were unanimous in their belief that children were not coddled sufficiently.[170] Infants were at their most vulnerable when their weaning period coincided with sunlight deprivation.[171] Boobbyer suggested that there was a connection between rickets and the prevalence of hand-feeding infants.[172] However, in the Medical Research Committee report of 1917, the findings did not uphold this and in fact they found that the lack of breast feeding was not a factor in the causation of rickets, providing that the substituted food was abundant, suitable and carefully given.[173] In a later chapter on infant mortality evidence suggests that this was probably where the danger lay.

In Nottingham, the number of deaths from rickets was comparatively few, the highest number of fatalities recorded was 33 in 1895 but, for most of the period, the fatalities were in single figures. Despite the increase in cases, the actual number of deaths declined. Nevertheless, the deformities and strain the disease placed on the body may have predisposed the child to premature death from other respiratory diseases.[174] In 1909, Boobbyer admitted that the frequency of rickets was probably three times greater than had been thought. Nearly one per cent of children examined in the elementary schools of Nottingham were suffering from well-marked rickets.[175]

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168. E Mellanby, 'Rickets', *The Lancet,* (15 March, 1919), p. 407
169. John Boyd Orr, *Food, Health and Income: report on a survey of adequacy of diet in relation to income,* Second Edition (1937), p. 49
170. Hardy, 'Rickets and the rest', p. 400
171. *ibid.* p.398
172. *ARMOH,* 1905
173. Ferguson, 'Causation of rickets', p. 61
174. Wohl, *Endangered lives*, p. 57
175. *ARMOH,* 1909

The following year, 7,213 children were examined and 1.4 per cent 'presented unmistakable signs of suffering or having suffered from rickets'[176] A year later there was a three per cent increase of known cases.[177]

The disparity between case figures was highlighted by Boyd-Orr. He noted that the figures for the incidence of rickets varied very widely, owing to the standards and the methods of diagnosis adopted by the medical profession. A clinical examination revealed far fewer than a thorough radiological examination. As malnutrition can appear in overt and less pronounced way, so rickets can manifest itself in gross deformities as well as in minor imperfections. Sir John made the point that although the incidence of gross rickets had decreased, the cases of minor rickets was still prevalent.[178] The debate over the causation of rickets continued for many years and has been discussed further in the chapter five. However, it became clear that the addition of accessory foods into a child's diet, usually in the form of cod liver oil, would stop or rectify the disease. Despite timely reminders in the newspapers such as 'How to prevent rickets',[179] it remained a debilitating disease for many more years

Conclusion

The one disease which declined and which could be totally explained by improvements in the environment, was typhus. As to the remainder some were obviously the result of dirt and filth, but other factors contributed to their decline. Some of these factors came later in the twentieth century, such as the treatment for whooping cough and tuberculosis.

176.*ARMOH*, 1910
177.*ARMOH*, 1911
178.Boyd Orr, *Food, Nutrition and Income,* pp. 47-8
179.*Nottingham Guardian,* 8 March 1935, p.6, col.2

Measles, whooping cough and rickets, in addition to killing many children in the period were also responsible for the 'damage' factor, leaving children weak from the diseases and therefore likely to succumb to illnesses in later life. There is no suggestion that whooping cough declined as a result of sanitary improvements but it has been shown that the poorer districts of Nottingham suffered the greater incidence of the disease than the better-class areas. Overcrowding was known to be influential in the spread of the disease because infection was spread by the droplet method. It has also been shown that the nutritional state of the patient was paramount to their recovery or death from the disease.

Measles tended to follow a similar pattern to whooping cough and there is known to be a correlation between the individual's nutritional status and both diseases. Similarly overcrowding was seen as influential in the spread of measles, the closure of schools during outbreaks of measles gives substance to this. The disease also had its most devastating effect in areas of low economic status. However, both diseases were only reduced in severity and numbers by vaccination later in the twentieth century. The influence of an improved diet is not fully established but McKeown has made the point that the affect of vaccination against these two childhood killers on a malnourished body may not have been successful.[180]

The third childhood illness, rickets, was the result of a poor diet mainly through a lack of vitamin D, and it is also negatively affected by the lack of sunlight. Hardy has suggested that rickets was influential in the aetiology of measles and whooping cough suggesting the benefits of a nutritious diet. Whereas middle-class children were known to suffer from the measles and whooping cough, their well-nourished bodies enabled them to fight off the worst symptoms. The high rate of incidence of rickets in Nottingham was only revealed after the introduction of school medical examinations in 1908.

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180. McKeown, *Modern Rise*, p. 135

Eveleth and Tanner have noted, that "An ill-child is a poorly nourished child, although the extent of slowing down depends on a number of factors. Poorly nourished children are more susceptible to and more severely affected by infection than well-nourished children...infection in turn lowers the nutritional intake of the child and the vicious spiral continues." [181] Other factors, such as housing, overcrowding and lack of sunlight also played a part in their aetiology, but the important factor which was instrumental in the continuation of high death rates from the three diseases was poor health stemming from the lack of a good diet.

Typhoid fever was endemic in Nottingham throughout the nineteenth century and only began to decline in the early twentieth century. The town had adopted the pail closet method of waste disposal in 1868 believing it to be a progressive move. However, towards the end of the nineteenth century whilst other towns were benefiting from changing to water closets, Nottingham council, well aware of the advantages of water closets for economic reasons failed to replace the pails. Despite repeated requests from the Medical Officer Health to change the method, pails were still being used in the town in 1920. The true state of affairs concerning the use of pail closets was highlighted by Boobbyer who spent a considerable time during his period of office in trying to persuade the council to make the transition from pails to water closets. He had made extensive enquiries into the loci and spread of typhoid fever and for the most part, the poor densely populated areas with the communal privies were the breeding grounds.

The disease began to decline in the first ten years of the twentieth century and by 1915 had all but vanished from the town. As it was not until 1920 when fundamental changes were made in housing and excrement removal, it is difficult to attribute the decline in deaths from typhoid to social intervention. On the other hand it is difficult to say whether an improvement in diet was responsible for this downward

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181. P B Eveleth and J M Tanner, *World-wide variation in human growth* (1976) p. 246.

trend as we do not have sufficient information. However, it was in the late nineteenth century that the first appreciable nutritional improvement occurred[182] and Woods *et al* have noted that better nutrition reduces morbidity and promotes a healthier individual more capable of fighting disease. [183] Sheard has also noted that this would have affected the mortality from diseases hitherto only thought to respond to improvements in sanitation.[184] It was also around this time that there were improvements in domestic hygiene and food-handling. Perhaps all these factors had a positive effect on the spread of typhoid. This may be an area for more detailed investigation.

During the nineteenth century tuberculosis, and particularly phthisis, was the leading killer. It affected the adolescent, young men and women in the prime of their life, young male being most at risk More importantly it was young, employed males who stood a greater risk of contracting phthisis, this fact being attributed to the dissemination of the disease through the droplet method of coughing and spitting. The end of the nineteenth century saw a growth in factories and warehouses employing large numbers of men; the proximity of so many people compounded by the poor atmosphere, helped to spread the disease.

The nature of the disease made it difficult for the health authorities to be exact in their estimations as to the number of cases and deaths. Many doctors were unsure of its symptoms and many phthisis carriers and their families kept the fact hidden from the outside world. The figures which have been examined in the chapter show that it was a devastating disease but that a downward trend in deaths was visible by the early twentieth century.

Boobbyer attempted to analyse the seat of the disease in his investigations in house rentals. However, the conclusions from these investigations are not what was

182. Wohl, *Endangered lives.* p. 50
183. Woodward, 'Medicine and the city', p. 68
184. Sheard, 'Public Health', p. 93

initially expected. They show that the middle band of house rentals had the greater number of deaths from phthisis. In consideration it is logical that this group would be the most affected; they presumably worked, they perhaps spent more money on the rent than on food and would have been within the targeted age group. Obviously the higher rent houses were occupied by people who were better off, with better conditions and they could afford to eat well. The lower rent houses were occupied by those who had little money, did not work and were part of the 'unwashed' masses which existed in towns around England.

A local investigation, in 1902-3, into the influence of working in the manufacture of lace failed to show an absolute connection between the disease and employment in the lace trade. However, the service that both these investigations gave to Boobbyer was to emphasise his belief in the importance of educating the public, and in particular the working-class, about the dangers of poor living conditions and how they could help themselves. This belief in the prevention of tuberculosis through education may have been a factor in the later creation of the Mother and Baby Welcomes.

A small, but significant factor in the fight against phthisis was to make it a notifiable disease and to bring it out into the open, rather than hiding it. It was not only the patient and their family that tried to cover up the extent of the disease but also the medical profession. By refusing, through choice or ignorance, to notify the disease and treating patients with an amount of disregard helped to prolong is significance.

Once again there were several contributory factors which influenced phthisis. Boyd Orr suggested in 1936 that tuberculosis began its descent through improved nutrition. The McKeown thesis emphasised that the airborne disease of phthisis was the key to Britain's mortality decline and this decline was brought about by an increase in the nutritional intake. Like typhoid fever, phthisis was also influenced by factors

such as housing and overcrowding. However, there appears to be a strong correlation between an improvement in diet and the decline of the disease at the beginning of the twentieth century. The status of the disease was further improved when it received royal patronage ensuring more funds were available for investigations and sanatoriums where the patients received open air treatment together with an improved diet - both of which were beneficial.

It has been shown in this chapter that where poor nutrition occurs, the defensive response of the individual to germs is impaired and this is particularly noticeable in diseases which affect the gastro-intestinal and respiratory tracts such as tuberculosis, measles and diarrhoea.[185] Rowntree postulated the effects of nutrition on general health in his study of York[186] and it is the suggestion that if the working-classes had received better nutrition they would have been able to avoid some of the diseases, if not all, and that the severity of the diseases would have been minimalised.

185. Ulijaszek, 'Nutritional status and susceptability', p. 140
186. S B Rowntree, *Poverty: a study of town life* (1902)

Chapter 7

Infant Mortality 1850-1939

Introduction

The great value of a study of child mortality is as an index as to the state of the environmental conditions, both public and private, social facilities and health in a particular area.[1] Edward Seaton, Nottingham's first Medical Officer of Health commented, 'It is on the lives of infants that unhealthy influences have their deadliest effects.'[2] Nearly forty years later Dr Newsholme, Chief Medical Officer, said, "Infant Mortality is the most sensitive index we possess of social welfare and of sanitary administration, especially under urban conditions."[3]

The self-congratulatory feeling of health officials, brought about by the fall in the general death-rate through improved public health measures, was frustrated by a high incidence of infant deaths at the end of the nineteenth century. The sanitary improvements which had been in place for several decades appeared to be reducing the overall death rates, so why was there no visible sign of a reduction in infant deaths? This contradiction cast doubts on the effectiveness of public health measures and forced officials to seek a solution elsewhere.

The finger of blame always came back to the mother because she was the one who failed to nurture her child and left it with a child-minder whilst she worked;[4] the

1. Richard Titmuss, *Birth, poverty and wealth. A study of infant mortality* (1943) p. 24
2. Edward Seaton, *Report on the sanitary conditions of the borough of Nottingham* (Nottingham, 1873), p. 40
3. *ARMOHLGB,* Thirty-ninth Report, PP.1910, Cd5263 (XXXIX), supplement on infant and child mortality, report of Dr Arthur Newsholme
4. The position of women working is complicated because they were often employed part-time or on a casual basis and their 'occupations' were not always recorded in the census. According to Higgs the work of women in the home which created services and products for sale was indifferently recorded. In 1901 'working at home' was added but there remained an air of confusion about the accuracy of the data. Edward Higgs, *Making sense of the census. The manuscript returns for England and Wales, 1801-1901* (1989), pp.81 and 93

mother was the one who failed to breast-feed the child and then fed it on improper foods and she was the one who failed to provide a suitable home in which to raise a child.

The aim of this chapter is to examine infant mortality in Nottingham and to determine the causes of this persistent problem. Initially, the causes of post-natal deaths are examined. It was in the post-natal period, from one month to twelve months, that the greatest number of deaths occurred and outside influences would have been at their most devastating.[5] The post-natal period is also the most important time when the actions of the mother plays such a crucial role. Criticism of the mother continued into the early years of the twentieth century and it was only when a more enlightened society began to emerge that other factors were seen as being influential in infant mortality.

The chapter goes on to examine the various enquiries made to determine why infant mortality persisted throughout the late nineteenth century and early twentieth century. Such enquiries included the examination of parental input and the conditions of housing and the environment, both in terms of overcrowding and the physical state, sanitary conditions, illegitimacy, and breast and hand-feeding. It will be shown that no one factor could be held responsible but that a variety of factors, impacting on each other, were suspected. Wohl makes the comment that, "As with so many aspects of public health a single factor...taken in isolation may not appear to be terribly significant." [6]

In Nottingham, the circumstances surrounding infant mortality were just as confused as elsewhere in England. An examination of the working practices of mothers in Nottingham will reveal that the number of women employed away from

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5. The neo-natal period from birth to one month is considered to be more influenced by congenital factors, rather than the environment and is not within the remit of this thesis.
6. Anthony S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), p. 13

home were not as great as in the cotton areas of Lancashire but they were employed as out-workers in their homes. Illegitimacy in Nottingham was higher than other similar sized towns such as Coventry and may have been significant in the higher rate of deaths but it could never be singled out as the principal factor. The over-riding feature of infant deaths was that most occurred from the effects of diarrhoea. Boobbyer concluded that the inadequate excrement removal system was an important cause of infant mortality.

During the first decade of the twentieth century, Nottingham had an above average number of deaths and was in the dubious position of being one of 25 towns with the greatest number of infant deaths. At this point the finger of blame had shifted slightly and focused on hand-feeding of infants and more particularly the use of milk other than that of the mother. A survey carried out in Nottingham revealed that most women breast-fed whenever they could, the problems arising when they had to resort to alternative methods. At the same time Boobbyer was highlighting the problems arising from the method of excrement removal which appeared to be very influential in the high death rates from typhoid in some areas. The combination of hand-feeding and the continued use of the pail closet seemed to provide the answer as to why infant mortality was not on the decline.

By the end of the First World War, infant mortality had been reduced and was no longer the *bête noir* it had been, and this was reflected in the health reports from 1916 onwards. Although infant mortality is dealt with in the health reports until 1939, the concern and frustration expressed in the earlier reports are not so apparent and for this reason the period 1916-1939 has been dealt with chronologically rather than thematically.

The causes of infant mortality

At the end of the nineteenth century, although the general death rate was showing a decline, there was an noticeable increase in the number of infant deaths, that is, children between 0 and 12 months. (see Table 7-1) This was particularly frustrating for the authorities as the birth rate had also begun to decline and all three factors had eugenic implications.

For the Victorians, it seemed that the improved sanitary conditions which had positively affected the general death-rates, were apparently having little effect on the most vulnerable sector of the population, infants. These figures cast doubt on the effectiveness of public health reforms in relation to infant life and forced the authorities to take new initiatives.

There was a broad measure of agreement among the authorities over two factors. Firstly, the link between high death rates and high-density urban living with poor sanitary conditions and secondly, the risk of artificially feeding very young children because of the poor domestic hygienic standards. In the mid-nineteenth century the focus had been concentrated on the improper feeding of unsuitable adult foods to infants but later the emphasis had shifted towards concern over the hygienic standard of the various forms of milk fed to infants. Contemporary opinions differed as to where the problem lay; the contamination of the milk, at the point of production, as believed by Sheridan Delépine, Professor of Pathology at Owen College, Manchester, or the poor storage facilities in the home, the view of Newsholme.

The causes of infant mortality can be divided into three groups:

1) Respiratory diseases; pneumonia, bronchitis, but including measles and whooping cough; since nearly all fatal cases of the these maladies are due to the supervention of pneumonia and bronchitis.

2) Epidemic diarrhoea and enteritis.

3) Developmental diseases and malformations - conditions occurring from some defect in the child, present at birth.[7]

Table 7-1: Birth, death and infantile death rates in England and Wales, 1891-1900

Year	Birth rate per 1000 living	Death rate per 1000 living	Infantile death rate
1891	31.4	20.2	149
1892	30.5	18.9	148
1893	30.8	19.2	159
1894	29.6	16.6	137
1895	30.3	18.7	161
1896	29.7	17.1	148
1897	29.7	17.4	156
1898	29.4	17.6	161
1899	29.3	18.3	163
1900	28.9	18.3	154

Source: Annual Health Report 1914

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7. William Brend, 'The relative importance of pre-natal and post-natal conditions as causes of infant mortality, Part II, ', in A K Chalmer, W A Brend, L Findlay, J Brownlee, 'The mortalities of birth, infancy and childhood', *Medical Research Committee, (Special Report Series),* 10, (1917), p. 18 and G F McCleary, *The early history of the infant welfare movement* (1933), p. 22. The problem with the nomenclature of recorded deaths were that they were often unclear and conditions were confused. For instance infantile convulsions were twice referred to by Boobbyer as being the 'symptom of disease' and not the recorded cause of death. *ARMOH,* 1910 and 1911. See also John Brownlee, 'The changes in the physiological processes of the developing child as shown by its response to different diseases', in Chalmer *et al* p. 79, in which he says that convulsions are usually considered as a symptom of disease. However he believes that they are more a pathological entity than commonly regarded. Titmuss, *Birth,* p. 47 fn. 1

Table 7-2: General and infant death-rates in England and Wales and Nottingham, 1900-1909

Year	England and Wales		Nottingham	
	Infant deaths	General deaths	Infant deaths	General deaths
1900	154	18.3	178	19.2
1901	151	16.9	210	18.5
1902	133	16.3	196	16.7
1903	132	15.4	193	16.5
1903	145	16.2	159	17.7
1905	128	15.2	165	16.5
1906	132	15.4	176	15.9
1907	118	15	155	17.5
1908	120	14.7	171	15.2
1909	-	14.5	168	16.3

Source: Annual Health Report 1909 and 1914

These causes can be further sub-divided into pre-natal and post-natal conditions. In his study of infant mortality, Titmuss made the distinction between pre-natal, and post-natal deaths.[8] As with other infant deaths, pre-natal deaths are multifarious but they tend to be quite different in character to those operating in subsequent months and have more to do with congenital factors, the health of the mother, the nursing care available both before and during the pregnancy than with the environment.[9]

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8. Pre-natal occurs before and up to one month after birth and post-natal occurs between one and twelve months of life.
9. Titmuss, *Birth,* pp. 77 and 81

Post-natal causes are ones which normally arise from environmental conditions, and are influenced by:

Proportion of male to female births
Proportion of legitimate to illegitimate births
Family size
Number of stillbirths
Quality of help given at birth
Age of women at marriage
Poverty and social conditions
Extra-domestic employment of women
Urban and rural conditions of life
Domestic and municipal sanitation
Conditions of housing
Ignorance and fecklessness of mothers

Source: ARMOHLGB, 1909-1910, Supplement on Infant Mortality

In all of these instances the common factor of paramount importance appears to be the mother. She was to blame for going out to work, for not suckling her baby, for leaving the child with unsuitable baby-minders and for failing to provide a homelife suitable for a young child. Most early investigations referred to the fact that the mother's behaviour was central to the problem.[10] A report of 1861 commented that all the medical men expressed an opinion that where mothers of young children were employed in factories away from home, excessive sickness and mortality would occur.[11] The following year the Sanitary Committee Report commented on the high rate of infant mortality and suggested four reasons for this; the improper or insufficient

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10. *ARMOHPC*, Fourth Report, PP.1861, 179 (XXII), Appendix V, Dr Greenhow's report on the circumstances under which there is excessive mortality of young children among certain manufacturing population, p. 191. Seaton, *Sanitary conditions*, pp. 40-1. Dr Hugh Jones, 'The perils and protection of infant life', in *Journal of the Royal Statistical Society*, LVII (March, 1894), p. 3
11. *ARMOHPC*, Fourth Report, PP.1861, 179 (XXII), p. 191

feeding; poverty or ignorance or a want of careful tending; mothers working and neglect common in the mothers of illegitimate children.[12]

Employment of women

Seaton's first report suggested that high infant mortality in Nottingham, was caused by a combination of the environment and the type of nursing received by the child. He suggested that the employment of married women in factories led to the neglect of infant care which, compounded by unhealthy home conditions, curtailed their frail life. However, he pointed out that the employment of women in factories in Nottingham was nothing like that of the cotton districts of Lancashire.[13] The census returns during the nineteenth century are difficult to interpret because the recording of the work of women was very neglected or ignored, especially if the woman worked as an outworker for the lace industry.[14]

Dr Hugh Jones[15] claimed that the 'majority of the perils of infant life must be in the home' [16]and he continued, 'the children of women engaged in industrial occupations suffer from the effects of maternal neglect. They are handicapped from the moment of birth in their struggle for existence and have to contend, not only against the inevitable perils of infancy, but also against the perils due to the neglect by their mothers and to the ignorance of those to whose care they are entrusted.'[17] This was reflected in the fact that infant mortality was higher in Durham and South Wales where fewer women were engaged in industrial occupations, in comparison to Lancashire and the West Riding of Yorkshire where more women were employed in factories.

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12. *SCR,* 1862
13. Seaton, *Sanitary conditions*, p. 40-1. The 1907 Annual Health Report reported that 'women were extensively employed in factories.'
14. Higgs, *Making sense of the census*, pp. 81 and 92
15. Dr H Jones, Hon. Assistant Surgeon, Royal South Hospital, Liverpool Infirmary for children
16. Jones, 'The perils and protection' p. 3
17. *ibid.* p. 57

However, Jones's methods and statistics did not go unquestioned and a contemporary suggested that general insanitary conditions were a much more important factor than industrial employment. In fact, she saw that the advantages of being able to provide better food and conditions compensated for the ill-effects.[18]

Four years later in 1884, Clara Collet, who had recently been involved in an investigation into the conditions of women's work, again raised problems with Jones's methodology particularly when examining whole towns and women employed en masse, rather than separating sub-districts and specific occupations. She found that there was a connection between infant mortality and the proportion of the female population returned as indoor domestic servants in 1891 indicating that middle class residential areas obscured the issue. Hence the smaller proportion of domestic servants (the best measure of servant-keeping class in a town) the higher the rate of infant mortality.[19] This would suggest that there are very specific factors which influence infant mortality.

In a recent paper, Tanner and Mooney highlighted the problems experienced by the London Borough of Kensington. Considered to be a high-class borough having Brompton's substantial middle-class houses, Kensington town had an infant mortality rate greater than London's. The small area known as the Notting Dale Special Area increased the average infant death rate for the whole area. In addition to these findings, the research has shown that the women who lived in these areas were mostly employed in the laundry trade and not in the factories.[20] Environmental conditions were

18. *ibid.* pp 101-
19. Clara Collet, 'The collection and utilization of official statistics bearing on the extent and effects on the industrial employment of women,' *Journal of the Royal Statistical Society,* LXI (June, 1898), pp. 232-3. See also *Report of an enquiry by Board of Trade into working-class rents, housing and retail prices together with the standard rate of wages of the UK*, PP.1908, Cd.3864 (CVIII), p. 351 which states that Nottingham largely comprised of industrial classes as indicated by the proportion of domestic indoor servants to the total population, i.e. 25 per 1000
20. Andrea Tanner and Graham Mooney, 'Infant mortality in Kensington 1890-1914', Paper presented to the *Annual Conference of the Society for the Social History of Medicine,* Liverpool, September 1997.

apparently ruled out in the belief that the mother was the single most important factor in child mortality. This was stressed in 1913 when Newsholme said, "It is now a well-established truism to say that the most injurious influences affecting the physical condition of young children arise from the habits, customs and practices of the people themselves, rather from the external surroundings or conditions. The environment of the infant is its mother. Its health and physical fitness are dependent primarily upon her health, her capacity in domesticity and her knowledge of infant care and management." and "The principal operating influence is the ignorance of the mother and the remedy is the education of the mother."[21]

To the Victorians there was a link between infant mortality, working mothers and maternal ignorance. For employed women the normal period of breast-feeding, which could continue as long as nine months, would be curtailed particularly prior to legislation which outlawed women returning to work in any factory or workshop within four weeks of giving birth. The mothers had to rely on local women who acted as baby-minders[22] who were often of a low educational calibre and only interested in 'looking-after' as many children as possible to supplement their income, and relied on opiates to keep the children quiet and fed them on totally inappropriate food.[23]

Many mothers had to supplement their inadequate income through working either from home or going out to work. In Nottingham during 1909 and 1910 the number of mothers who were industrially employed was very small indeed. Only 100 out of 2,055, or 5 per cent were employed away from their homes (see Table 7-3) before their confinement and they intimated that they intended to resume work as soon as they were legally and physically able to do so. This small percentage would seem to have been in line with the rest of the country as Miss Anderson, the Principal Lady

21. *ARMOHLGB*, Forty-second Report, PP.1913, Cd6909 (XXXII), Second report on infant and child mortality
22. There were no creches available until the First World War. The first Mother and Baby Welcome centre in Nottingham, was opened in 1908.
23. *ARMOHPC,* Fourth Report, PP.1861,179 (XXII), p. 659

Inspector of Factories, told the enquiry into Physical Deterioration that only 9 per cent of the total female population of England above ten years of age came under her preview.[24] The employment of women in Nottingham was in the following trades:

Table 7-3: Employment trades of women in Nottingham, 1909

Trade	Number employed	Trade	Number employed
Blouse hands	4	Packer	1
Box makers	5	Paper sorter	1
Brass bobbin winders	5	Picture gilder	1
Cane worker	1	Pressers (cycle)	2
Cigar hands	5	Printer	1
Charwomen	7	Seamstress	1
Cop winders	3	Silk sampler	1
Hosiery sorters	2	Slip winders	3
Lace-dressing hands	13	Tailoress	2
Lace warehouse hands	21	Upholsterer	1

Source: ARMOH 1909

Many of these occupations (see Table 7-3) would suggest that they would not have been so physical, allowing the women to work up to their confinement and then to make an early return.

The textile trade in Nottingham needed female workers especially in the lace trade but unlike the towns in the cotton areas of Lancashire and Yorkshire, some work was carried out by the women not within a factory but at home.[25] A report from the Factories and Workshops Inspector noted that, "a considerable volume of home work is done ...in connection with the lace trades... Most unsatisfactory...houses are totally

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24. *Report of the Inter-Departmental Committee on Physical Deterioration*, PP. 1904, CD.2210 (XXXII), Q. 1424 to Miss Anderson
25. Seaton, *Sanitary conditions* p. 41 and *ARMOH,* 1893

unsuitable...In the summer time it is possible to see in the courts and back yards of the slum districts heaps of lace at almost every door."[26] One male resident recalled bundles of lace being transported in prams by the women to their homes where it was clipped and scalloped.[27] Home work may have reduced the problem of farming out the child but there was still the problem of caring for them adequately whilst the mother was otherwise occupied with her 'homework'.

Illegitimacy

One factor of motherhood which was pertinent to Nottingham was illegitimacy. Table 7-4, although from a slightly earlier period, highlights the excessive number of illegitimate births in Nottingham and the surrounding districts, compared to other similar industrial towns such as Coventry and Birmingham. The enquiry by Dr Greenhow in 1861 concluded that the precise measure of the influence of neglect, illegitimacy, working mothers etc. could not be determined. In the year September 1861 to September 1862, the number of deaths of infants under the age of 2 years was 610, but there is no way of knowing how many of those that died were illegitimate. The part played by illegitimacy was a difficult one - although its effect is probable on individual health, its effect on the gross mortality in an entire district could be small.[28] Seaton believed illegitimacy to be high in the 1870s and this was reflected in a high mortality rate among illegitimate children.[29]

Women or girls who had illegitimate children, were always going to have to work to keep themselves and their offspring and this compounded the problem. Illegitimate children in urban areas faced accumulated hazards compared to legitimate rural births and were always considered more at risk from early deaths because of the

26. *Annual Report of the Chief Inspector of Factories and Workshops*, Reports and Statistics, Cd.3036 (1906), report of Inspector Parkes, p. 102
27. Interviews Nottinghamshire County Council Oral History, (NLSL), A34, male born 1891
28. *ARMOHPC,* Fourth Report, PP.1861, 179 (XXII), Appendix V, enquiry into excessive mortality of young children, p. 653
29. Seaton, *Sanitary conditions* p. 41

'common lack of solicitude on the part of the mother for their welfare'. It has been shown that up to twice as many illegitimate babies died from diseases attributed to their poor feeding, through diseases such as diarrhoea, atrophy, debility, and wasting diseases than from any other causes.[30] It must be assumed that this was associated with a lack of education and a lack of finances. In 1909 it was claimed that the average death-rate among illegitimate children was twice that of children born in wedlock[31].

Table 7-4: Number of illegitimate births in proportion to every 1000 births in various towns

Name of district	Total number of births	Number of illegitimate births	Proportion of illegitimate births per 1000 births
Nottingham	22,612	2,272	10.04
Basford	26,413	2,396	9.07
Radford	10,936	893	7.98
Coventry	15,225	1,073	7.04
Blackburn	41,307	2,539	6.13
Wolverhampton	49,061	2,776	5.65
Birmingham	76,893	3,887	5.05
Abergavenny	24,385	1,168	4.79
Methyr Tydfil	38,393	1,709	4.45
Aston	31,621	1,242	3.92

Source: Sanitary Committee Annual Report 1862

In the Local Government Board report of 1918, one factor singled out as the chief cause of excessive mortality in illegitimate births was a lack of parental care, through the lack of breast-feeding and home life.[32] Historical evidence from Germany in the late nineteenth century tends to show that a key factor in the higher mortality of illegitimate children was that unwed mothers were less likely to breast-feed their

30. *ARMOH,* 1907, 1914 and 1915
31. *ARMOHLGB*, Thirty-ninth Report, PP.1909, Cd5263 (XXXIX), supplementary report on infant and child mortality
32. *ARMOHLGB*, Forty-seventh Report, PP.1918, Cd9169 (XI), p. xxix

children and to wean the child at an earlier age. A similar result has been found in England at the turn of the century.[33] A combination of illegitimate births and the mother having to work appeared to be influential in infant mortality.

Environmental conditions

Poverty and social conditions; housing conditions; domestic and municipal sanitation and the ignorance of the mother, all considered by contemporaries to have an influence on infant deaths. Several studies made since the decline of infant mortality have also examined the separate causes to try and resolve the matter. In his study of Birth, Poverty and Wealth, Titmuss found that the environment in its widest sense of the term was the main determinant in deaths of infants between the ages of 1 and 12 months.[34] Poverty and social conditions can embrace housing, sanitary conditions and maternal ignorance but, nevertheless, they have been treated as separate entities by recent investigators including Watterson, Woods et al and Williams.[35] Watterson noted that "poverty level was not strongly related to infant mortality decline except in association with urban development."[36] She concluded, "The results suggest that raising private incomes without changing environmental conditions would do little to improve infant mortality levels."[37] In a later article in which she examined the relationship between infant mortality and the father's occupation, she came to the same conclusion.[38] A fact that Titmuss had picked up in the 1940s when he found that the

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33. John Knodel and Hallie Kinter, 'The impact of breast feeding patterns on the biometric analysis of infant mortality', in *Demography,* 14, 4 (November, 1977), pp. 399- 405
34. Titmuss, *Birth*, p. 60
35. Patricia A Watterson, 'Role of the environment in the decline of infant mortality: an analysis of the 1911 census of England and Wales', *Journal of Biosocial Science,* 18 (1986), 457-468. P A Watterson, 'Infant mortality by father's occupation from the 1911 census of England and Wales', *Demography,* 25, 2 (1988), 289-306
R I Woods, P A Watterson and J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921, Part I', *Population Studies,* 42 (1988), 343-365. R I Woods, P A Watterson and J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921, Part II', *Population Studies,* 43 (1989), 113-132. Naomi Williams, 'Death in its season: class, environment and the mortality of infants in nineteenth century Sheffield', *Social History of Medicine,* 5, 1 (1992), 71-94
36. Watterson, 'Role of the environment', p. 462_
37. *ibid.* p. 468
38. Watterson, 'Infant mortality by father's occupation', p. 302.

children of coal miners had a higher death rate in the first month of life than those of general labourers.[39] However, he also found that environmental diseases associated with bad housing, nutritional deficiencies and inadequate medical care indicated a huge gulf between the privileged and the under-privileged.[40]

Overcrowding

From the earliest reports on infant mortality, a link between poor housing and infant mortality rates had been made.[41] In 1859 the number of children dying under the age of 5 years was over half the total number of deaths. The chief causes of death were diarrhoea and pneumonia and (see Table 7-5) many of the deaths had taken place in the closely built-up areas, suggesting a link between overcrowded housing conditions and the spread of contagious diseases. Overcrowding has been shown to be a significant problem in housing but Newsholme's investigations in 1910 were unable to prove the connection between overcrowding and infant mortality.[42] Figures for deaths of infants in Ireland showed that the country had a low infant mortality due to the sparseness of its population. At the other extreme, details of infant deaths in Peabody Buildings in London confounded the theory that high density was the cause of high infant mortality. The building consisted of tenement dwellings housing very poor people and in 1909 the density of population was 504 persons per acre, nearly eight times higher than the rest of London, yet the infant mortality rates were 92.2 compared to Kensington with a rate of 126 and Hampstead with a rate of 76. The average number of persons per room in the Peabody Buildings was 1.8. They lived under strictly regulated conditions, each family had to have a certain standard of cleanliness, no overcrowding and good sanitary conditions.[43] This suggests that control over housing was an important issue. Watterson concluded that urban development, provided that it took place in a

39. Titmuss, *Birth,* p. 43
40. Titmuss, *Birth,* p. 51
41. See Chapter 2
42. *ARMOHLGB,* Thirty-ninth Report, PP.1910, Cd5263 (XXXIX), pp. 61-2
43. *ibid.* These buildings were very often visited by middle class women to collect rent and act as informal friends to the residents and thus could keep an eye on the conditions therein.

controlled way, may have had a more dramatic effect on the decline of infant mortality than other factors.[44] Stocks has shown that density per room is more problematic than density per acre and its effects were far and away the most serious at pre-school ages.[45]

Table 7-5: Deaths of children as percentage of total deaths in Nottingham, 1859

Wards	Under 5 years	Total number of deaths, all ages	Under 5s deaths as a percentage of total
Byron	296	497	59
St Ann's	327	635	51
Sherwood	116	265	44
Park	66	232	28
Castle	113	216	52
Exchange	166	271	62
St Mary's	180	428	42

Source: Sanitary Committee Report 1859

Over-crowding is a perplexing matter, as the following quote suggests;

"The number of rooms occupied by each family is of much greater importance in relation to health than the number of persons living on a given area, as this fact throws important light on the state of each tenement as regards overcrowding...Given houses properly constructed and drained, and given cleanly habits on the part of the tenants, increased aggregation of population on a given area has no influence on raising the death rate, except in so far as it is accompanied by *overcrowding in individual rooms*, an event which is by no means necessary under the circumstances named. In other words, there is no causal relationship between density of population *per se and* a high

44. Patricia Watterson, 'Role of the environment', p. 468
45. P Stocks, 'The association between mortality and density of housing', *Proceedings of the Royal Society of Medicine (Epidemiology Section),* 27 (1934), pp. 1144 and 1146

mortality. The *true index of density is the number of persons to each occupied room.*"[46]

C H Lee has shown in his study of regional inequalities that infant mortality *was directly* linked to high-density living, especially housing density, (the number of people per room) and urbanisation.[47] Williams has shown that whilst the environment played a part in the variations in infant mortality, other factors such as geography, socio-economic and the season, also played a contributory part.[48]

An examination of the villages surrounding Nottingham in 1915, does not automatically indicate that less-urban areas, with less over-crowding, had lower rates of infant deaths. For example Arnold, an industrial suburb of some four and half acres, was situated to the north-east of Nottingham, had a population of 12,006 and a high infant mortality rate of 143 per 1000 living births. The scavenging system carried out by contractors and the Urban District Council was poorly done, resulting in complaints about the irregularity and working method. There were over 1400 dry closets compared to 996 water closets suggesting that poor excremental removal was a key factor in the high death rates. The adjoining suburb of Carlton had a slightly higher population of 17,877 with an average number of persons per house of 4.37 but a lower infant mortality rate of 106. The district had just over half the number of water closets to the 2,600 pail closets.[49] The scavenging was described as insufficient and a number of buildings including houses, slaughterhouses and cowsheds were in poor and dirty condition. Again this would suggest that the infant death rates were linked to the poor scavenging methods.

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46. *ARMOHLGB*, Thirty-ninth Report, PP. 1910, Cd5263 (XXXIX) pp. 61-2 (author's italics)
47. C H Lee, 'Regional inequalities in infant mortality in Britain, 1861-1971: patterns and hypotheses', *Population Studies*, 45 (1991), p. 63
48. Williams, 'Death in its season', p. 89
49. *ARMOH*, Nottingham 1914 and 1938. *ARMOH for West Bridgford Urban District Council*, 1908-11 and NAO CA/ENQ/1920/128_

Beeston, which was situated on the west side of Nottingham, had a population of 11,324 and an average number of four persons per house. There were 15 back-to-back houses with a majority of pail-closets and only 683 water closets, but the sewage disposal system was reportedly good. The infant mortality rate was 74 per 1000 births comparing favourably to Nottingham, Arnold and Carlton.

At the other extreme, West Bridgford, situated on the south side of Nottingham, was well-planned with wide streets and open spaces and a population of 11,362.[50] There were no back-to-back houses and most houses had water closet accommodation, with approximately 175 pail closets. There were 3,576 houses with an average of four persons per house. It was particularly noted for being one of the healthiest districts in the county with a very low birth rate[51] and the infant death rate of 60 reflected this.[52]

The study of these districts suggest that there is no conclusive answer to why infant mortality rate was higher in one area than another. All the four districts were similar in nature with regard to population figures and housing density, all were on the outskirts of Nottingham and were essentially rural. However, where the critical variation appears to be is in the type of closet accommodation and method of scavenging. Arnold and Carlton, which had the higher infant mortality rate are those which had the least efficient method of scavenging and the least number of water closets.

Newsholme suggested that the problem lay in the neglect of adequate household and excrement removal and linked defective sanitation with excessive infant mortality. In the second report on excessive infant and child mortality, Newsholme summarised the conditions under which excessive infant mortality existed:

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50. Figures for 1908
51. *Nottingham Evening Post*, 9 May 1908 p.5, col.3
52. The death rate was for 1911

It was usually higher in urban rather than rural areas.

Towns within the same county and neighbouring counties could show widely divergent infant mortality;

Differences could occur between constituent wards or districts of a town and these differences were not confined to towns showing a high infant mortality.;

Size of town has no definite relationship to excessive infant mortality. [53]

The evidence so far seems to pose more questions than it answers and, although it is well accepted that urban areas suffered more infant mortality than rural areas, we should bear in mind the conclusions of Watterson and C H Lee.[54] Perhaps we should listen to Woods et al who warned, 'One should not be tempted to believe that the relationship between infant mortality and urbanisation was always straightforward.'[55]

The evidence to date suggests that mothering and housing were not the sole contributors to the high rates of mortality. Williams has shown in her investigation of Sheffield that housing and sanitary conditions are likely to be as different at the micro-level, from one street to the next and from one court to another, as it is at the macro-level.[56] This suggests that there was a local factor which affected different towns and even parts of the same town.

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53. *ARMOHLGB,* Forty-second Report, PP.1913, Cd6909 (XXXII), pp. 40-46
54. Watterson, 'Role of the environment', and Lee, 'Regional inequalities in infant mortality',
55. Woods *et al*, 'The causes of rapid infant mortality, Part I', p. 354
56. Williams, 'Death in its season', p. 92

Excrement removal

In Nottingham, the one local factor which had a dramatic affect on the mortality figures was the inefficient excrement removal system within the borough.[57] Greenhow, in 1860 observed that, "Until a few years ago the common privy and cesspool were the only conveniences attached to the dwellings of the poorer classes...as recently as 1854...the Sanitary Committee stated that many dwelling houses were still unprovided with privies..."[58] Unlike other towns, the inequalities in the death-rate were less obvious and it was difficult to isolate particular districts sufficiently to show the exact areas where the problem was causing most concern. Greenhow plotted three specific areas where there were obvious variations in diarrhoeal mortality (see Table 7-6 and Figure 7-1).

The first of these three districts was Sheridan Street including houses on Pipe Street, Wood Street and Gedling Street, several of which had constantly been under the notice of the Sanitary Committee. They were back-to-back houses, inhabited by the very poor, with the privies situated under the inhabited rooms.

The second district was Trumpet Street, Commerce Row, Rumford and Cyprus Street. Nearly all of these houses were back-to-back, but were open at both ends, to a recreation ground and the cholera cemetery. The highest number of deaths had occurred in Rumford Place, which had on its opposite sides two large groups of privies serving Commerce Row and Cyprus Street. However, it was by no means certain that the inhabitants of the houses nearest the privies had suffered in any greater number.

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57. See also Wohl, *Endangered lives,* Chapter 4
58. *ARMOHPC*, Second Report, PP. 1860, 2736 (XXIX), Report by Dr Greenhow into diarrhoeal of England, p. 126

Figure 7-1: Map showing areas detailed by Dr Greenhow's enquiry into diarrhoea in Nottingham, 1854-58

Source: Ordinance Survey map 1901

Table 7-6: Deaths from diarrhoea in certain streets in Nottingham, 1854-8

Name of district	Average annual number of deaths from diarrhoea per 100 persons, 1854-58
Sheridan Street	2.6
Trumpet Street	3.1
Pomfret Street	3.1
Nottingham	2.34

Source: ARMOHPC, PP. 1860 (XXIX), p 128

The third district was around Pomfret Street including Stanhope Street and Earl Street and was similar in character to Trumpet Street and although the streets were situated at a considerable distance apart, the diarrhoeal rates were very similar, suggesting parallel conditions.

From the map (Figure 7-1) it can be seen that the streets involved were situated in the districts of Byron and St Mary's wards, (see Figure 6-1) which have already been shown to have a generally high death rate. Foundary and Lees Yard also showed high rates of death from diarrhoea, both had low-class living accommodation (including a common lodging house) with privies which were situated underneath or very close to houses and used by several different families. However, Narrow Marsh, despite its proximity to 'some of the worst and densest courts of the town' had been virtually untouched by deaths attributed to diarrhoea.[59] At the other extreme several streets, Plantagenet Street, Mowbray Street and Berkeley Street had been constructed upon recently enclosed land in the suburbs All were model streets with the best type of housing inhabited by respectable workpeople; since 1854 there had only been four recorded deaths from diarrhoea in this area. Greenhow later commented that despite the examples, diarrhoea tended to be 'diffused throughout the town'.[60] He stressed that

59. *ARMOHPC,* PP.1860, 2736 (XXIX), p. 132
60. *ibid.*

the Sanitary authorities had been very quick to isolate the disease and were very thorough in their cleansing of the streets, courts and alleys.

Diarrhoea

Williams has suggested that mortality rates varied not only geographically within a borough and within streets, but also according to the socio-economic status of the inhabitants of a micro-area.[61] Furthermore, these factors were influenced by the seasonal effect of diarrhoea and Williams suggests that the seasonal effect operated in two ways. Firstly, it picked out particular areas within the urban environment, usually areas lacking in sanitary facilities resulting in a high number of infant deaths regardless of the socio-economic status. Secondly, infants from particular socio-economic groups, usually the very poor and regardless of where they lived, were most vulnerable to the disease. Thus each component had an independent yet additive contribution.[62]

Greenhow had previously associated the dysenteric form of diarrhoea[63] which manifested itself in the infant population with poor feeding practices and in particular the practice of placing them with baby-minders. However, he continued that the most influential cause was the existence of 'foul privies' and the accumulations of excrement which gave off 'noxious exhalations', yet found nothing offensive in the water provided to the town.[64]

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61. Williams, 'Death in its season', p. 73
62. *ibid.* p 89
63. Diarrhoea is a water or food-borne disease which predominantly affects children under the age of 2 years. Diarrhoea was the umbrella name for dysentery, shigella-sonnei, salmonella and typhoid. Some of these will cause a person to vomit, as in the case of very young children who are given the wrong type of food, i.e. dietary disorder this is non-pathogenic diarrhoea. Dysentery is a frequent passing of stools of a particular consistency which is usually pathogenic diarrhoea i.e. infection producing, which invades the gut and has a reaction. This is caused from a lack of personal hygiene- taken into a person by eating or drinking. Salmonella is classic food poisoning. caused when the food taken by a person is of a impure standard. What has to be understood is that in the late nineteenth and early twentieth century the knowledge of what caused particular diarrhoeas was still unclear, from a 1990s point of view much of what is talked about in the context of diarrhoea is somewhat loose.
64. *ARMOHPC,* Second Report, PP.1860, 2736 (XXIX), pp. 132-3

High infant mortality occurred in densely populated areas of Nottingham, where the use of the pail closet was predominant. Table 7-7 shows clearly that the worst excesses of infant mortality occurred in the Byron, St Mary's and St Ann's wards, all situated in the Old Town. The connection between the high death rate from diarrhoea and insanitary areas is clearly visible in Table 7-7 to Table 7-9. Byron, St Mary's and St Ann's ward had the highest numbers of deaths of infants under one year and also had the highest distribution of diarrhoea. Seaton's analysis of the figures show that the majority of the deaths from diarrhoea occurred in infants. He was in no doubt that unhealthy conditions which existed in certain parts of the town, resulting from the impurity of air and inefficient removal of night-soil, were contributory factors.[65]

Table 7-7: Death rates, per 1000 persons, under one year of age*, in specific wards, 1869-72

District	1869	1870	1871	1872	Average
Sherwood	3.6	3.9	3.5	3.9	3.7
Park	3.9	3.9	2.3	5.1	3.8
Exchange	5.3	5.1	6.5	7.2	6.0
Castle	5.6	4.9	7.3	7.3	6.2
St Ann's	7.3	6.6	6.5	7.8	7.0
Byron	7.2	8.5	8.0	8.8	8.1
St Mary's	7.5	7.9	7.9	11.3	8.6

Table 7-8: Death rates for 1872, in Four Districts. Under one year of age*

District	Population	Number of deaths	Rate per 1000
Sherwood	13,502	50	3.7
St Ann's	21,158	114	5.3
Meadows	7,480	50	6.6
Old Town	44,473	406	9.1

* *Note: these are calculated on the total population, and not on the population below one year.*

65. Seaton, *Sanitary conditions*, pp 44-51

Table 7-9: Distribution of diarrhoea throughout Nottingham, 1869-72

District	1869	1870	1871	1872
Sherwood	13	14	15	17
St Mary's	11	23	17	12
St Ann's	30	18	52	44
Byron	25	30	43	23
Castle	14	9	17	11
Exchange	9	17	25	15
Park	4	1	4	10

Source for Table 7-7 - Table 7-9: Edward Seaton's Report on Nottingham 1873.

Seaton later reiterated much of his criticism of the town's poor state on housing and sanitary provision and suggested that localised factors were responsible for infantile diarrhoea. The map which accompanied the 1882 Health Reports show that many of the deaths were in the north east and south east districts.[66]

McKeown stated that deaths from diarrhoea-dysentery in the under-fives began to decline by the late nineteenth century, but then increased during the first few years of the twentieth century, decreasing rapidly after 1914.[67] Figure 7-3[68] shows that after 1906, there was a gradual decline in the infant death rate in the four central districts of Nottingham. The south-east district, with its poverty and poor housing had the worst consistent infant death-rate and despite the decline after 1908, the rates were still high. Similarly the north-east district had consistently high rates mirroring those of the south-east, for example in the years 1898, 1900, and 1904. The health report of 1903 listed the districts of Leenside, Poplar, Sneinton, Meadow Platts and Old Radford as having the heaviest number of reported cases, all but Radford were in the south-east district.

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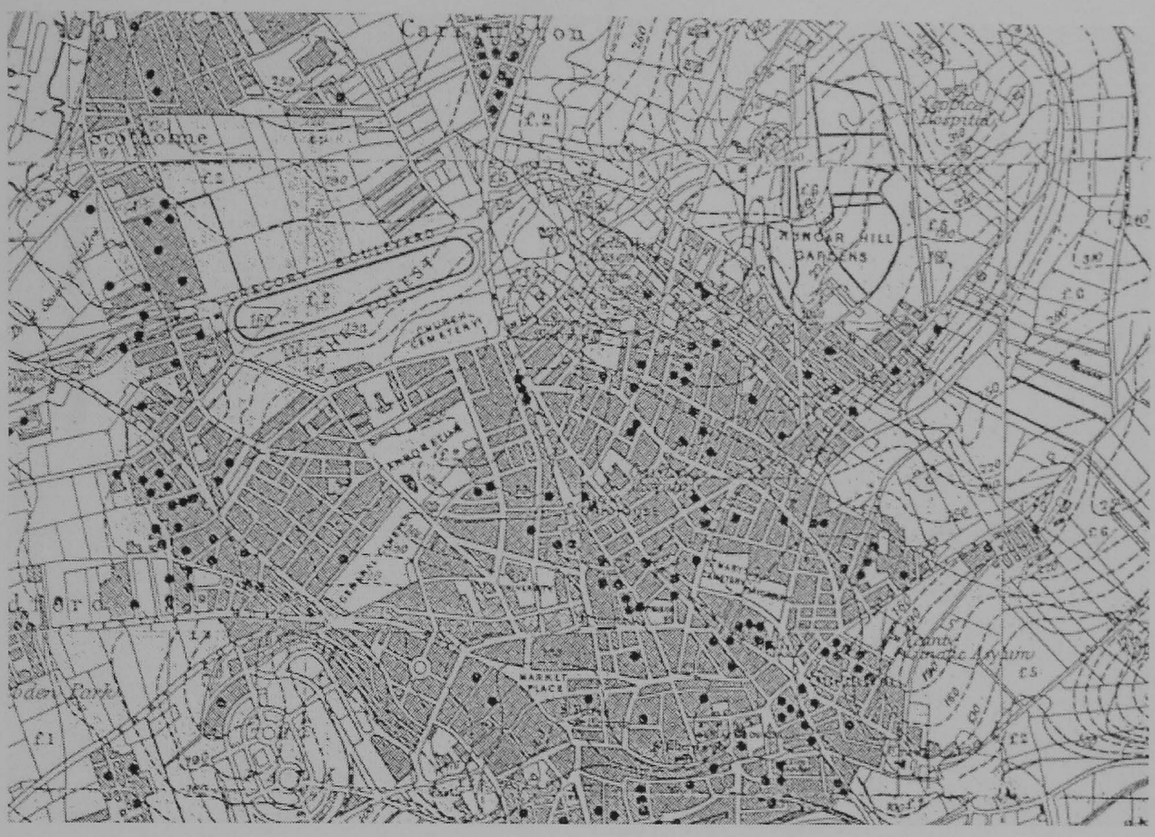
66. *ARMOH,* 1882
67. Thomas McKeown, *The modern rise of population* (1976), p. 101
68. *ARMOH,* 1890-1914

Figure 7-2: Map accompanying annual health report showing location of deaths from diarrhoea 1882



Source: ARMOH, 1882

Figure 7-3: Infant death-rates in four districts of Nottingham

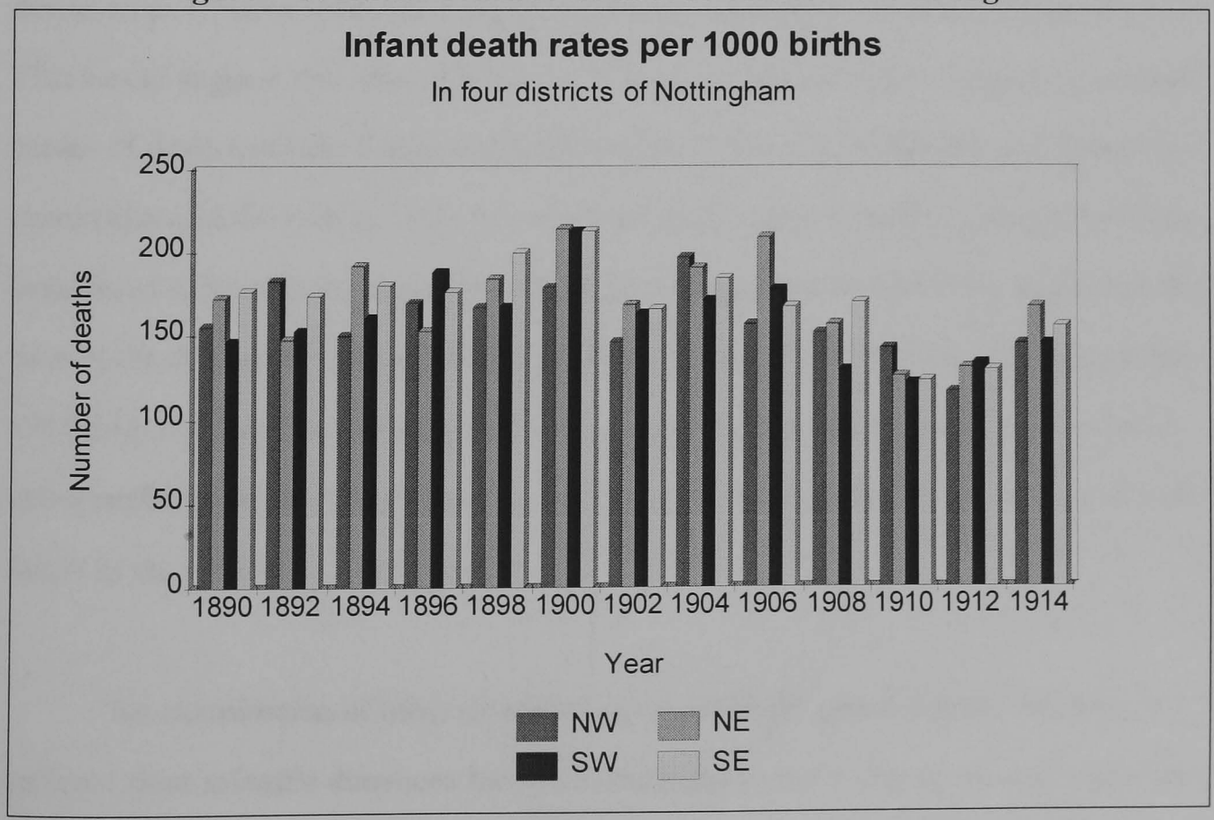
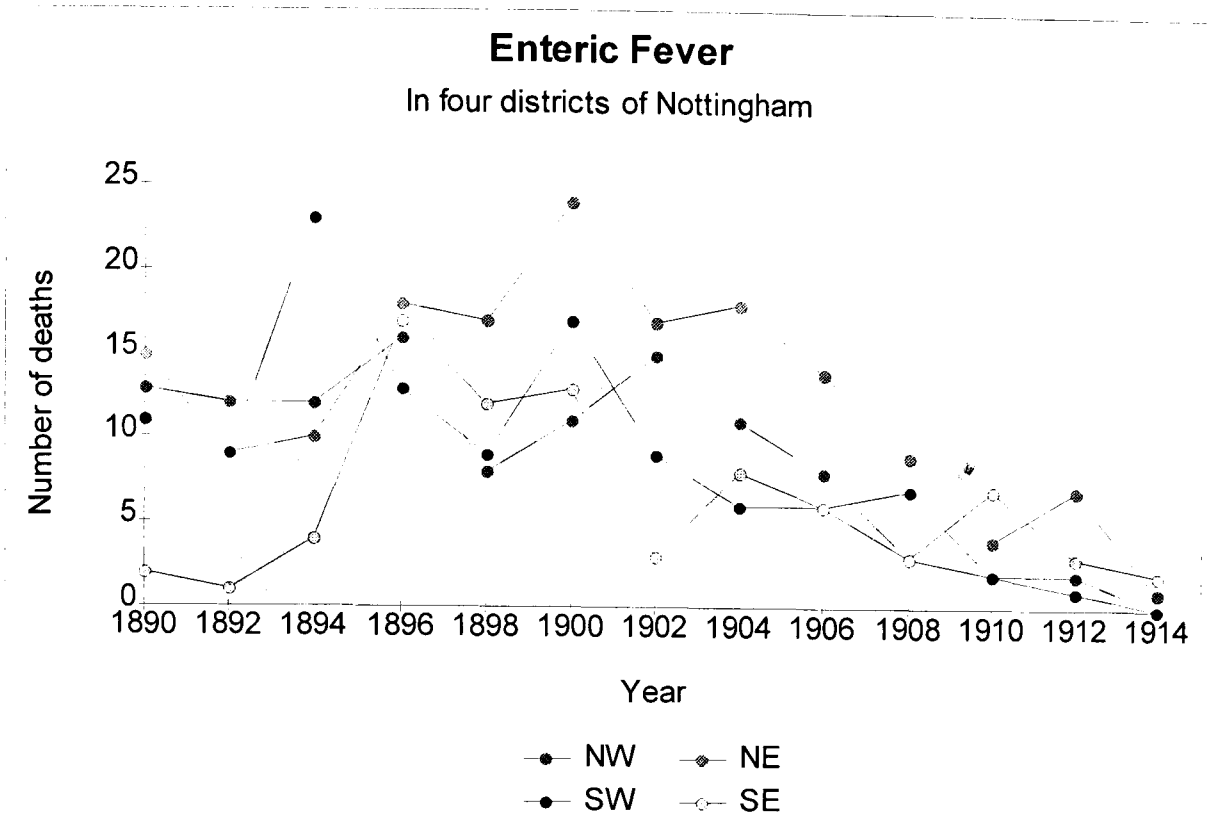


Figure 7-4: Number of deaths from enteric fever in all ages



If a comparison is made between deaths from infantile mortality and deaths from enteric (typhoid) fever, (Figure 7-3 and Figure 7-4) it is possible to see that both causes of death peaked in 1900, but from then onwards, there is a steady decrease in deaths from typhoid fever whilst infant mortality continued to rise and fall until 1914. This would suggest that although there had been similar influences impacting on both causes of death until the beginning of the twentieth century, a separate and unknown reason changed the course of the two diseases. Although excrement removal had been considered to be at fault, improvements in its management had not been in place at the time of the decline of typhoid fever and similarly the decline of infant mortality from 1914 does not coincide with any real improvements. It is therefore difficult to isolate one specific factor, but the probability is that poor excrement removal was a significant factor in the number of infant deaths.

An examination of other districts within the Nottingham reveals that they, too suffered from infantile diarrhoea but not to the same extent as the north-east and south-

east. The south-west district had, by the beginning of the twentieth century, developed into the area now commonly known as the Meadows and although much of this housing was relatively new, and by association, of better quality, not all the properties were built to high standards and its cheaper rents attracted the lower paid workers. The area also contained many of the common lodging houses, already associated with poverty. The north-west district contained some of the new suburbs, such as Hyson Green, Carrington and Sherwood where the housing was of a better quality and occupied by better-off artisans and consequently there was a significantly lower death rate.

Nevertheless, the vulnerability of infants in areas with better-class housing, is indicated in the 1890s when the north-west, Bulwell and Basford suffered from unusually high numbers of deaths, attributed to the effects of epidemics of measles, whooping cough and influenza in 1891.[69] It has previously been shown that the effects of measles and whooping cough on young children seriously reduces their immature immune system and it is possible that this was the case in point and the children were defenceless against infection from diarrhoea.

Table 7-10: Deaths from diarrhoea, 1895

District	1st quarter	2nd quarter	3rd quarter	4th quarter	Total
Bulwell	-	-	25	6	31
Basford	6	3	32	10	51
NW	9	7	83	8	107
NE	3	4	72	8	87
SW	4	2	58	8	72
SE	4	7	72	7	90
Wilford	-	-	4	2	6
Total	26	23	346	49	444

Source: Annual Health Report 1895

69. *ARMOH*, 1891

Table 7-11: Notification of enteric fever (all ages)

District	1st quarter	2nd quarter	3rd quarter	4th quarter	Total
Bulwell	3	1	15	18	37
Basford	11	6	11	11	39
NW	12	10	31	59	112
NE	17	26	23	42	108
SW	6	9	27	33	75
SE	14	7	32	36	89
Wilford	-	1	-	-	1
Total	63	60	139	199	461

Source: Annual Health Report, 1895

Climatic conditions had a great effect on the prevalence of diarrhoea and the piles of rotting waste, animal manure, particularly that of the horse, the loose, moist sub-soil containing organic rotting matter, were all breeding grounds for flies[70] which readily fed on fluids such as syrup, milk and sputum and kept this in their crop, afterwards regurgitating it onto other food which people ate.[71] Williams found in her survey of Sheffield[72] that the accumulations of domestic refuse, found near to houses, were transported into the houses on the soles of the feet and in clothes where more putrefaction continued, adding to the already dirty state of the dwellings. The transference of filth from outside of the house to the interior made the latter a

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70. *ARMOH*, 1889 and W M Frazer, *The history of English public health, 1834-1939* (1950), p. 333. Naomi Rogers, "Germs with legs. Flies, disease and the new public health", *Bulletin of the History of Medicine*, 63 (1989), pp. 600-1.Until the late nineteenth century the common house fly had been an accepted part of the domestic environment; considered a pest but not dangerous. But by the first decade of the twentieth century the fly had been transformed into an enemy. Insects in the home were beginning to be seen as a sign of insanitary living conditions
71. *Nottingham Guardian* 22 July 1908 p.7, col.4. *ARMOHLGB,* Fortieth Report, PP.1911, Cd5939 (XXXII), p.lxvii. A fly which has access to abundant food produces between 15 to 30 deposits (both vomiting and faeces) in 24 hours. *Nottingham Guardian* 22 July 1908 p. 7 col. 4. In an address to the Royal Institute of Health, Dr J Crichton-Browne said that 10,000 bacilli had been found on the mouth and legs of a common fly and the leader in the Guardian urged everyone to rid their home of flies
72. Williams, 'Death in its season' pp. 71-94

potentially dangerous place for babies and toddlers who would be crawling around the floor, transferring dirt and bacteria from the floors into their mouths and thus causing diarrhoea to reach epidemic proportions in many poor neighbourhoods.

The hot dry summers of 1893, 1895, 1897, 1901 and 1908 produced high death rates. Conversely the reduced figures for 1902, reflected a cooler, wetter summer. Table 7-10 and Table 7-11 show that both infant mortality and enteric fever (typhoid) in 1895, rose sharply during the third and fourth quarters, the period of hot and dry weather. Woods *et al* have examined the Registrar General's Report for 1911, an exceptionally hot summer, and summarised that the hot, dry summers during the 1890s, together with the urban environment, increased the rate of infant mortality from diarrhoea.[73] Summer infant diarrhoea clearly was of considerable importance in influencing the annual rate of infant mortality.[74]

By 1908, it was noticeable to the health authority in Nottingham that there was a connection between defective scavenging, the use of dry closets and the unacceptable rates of infant mortality. This was reinforced by diarrhoeal mortality being reduced in some large towns such as Manchester, Salford, Birmingham and Leicester, by radical reform of their excremental removal system.[75] This was borne out in the following year when Newsholme made the link between the two and stated that the Board had written to various sanitary authorities urging them to convert from pail closets to the modern water closet. Nottingham and Leicester were singled out as contrasting experiences. Nottingham had excessive incidence of diarrhoea and enteric fever where over half the city was served by pail closets. Leicester, on the other hand, had begun to adopt the water closet far more rapidly and the results were quite apparent with an initial reduction in typhoid fever to be followed then by a reduction in diarrhoeal deaths. Comparing the first with the last quinquennial period, (see Table 7-12) the

73. Woods *et al*, 'Infant mortality decline, Part I', p. 362
74. R Woods and N Shelton, *Atlas of Victorian mortality* (Liverpool, 1997) p. 57
75. *ARMOH,* 1908

diarrhoeal death-rate had fallen by 30 per cent in Leicester, and had increased by 17 per cent in Nottingham; while the death-rate from typhoid fever had fallen by 78 per cent in Leicester, compared to 43 per cent in Nottingham. Comparing the quinquennial periods 1889-93 and 1899-1903, in Leicester the typhoid mortality declined by 49 per cent but rose 15 per cent in Nottingham and this was despite the number of alleged new water-closets fitted in new houses. The two towns had similar populations, Leicester 240,000 and Nottingham 260,000. The experiment was considered trustworthy and Newsholme concluded that, if Nottingham was to adopt a similar system to Leicester, then the death rates from the two diseases would be reduced.[76]

Table 7-12: Comparing death rates in Nottingham and Leicester, 1889-1908

	Leicester				Nottingham			
	Mean death rates		Proportional figures		Mean death rates		Proportional figures	
Period	Diarrhoea per 1000 births	Enteric fever per 1000 of population	Diarrhoea	Enteric fever	Diarrhoea per 1000 births	Enteric fever per 1000 of population	Diarrhoea	Enteric fever
1889-93	48	0.19	100	100	31	0.26	100	100
1894-98	49	0.18	103	94	40	0.26	127	99
1899-1903	36	0.1	76	51	40	0.3	128	115
1904-1908	33	0.04	70	22	37	0.15	117	57

Source: ARMOLGB, 1909. In this table mean-death rates for quinquennial periods are given.

76. *ARMOHLGB*, Thirty-eighth report, PP.1909, Cd4935 (XXIX), Medical Officer's Report, pp. xxv-xxvii

Newsholme stressed this point in his investigation into Infant and Child Mortality. He again used the comparison of Nottingham with Leicester, and pointed out that the average death-rate in 1889-93 in Nottingham was 37.9, whilst in Leicester it was 52.3. By 1909 the roles had reversed, in Nottingham it was 36.2 and Leicester 24.9, a fall of 4 per cent and 52 per cent respectively.[77] Following a very detailed investigation, several recommendations were made but the one which was relevant to Nottingham was that all other measures would fail to achieve their aim, while the authorities continued to condone an inefficient scavenging system and use the dry-closet method rather than water-carriage in compactly populated districts. It was suggested that financial cost should not be a consideration when the lives of people were at stake.[78]

The Health Report for 1910, although showing a lower than normal rate of deaths from diarrhoea, caused Boobbyer to ponder its epidemiology. The weather conditions had been unfavourable due to cold, wet conditions during the summer period, yet there was still a concentration of fatalities in Narrow Marsh, Barker Gate, Meadow Platts and Old Sneinton and between St Ann's Well Road and Carlton Road - areas within the south-east and north-east districts. Over three-quarters of the deaths occurred in the age group 0-1 year old and it was concluded that the deaths were indicative of the poor sanitary conditions.[79]

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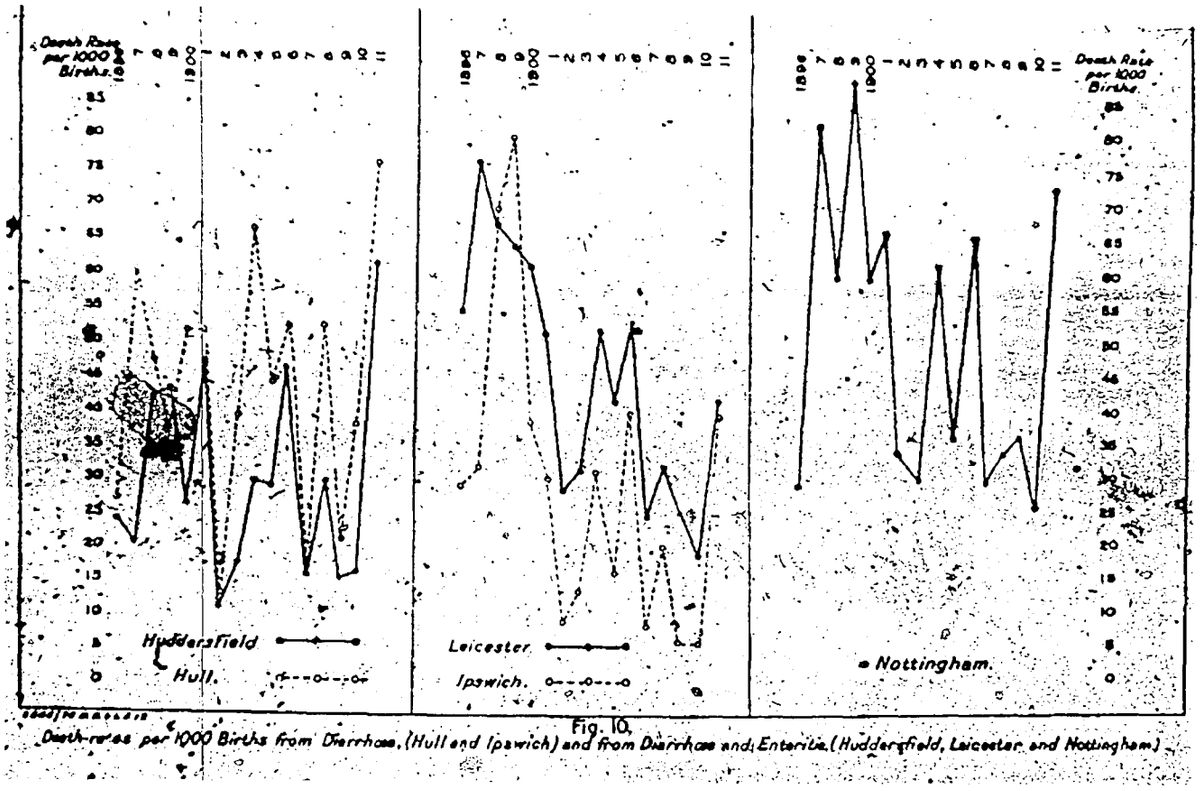
77. *ARMOHLGB*, Thirty-ninth report, PP.1910, Cd5263 (XXIX), p. 66. A recent publication on health in Leicester, Clive Harrison, *In sickness and in health* (Leicester, 1999), suggests that Leicester had one of the highest and most persistent infant mortality rates
78. *ARMOHLGB*, Thirty-ninth report, PP.1910, Cd5263 (XXIX), p. 77
79. *ARMOH*, 1910

Figure 7-5: Death rates per 1000 births from diarrhoea, Hull and Ipswich, and from diarrhoea and enteritis Huddersfield, Leicester and Nottingham



Source: ARMOHLGB Forty-second Report PP.1913, Cd6909 (XXXII)

In the second report on infant and child mortality, Nottingham was again shown to have a high mortality of children between the ages of 1 and 5, in the years 1907-10.[80] A comparison was made between three towns - Huddersfield, Hull and Nottingham - all of them continuing to use the conservancy method of excrement removal, and two - Leicester and Ipswich - which had almost completely changed to the water-carriage method. Newsholme rather optimistically concluded, "Happily a rapid abolition of pail-closets and substitution of water-closets is now in progress in Nottingham". Examination of the graphs (Figure 7-5) show that Leicester and Ipswich had a declining death rate from diarrhoea and enteritis. Figure 7-5 also show a decline in Nottingham, despite an increase in 1911 consistent with the rest of the country, the inference being that better sanitary conditions available within a town would improve the mortality rate from infantile diarrhoea. However, in their work on the causes of the

80. *ARMOHLGB*, Forty-second report, PP.1913, Cd6909 (XXXII), Second report on infant and child mortality, p. 44

decline in infant mortality, Woods et al. whilst conceding that 'the health of towns movement did make significant advances possible', evidence from 1911 shows that epidemic diarrhoea could still prove a potent short term influence on infant mortality rates. [81] Nevertheless, the evils of the environment failed completely to explain the excess of infant mortality. Recent examinations have been carried out on this subject by Watterson; Woods et al; Watterson; Lee and Williams,[82] all of whom see the causes of infant mortality as being multifarious.

For the Victorians diarrhoea remained a sanitary problem throughout the last decades of the nineteenth century, but few of the sanitary improvements seem to have had any impact on infant mortality. As the private side of health took on more importance than the public side, especially with the introduction of Mother and Baby Clinics in 1908, the causes of excessive infant mortality were re-examined and more consideration was given to the unhygienic domestic conditions and the use of improper food as possible factors.[83] It seemed that whilst the domestic cleanliness and maternal care given to infants, particularly in relation to feeding, remained inappropriate deaths from diarrhoea were going to continue. Newman stressed the point of improper feeding, "It is not everything but a greater factor than any other thing...Even the domestic and social conditions are reducible to terms of nourishment." [84]

Breast-Feeding

Ignorance and fecklessness in mothercare were seen by many medical men as serious contributors to the high rates of infant mortality. To be able to raise a child successfully during the first year of life was a skill which had to be acquired. Given the

81. Woods *et al,* 'The causes of rapid infant mortality, Part II', p. 130
82. Watterson, 'Role of the environment'. Woods *et al* 'The causes of rapid infant mortality, Part I and II'. Watterson, 'Infant mortality by father's occupation'. Lee, 'Regional inequalities'. Williams, 'Death in its season'
83. McCleary, *Infant welfare movement*, pp. 28-9 and *ARMOHLGB,* Thirty-ninth Report, PP.1910, Cd5263 (XXIX), pp. 69-71
84. W R Aykroyd, 'Nutrition and mortality in infancy and early childhood: past and present relationships', *American Journal of Clinical Nutrition*, 24 (1971), p. 483

appalling domestic conditions which prevailed in many poorer homes in Nottingham,[85] this skill was not easily gained but it was believed possible to raise the standard of 'mothercraft' by means of education of the mothers and it was to these ends that the efforts of welfare workers were concentrated at the beginning of the twentieth century.

Many medical men were keen to promote breast feeding because it was considered to be the most natural and best way to feed an infant; "Nine months to bear the child, and nine months to suckle it." [86] Mother's milk provided the child with immunity to micro-organisms which it would face in later life.[87] Modern research has shown that human milk given to infants reduces the chances of gastro-intestinal infections.[88] "A single ounce of milk well digested, will nourish more than double the quantity when it oppresses the still feeble stomach."[89] During infancy the gut is working at full capacity in order to absorb the nutrients required for rapid growth. If there are any adverse influences on this process, it will affect digestion and absorption and will ultimately affect growth.[90]

Boobbyer conducted a survey into how prevalent breast-feeding was amongst the women who came to the Mother and Babies Welcomes. The trained visitor and inspector for Nottingham was Miss Winifred Hudston, who visited many families and in her first year interviewed 1,192 mothers. Over half of those interviewed promised or

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85. For accounts on cooking facilities see chapters in Robert Roberts, *The classic slum* (Manchester, 1971); Ellen Ross, *Love and toil: Motherhood in outcast London, 1870-1918* (Oxford, 1993) and Anna Davin, *Growing-up Poor: home, school and street in London 1870-1914* (1996).
86. F J Brown, "The first food of infancy" in *Journal of Public Health and Sanitary Review* (1856), p. 60
87. R Buchanan, 'Breast-feeding - Aid to infant health and fertility control.' *Population Reports,* J4, p. 52
88. Wohl, *Endangered lives*, p. 21
89. T H Barker, "Nursery government in its sanitary aspects", in *Journal Public Health and Sanitary Review,* (1856), p. 145
90. G J Ebrahim, 'The problem of under nutrition' in R J Jarrett, ed. *Nutrition and disease* (1979), p. 66

professed to feed their infants entirely from the breast, a tenth, for various reasons. fed them almost from the beginning entirely by hand, 67 partly at the breast and partly by hand. This was a positive sign, with approximately 90 per cent of women claiming to breast-feed. During the next six years, the results showed that at least three-quarters of the women interviewed had the intention of breast-feeding. Of course, these figures are only speculative because we do not know how many of the women did actually breast-feed their children and for how long. Nevertheless, even the shortest period of breast-feeding would ensure some immunity to diseases. The figures for Nottingham, however, seem to indicate that for a majority of women on low incomes, breast-feeding was the most obvious choice and that much of the criticism directed at them was misguided.[91]

Table 7-13: Numbers and percentage of women breast-feeding, 1908-15

Year	Method				
	Number of mothers visited	Breast feeding	Hand feeding	Combination breast and hand	Percentage breast feeding
1908	1192	1007	92	67	90
1909	2005	1641	204	157	80
1910	2523	1911	246	174	75.7
1911	2443	2001	220	150	82
1912	2371	-	-	-	82
1914	2243	1573	311	255	70

Source: Annual Health Reports, 1908-1914

91. *ARMOH*, 1908. The Notification of Births Act had been adopted in 1908 and had been invaluable to the MOH who had arranged a home visit by a member of staff. The *Nottingham Guardian* 1 August 1908, p.9, col.1, reported The Medical Congress considered the Notification of Births was instrumental in reducing infant mortality

Studies, both recent and contemporary, point to the fact that breast-feeding was adopted by most women, whenever possible, but for varying duration.[92] In a diary of Mabel Dexter, born 19 May 1902, it was noted that she was immediately breast fed but, by July, was being fed Bengers food and breast milk alternatively and by February the following year, she was eating bread and butter.[93] For many mothers, breast-feeding was not always possible because of their own inability to produce milk, the time constraints involved in breast-feeding or just simply that the infant would not breast feed. Given the premium attached to breast-feeding, any interference with it was singled out for particular attention and, to many medical men of the early period, the failure to breast-feed was seen as the mother's failing and the cause of much of the high infant death rate. As Dr Jones noted, the failure to breast-feed "served as a useful measure of the ignorance of a community together with the prevalence, therein, of child neglect."[94] Ignorance was the mother being unaware of the correct way of feeding and child neglect was by the mother who worked on a regular basis.

Hand-feeding

The alternative was to hand-feed, but much of the infant mortality occurred through the ignorance involved in hand-feeding.[95] Hand-feeding for the poor in the nineteenth century, seldom involved the substitution of cows milk for the mother's milk. In 1856, it was suggested that children should be fed on 'good cow's milk' as a substitute for breast-milk if there was need to hand-feed a child, but that many hand-fed children 'pine away' as a consequence of being fed on biscuit, gruel and other articles.[96] There had been attempts to devise breast milk substitutes. These attempts to 'humanise' milk had entailed modifying animal milks in such a way that they corresponded as closely as possible to human milk. This depended on knowledge of

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92. Woods *et al,* 'Infant mortality decline. Part II', p. 117
93. NAO DD1347/1. Diary of Mabel Emma Baxter
94. Jones, 'Perils and protection', p. 56
95. McCleary, *Infant welfare movement,* p. 29
96. Brown, 'The first food, pp. 59-60

the qualitative differences such as the distinctions between protein in bovine and human milk. Many babies reacted adversely to modified cow's milk because it was much less digestible than human milk. It would seem that the answer was to boil the milk despite objections that there was some loss of its nutritive value. Boiling milk had a dual purpose, not only did it make it more digestible, but it protected against infection.[97] This essentially simple task could well have been an onerous task for many working-class mothers who had only an open fire on which to cook.

The usual alternatives to breast-milk were a combination of various liquid pulps made out of the parents' food or condensed milk. The most popular weaning foods were a mixture of arrowroot, oatmeal and sago, and a mixture known as 'pap' made from bread and water and sweetened with syrup or treacle, but quite often the child would be fed on whatever was available; or as quoted in the Report on Physical Deterioration, 'a bit of everything we take ourselves.'[98] It was in the weaning period that 'weanling diarrhoea' became a hazard and the Local Government Board enquiry of 1880s concluded that it was among the most fatal of infant ailments.[99] Mortality from the diarrhoeal diseases was chiefly a matter of defective infant feeding. Feeding was the most important task carried out by the mother, but it was also the source of the major problem and consequently caused the most criticism of the mother. After the age of six months the passive immunity derived from the mother began to decline and new and unaccustomed foods irritated the gut, as well as the change from light to semi-solid foods and of course the ingestion of contaminants and pathogens.[100]

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97. Ben Mepham, ' "Humanising" milk: The formulation of artificial feeds for infants (1850-1910)', *Medical History,* 37 (1993), pp. 227-236
98. *ARMOHPC,* PP.1861, 179 (XXII), p. 192 *Physical Deterioration*, PP.1904, Cd2210 (XXXII), examination of Dr Alfred Eicholz, His Majesty's Inspector of Schools, p. 25
99. *ARMOHLGB*, Supplement to seventeenth report, PP.1889, C5638 (XXXV), Wohl, *Endangered lives,* pp. 22-3
100. Ebrahim, 'Under-nutrition', p. 58

Milk was one of the most adulterated foods in Victorian Britain so it was perhaps fortunate that cow's milk was not generally consumed by the lower income groups because it was such a poisonous liquid to give an infant and might have caused more deaths. There were three major factors against using milk for infant feeding. Firstly, the poor quality of the milk supply; secondly, the inadequate and unhygienic conditions for cleansing utensils; and thirdly, the relationship between contaminated milk and the spread of communicable diseases, particularly diarrhoea and tuberculosis.[101]

Before the general use of railways to carry milk from rural areas to towns, much of the milk consumed in towns came from the cows kept in town stalls.[102] The condition of these cowsheds was appalling, with the cows, the milkers and the utensils often filthy and unhygienic. Seldom would the milk be sold fresh and was referred to as 'old' milk. As well as being old, it had been kept in conditions detrimental to its freshness, and when purchased would be unfit for adults but especially for infants. Perhaps it was fortunate that cow's milk was not viewed with any relish until the early years of the twentieth century, when its relative benefits were then recognised and promoted. Nevertheless Beaver has suggested that the availability of cheaper cow's milk and improvements in the production of milk by the late nineteenth century may have had some bearing on an improvement in infant mortality. Whilst acknowledging

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101. Deborah Dwork, *War is good for babies and other young children* (1987) p. 59, and P J Atkins, 'White Poison? The social consequences of milk consumption, 1850-1930', in *Social History of Medicine*, 5, 2 (1992), p. 218. Extra-pulmonary tuberculosis, *Mycobacterium tuberculosis*, manifested itself in other parts of the body and was usually regarded as a separate but related condition. Of these diseases scrofula (infection of the lymph nodes), tabes mesenterica and tubercular meningitis were listed separately until the early part of the twentieth century, when they were classed as general tuberculosis, abdominal tuberculosis and tuberculosis of the brain, respectively. This type of extra-pulmonary tuberculosis, tended to affect children, and as the consumption of milk increased around the turn of the century, so this became more pronounced. The link between cows and tabes menesterica and other tuberculous infections had been known but its transmission was illusive, although a large proportion of cattle were infected. Richard Perren, *The meat trade in Britain 1840-1914* (1978) p. 63. See also rural opposition found in *Nottingham Evening Post*, 9 April 1908 p.4, col.5 and *Daily Guardian*, 24 July 1908, p.3, col.3

102. D M Amos, 'Food and health in nineteenth century Nottingham', (University of Nottingham, MA dissertation, 1994) and Atkins, 'White Poison?', p. 218

that milk supplied to households must have been contaminated with pathogens, he makes the suggestion that 'if the milk killed many infants, it probably saved far more.'[103] This argument has been dismissed by Atkins whose view is that the 'milk quality was so abysmal that the damage caused by diseases may have outweighed the nutritional benefits.' He further comments that the poor state of milk was probably responsible for the stubborn persistence of infant mortality rates.[104]

It is against this background that the first milk depots were set up. They were based on the *Goutte de Laits,* which had proved successful in France. The first to be set up in Britain was in St Helens, Lancashire in 1899. In general they provided clean milk and a certain amount of help in the care of the infants, but this varied within the localities. Breast-feeding was strongly emphasised, but to demonstrate good bottle-feeding techniques was also considered a priority.[105] Nottingham did not establish such a milk depot, but in 1908, volunteers under the guidance of Boobbyer, set up the 'Mothers and Babies' Welcomes' which essentially carried out the same sort of programmes. The first clinic was in Howard Street, directly behind the Victoria Station, an area known for its poverty and poor housing. The other clinics were established in similar deprived areas so that the mothers who were in most need of help were able to attend the clinics.[106]

The most widely used substitute for fresh milk was condensed milk, usually sweetened and skimmed, which was cheap and palatable to the poor. It was dangerous for infants depriving them of essential nutrients, fat and Vitamins A and D which would lead to malnutrition (emaciation or atrophy), rickets and scurvy.[107] Despite the

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103. M W Beaver, 'Population, infant mortality and milk', *Population Studies*, XXVII (1973), p. 246
104. Atkins, 'White Poison?', pp. 226-7
105. McCleary, *Infant welfare movement*, p. 82
106. London Road, Radford, and later in St Ann's Well Road, New Basford, Bulwell, Carrington and Hyson Green. *ARMOH,* 1916-28
107. The importance and knowledge of Vitamins did not become known until 1912

legislation of 1899 insisting that the tins should be clearly labelled, this would have proved futile because of illiteracy.[108] This type of milk was twice as harmful to infants, firstly because it had little nutritional value and infants fed on it were likely to slowly starve to death;[109] secondly, it usually came packaged in tins and contained sugar in excessive proportions and since tin openers were not universally owned, would be opened by the shopkeeper and left in the tin after use,[110] open to the elements where all types of bacteria could attack it. Health authorities may have advised mothers not to use opened tins of condensed milk but budgetary constraints dictated otherwise. The problem was exacerbated by inadequate storage facilities in many of the houses rented by the poor[111] combined with the inadequate waste facilities[112]

The alternatives to condensed milk were proprietary (patent) infant foods, made by Leibig, Allenbury, Nestlé and Berger. The first of these, Leibig's, came onto the market in 1867. Initially it was in liquid form but later it was produced in a dried preparation. The claims of its nutritional value were grossly exaggerated. Over the ensuing years many proprietary preparations became available. In 1910 it was claimed that Mellin's feed was, 'A substitute for breastmilk which entirely fulfils the conditions which are necessary in a perfect food adaptable for the use of infants from birth.'[113] The medical profession had severe reservations about the value of these feeds and nearly fifty years later, Dr Ralph Vincent, a witness to the enquiry, told the Physical Deterioration Committee that, "... the use of artificial food was absolutely fraudulent and deleterious - many do not provide a food at all in the proper sense of the word." He

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108. Dr F J H Coutts, 'Condensed milk with special reference to the use as infant food', *Public Health and Medical Subjects - Local Government Board,* New Series, 56 (1911)
109. Willaim J Howarth, 'The influence of feeding on the mortality of infants', *The Lancet,* (22 July, 1905), p. 213
110. Ian Buchanan, "Infant feeding, sanitation and diarrhoea in colliery communities, 1880-1911", in D J Oddy and D S Miller eds. *Diet and Health in Modern Britain* (Beckenham,1985) p. 158
111. Atkins, 'White Poison?' p. 214 fn. 34
112. Howarth, 'Infant feeding', p. 213
113. Mepham, ' "Humanising" Milk:', p. 242

was critical of most of the substitute milks, including Allenbury's Food, Horlick's Malted Milk and Mellin's Food and said that Nestlés Milk Food was more than one-third carbohydrates, which were in the form of starch - the worst type for infants.[114]

The contents of these foods were not the only problem since the use of them, in conjunction with bottles and teats, created a lethal combination of dirt and infection for the infant. Because of the economics involved, ginger-beer bottles and other containers were used in conjunction with the newer rubber-teats and the old leather teats, or even bits of old cloth or rag, to allow the infant to suckle. In a paper to the Pathological Society, Dr Merriman spoke of the damage caused by the way food was given to a child which was often too thick for the child to digest properly and resulted in purges having to be administered.[115] It was noted in a report that habitually improperly fed infants contribute to the deaths from diarrhoea.[116] The baby food companies of today have been criticised for selling powdered milks to Third World countries because the lack of sanitation, clean-water and illiteracy leads to over-dilution and contamination of the feed.[117] A consultant paediatrician at Edinburgh Royal Infirmary summed up the problem experienced today:

'It is clear to all but those who will not see that informed, adequate and relatively safe bottle feeding must follow, or at least accompany, but never precede literacy, education, infection-free water supplies, sanitation and a standard of living which permits the purchase of enough baby foods, equipment and sterilisation.'[118]

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114. *Physical Deterioration*, PP.1904, Cd2210 (XXXII), Q. 12053, examination of Dr Ralph Vincent, Doctor to Infants School at Hampstead, p. 442
115. Isaac Pidduck, 'The causes and prevention of infant mortality', *The Lancet,* (31 December, 1864), p. 744
116. *ARMOHPC,* PP.1860, 2736 (XXIX), Second Report
117. Open University, *Third World Studies,* U204, Block 4, (1989), p. 43
118. Dr James Farquhar, as quoted in Andrew Chetley, *The politics of baby foods. Successful challenges to an international marketing strategy* (1986) p. 29 See also p. 39 on the response of Nestle to the problems encountered in developing countries.

Poor water supplies, lack of equipment and insufficient knowledge on baby feeding preparation were all present in Victorian Britain and the problem of efficient cleansing of the equipment, led to many children suffering from diarrhoea as a result.[119]

Infant Mortality 1916-1939

Sometime between 1916-1928 the Maternal and Child Welfare clinics had passed from the voluntary sector to an official status and, by 1929, there were ten centres attended by over half of the mothers who gave birth in the city.[120] The benefits of the service could not be overstated with a reduction from 171 to 85 deaths per 1000 live births, a fall of 50 per cent since the scheme's inception in 1908. During the First World War, there had been an increase in illegitimate births in relation to legitimate births. No reason was given for this but no doubt the disruption to life during the war and men returning on leave from the Front had some connection. It is interesting to note that there was not a dramatic increase of infant deaths rates because of the increased number of illegitimate children. This may have been influenced by the presence of Mother and Baby clinics and the establishment of an unmarried mothers hostel on Queens Drive in the late 1920s.[121]

From Table 7-14 it can be seen that infant deaths fluctuated between a high of 127 per 1000 live births in 1917 to a low of 83 in 1922. There are no obvious reasons for the high figure in 1917.[122] The influenza epidemic of 1918-19 did not appear to affect the infant deaths although the figures for 1919 had risen from the previous year. By 1928 the number of deaths was 85 and had been fairly static since 1922.

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119. Wohl, *Endangered lives*, p. 22
120. *ARMOH, 1929*
121. *ARMOH, 1916-1928*
122. *ARMOH, 1916-1928*

Nevertheless, the authorities could not be complacent, because in the following year of 1929, there was a steep increase in deaths from diarrhoea due to a very hot summer.[123]

The figures also show an increase in deaths in both categories during 1917 and 1918. Once again there are no official reasons given but a suggestion may be that as the war entered its final years life was becoming increasingly hard for the women left at home and care of their infants was neglected.

Table 7-14: Number of deaths of both legitimate and illegitimate children

Year	Total Deaths	Legitimate	Illegitimate
1916	116	109	203
1917	127	119	205
1918	123	110	224
1919	106	96	204
1920	96	92	140
1921	102	95	186
1922	83	79	136
1923	86	83	134
1924	85	81	133
1925	96	94	140
1926	100	97	138
1927	84	81	129
1928	85	80	150

Source: ARMOH 1916-1928

At the end of the 1920s the death rate for under 2 year olds from diarrhoea and enteritis was still considerably higher in Nottingham at 15.6, compared to England and Wales as a whole at 8.1 and other large towns at 10.9. This was despite a comment by Cyril Banks, the new Medical Officer of Health in 1929, that the advent of the motor

123.*ARMOH, 1929*, the rate went up to 96 per 1000 live births

car had a positive effects on reducing the amount of horse manure- a breeding ground for flies.[124]

In 1931 pneumonia accounted for 28 per cent of deaths of children under one year and diarrhoea 9.8 per cent, but the infant mortality rate had fallen to 89.0 per 1000, showing a slight improvement in the fight against diarrhoea. [125] The next few reports conveyed an optimistic view about infant mortality rates; it was believed that the demolition of large areas of insanitary housing in the 1920s and early 1930s, and the increasing importance of the welfare clinics which educated women in caring for their children had a critical effect on the deaths. The infant mortality rate wavered between 80 and 90 per 1000. Pneumonia and diarrhoea continued to be the main killers - both showing an increase in numbers. A mild epidemic of measles in the first half of the year which may have been significant in the number of broncho-pneumonia cases.[126]

By the end of 1938 the infant mortality rate had fallen to 70 per 1000 live births. Pneumonia and diarrhoea continued to have the most devastating effects on the infant population, although the percentages had dropped slightly. The suggestion by Banks that better housing in Nottingham was beginning to have a positive effect was highlighted by the higher rates of death experienced in Radford, now the most crowded part of the city.[127]

In 1939, there was a certain sense of satisfaction expressed by the Medical Officer of Health, in that infant mortality rate was now as low as 66 per 1000, about one-third of the figure it had been at the beginning of the century. Banks attributed various factors to this; the work of the infant welfare centres, improved sanitary

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124.*ARMOH, 1929*
125.ARMOH, 1931
126.*ARMOH, 1931* and PRO MH 66/785
127.*ARMOH, 1938*

conditions, better housing and an improved standard of living.[128] The evidence thus provided would seem to support Jay Winter's view that unemployment was not the decisive cause of fluctuations in infant mortality during the inter-war period.[129] According to Winter, this was a 'reflection more of the trend of nutritional and sanitary improvement over the generations preceding', in other words the health of the reproducing population was considerably better in this period than in previous generations and consequently healthier babies were being born. He further states that a 'substantial decline in infant mortality rate...was impossible without major improvements in the quantity and quality of the per capita food intake.'[130]

Conclusion

In this chapter it has been shown that infant mortality presented the authorities with problems that were complex and often contradictory. Various factors including poor housing, poor sanitation and maternal neglect were symptomatic in the high number of infant deaths. Examination of the data shows that the cause of many of these deaths was from diarrhoea. The measure of health of infants in Nottingham has to be the number of recorded deaths because illnesses are not usually registered. Titmuss, writing in 1949, observed that a high death rate was linked with morbidity and therefore the 'reduction in infant mortality is not an isolated phenomena but a hint of a vast improvement in the conditions of child life and in particular the incidence of sickness and ill-health during infancy and later life.'[131] This improvement in health would hopefully be passed on into adolescence and adulthood.

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128. *ARMOH, 1939*
129. Jay Winter, 'Unemployment and nutrition and infant mortality in Britain, 1920-50', in J Winter ed. *The working-class in modern British history. Essays in honour of Henry Pelling* (Cambridge, 1983) p. 233
130. *ibid.* p. 254
131. Titmuss, *Birth*, p. 91

Initially the actions of the working mothers were thought to be the reason for the high number of deaths. A lack of maternal care and the knowledge that many left their babies in the hands of child-minders, many of whom were of a low-calibre and frequently used opiates, including Godfrey's cordial, to sedate their charges. Seaton admitted that the female employment in the town was nothing like that of cotton districts of Lancashire and other evidence has shown that many women in Nottingham employed in the textile trade worked from their homes. This raised the issue of children being neglected whilst the mother was busy working.

A second factor which was attributed to the high rate of deaths, was the number of illegitimate children. Illegitimacy was considered to be significant because of the necessity for the mother to support herself, thus leaving the child with child-minders who would not have been able to breast-feed the child and leaving it vulnerable to improper feeding and care. Nottingham had a higher proportion of illegitimacy than some other towns and it has been shown that illegitimate babies were more likely to die within their first year than legitimate children due to a lack of care. The parliamentary enquiry into infant and child mortality also stated that other factors were influential in the death of babies born to unmarried mothers and were linked to first born children and syphilis. However, these do not come within the scope of this thesis.

The third factor which was considered to affect infant mortality rates was the environment, and this included housing, overcrowding and poor sanitation. Enquiries into housing and overcrowding during the twentieth century have all agreed that both factors had a negative influence on high infant mortality but were not the sole reason for high infant death rates. The poor sanitation would appear to have been the greater influence. The enquiry conducted in 1860 by Dr Greenhow indicated that areas where excrement removal was poor, tended to have a higher incidence of infant deaths. Seaton's enquiries in 1873, showed similar results. The investigation into infant deaths in 1910, compared Nottingham with Leicester and found that the latter. having

converted to water closets, showed a remarkable decrease in diarrhoeal deaths, whereas Nottingham continued to have an excessive amount of pail closets and a higher death-rate. More recent research by Williams, 1992, has also suggested that poor waste scavenging had a detrimental localised affect. The poor excrement removal is exacerbated by other factors such as overcrowding, hot and dry weather and a lack of domestic hygiene.

Titmuss and Watterson have both shown that poverty in itself does not have to influence child mortality, it is only when associated with another causation factor that it presents a problem. However, Boyd-Orr has commented on inherited differences in health between the well-to-do and the poor and underlines the fact that nutrition is of prime importance because, when the diet of poor children is improved, their health and physique also improve.[132]

The fourth factor which was influential in infant deaths was the improper feeding of babies. There is a general consensus today that many nineteenth and early twentieth century women tried to breast feed their children, if only for a short time and when this was not possible, the problems began because the children were fed on milk substitutes, bereft of nutrition or sloppy mixtures of adult food. These were unsuitable and even dangerous since the food upset the child's gut either by introducing pathogens into it or being the wrong type of food for an immature digestive system thus causing diarrhoea.

The increase of infant mortality rates at the end of the nineteenth century was difficult for the Victorians to interpret because they had been confident that by paying attention to sanitary conditions, the public side to health, that they had found the solution, but to counter the rise in infant deaths it was more important to look at the private, domestic side of health. A change of attitude can be detected during the first

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132. John Boyd Orr, 'A study of infant mortality', *Nature,* 144 (1939), p. 734

decade of the twentieth century as the rising death rates were matched by a declining birth rate and fears for the future of the nation were expressed.

The examination of all these factors show that domestic arrangements played a significant part in infant mortality particularly when considering the food being given to babies. Until babies were hygienically and correctly fed, then deaths would continue to occur and the cleaning of the environment and provision of better housing was of secondary importance. Aykroyd concluded that the most important factor in improving infant health was the improvement in their feeding associated with the introduction of safer milk, processed infant foods and *education* of the mothers in child rearing.[133] As infant mortality began to show a decline by the beginning of 1914, it must be assumed that improvements were being made on the domestic front, most probably through the influence of the Mother and baby Clinics because the city continued to rely on the pail system for collecting excrement until the 1920s.

Szreter has used his social intervention argument by saying that the root of the problem concerning the vulnerability of infant lay in the unhygienic conditions and associated practices of the urban working-class home[134] and that whilst there remained an absence of domestic hygiene surrounding the feeding of infants, any improvements in infant lives, through the increased consumption of milk, would be lost. He went on to say, that until the environment was improved bacterial organisms would be continuously introduced to infants. This argument does offer some explanation as to the reasons for high infant mortality rates. However, I would argue that whilst cleaning up the environment would go some way to improving the lives of infants, the problem remained of incorrectly feeding adulterated food to the infant, whose undeveloped digestive system was incapable of accepting the wrong foods. I would argue that until more appropriate clean food was available and that families were educated in the provision of good quality food hygenically administered the problems of infant mortality would remain.

133. Aykroyd, 'Nutrition and mortality', p. 485
134. Szreter Simon, 'The importance of social intervention in Britain's mortality decline c.1850-1914: A re-interpretation of the role of public health', *Social History of Medicine*, 1, 1 (1988), p. 31

Chapter 8

Maternal Mortality

Introduction

The death rate among expectant mothers had remained stubbornly high with between four and five deaths per 1,000 live births over the long period from the 1850s until the1940s. Most deaths were due to puerperal fever through infection transmitted by the attendant during labour. For many of the poor the only 'medical' attendant present at childbirth would have been the midwife; who were untrained and unsupervised until the introduction of the Midwives Act 1902. Sir Francis Champney was responsible for proposing compulsory training and registration of midwives but the Local Government Board was reluctant to introduce the legislation, but after a long battle the act came onto the statute book in 1902. The Act ensured better training for midwives and regulated their practice through the Central Midwives Board, keeping a register of the midwives and making rules for their training and examination, and thus the occupation of midwife took on a more dignified status.[1]

Despite this positive move the number of deaths in childbirth remained unacceptably high. Three explanations for this were put forward; firstly, social deprivation and this was particularly so during the Depression;[2] secondly, the failure of

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1. Enid Fox, "An honourable calling or a despised occupation: Licensed Midwifery and its relationship to District Nursing in England and Wales before 1948", *Social History of Medicine*, 6, 2 (1993, 237-259 and 'Powers of Life and Death: Aspects of Maternal Welfare in England and Wales between the wars', *Medical History*, 35 (1991), 328-352
2. Charles Webster, "Healthy or Hungry Thirties?", *History Workshop Journal,* 13 (Spring, 1982), 110-128. Madelaine Mayhew, "The 1930s Nutrition Controversy", *Journal of Contemporary History*, 23 (1988), 445-464. Margaret Mitchell, "The effects of unemployment on the social condition of women and children in the 1930s", *History Workshop Journal*, 19 (1985), 105-127 and J M Winter, 'Infant mortality, maternal mortality and public health in Britain in the 1930s', *Journal of European Economic History*, 8 (1979), 439-462

women to use the ante-natal care and thirdly the incompetence of doctors during and after birth.[3]

During the 1920s and '30s several enquiries were undertaken nationally, some on behalf of the Ministry of Health and others by private groups.[4] The results revealed that the majority of deaths were due to puerperal fever, a fever occurring directly after childbirth and the reason why so many died is a subject of debate.[5] Part of the problem lay in the failure to notify births and the uncertainty of the recorded cause of death. The introduction of Notification of Births Act 1908, together with the opening of the first Mother and Baby Welcome in Nottingham in 1908, went some way to improving the welfare of mothers and their babies, both before and after birth. Boobbyer was unhappy about the insufficient hospital maternal places for women but he was confident that the midwives in Nottingham were doing a good job.

The number of maternal deaths in Nottingham was quite low compared to other areas of Britain such as Wales and the north-east of England. However because these deaths have raised issues concerning the Depression and the poor diets of expectant mothers, it was felt that the incidence of maternal mortality in Nottingham should be examined to see whether they reflected other data from this period and if there were any known contributory causes.

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3. Enid Fox, 'Powers of Life', p. 332 argues that the problem was not with the midwives but the newly appointed doctors, whose hygienic standards were not always what they should have been,
4. Dame Janet M Campbell, 'The Protection of Motherhood', *Reports on Public Health and Medical Subjects,* 48, (1927); Ministry of Health, 'Interim Report of Departmental Committee on Maternal Mortality and Morbidity', (1928); Dr A Topping, 'Prevention of maternal mortality: the Rochdale experiment', *The Lancet*, i (1936), 545-7; Lady Rhys Williams 'Malnutrition as a cause of maternal mortality', *Public Health,* (October, 1936); The Pilgrim's Trust report, *Men without work* (1938)
5. Winter, 'Infant mortality'; M W Beaver, 'Population, infant mortality and milk', *Population Studies*, XXVII (1973), 243-254. Irvine Loudon, 'On maternal and infant mortality 1900-1965', *Social History of Medicine*, 4, 1 (1991), 29-73

The chapter will examine the death figures in Nottingham during the 1920s and 1930s, when maternal mortality was at its peak nationally. Although there had been a continuous high rate of maternal mortality since the 1850s, little attention had been paid until the 1920s, when a declining birth rate drew attention to the number of deaths involved in childbirth, compelling the authorities to investigate. The chapter will also examine views on maternal deaths from the rest of England and Wales during the Depression. In areas such as South Wales and the north-east of England, the cause of the high maternal mortality rates was often connected with poverty and a poor diet and this chapter will examine the evidence to see whether this was the case in Nottingham or, as is suspected if there were other causes for the deaths, such as the role of the birth attendants or abortion. What follows is a analysis of maternal mortality in Nottingham in context with the remainder of the country.

Maternal Mortality during the 1920s and 1930s

Childbirth in the 1930s remained as dangerous as it had been over the past three or four decades and has been the subject of some debate.[6] Certain areas of the country were seen as being particularly vulnerable, and as with infant mortality, several enquiries were made into the causes of maternal mortality.[7] Similarly there were conflicting opinions about the reasons for the high death rates. The authority's view was that the blame lay with the mother for not attending ante-natal classes or neglecting herself during pregnancy, other people viewed the problem not in terms of the mother's actions but instead citing poverty manifested in malnutrition and poor obstetric care as key factors.[8] Like infant mortality, maternal deaths were frustrating, because no one factor could be held accountable for the high number of deaths.

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6. Winter, 'Infant mortality', p. 454
7. See footnote 4
8. I Loudon, 'Maternal mortality: 1880-1950, some regional and international comparisons', *Social History of Medicine*, 1, 2 (1988), p. 206

If infant mortality posed a problem for the Victorians, then maternal mortality raised difficult questions during the 1920s and 1930s. There has been the presumption of a link between infant deaths and maternal deaths, after all, the obstetrical period is one where mother and /or child may lose their life and this fact is still true even in the modern world. The causes of death in childbirth were often difficult to establish and, like infant mortality, there was no one obvious cause and so official reports tended to investigate only the immediate clinical cause, ignoring the broader, social and medical issues.[9]

The study of maternal mortality is fraught with statistical problems.[10] Firstly, maternal mortality rates were based on registered live and stillbirths, not on the number of pregnant women. Secondly, the classification of cause of death was frequently mis-reported on the death certificates, from which the statistics were compiled by the office of the Registrar-General. Before 1911 deaths from toxaemia, but not eclampsia (convulsion caused by toxaemia), were classed together with diseases of the kidney. Classification statistics in Nottingham refer to puerperal fever until 1909, when it changed to puerperal sepsis and in 1926 it was reclassified to puerperal pyrexi.[11] There was also a reported 'concealment' of maternal deaths by false certification in the nineteenth century, to avoid claims of medical negligence.[12] Nevertheless, there seems to be agreement that the death rates for England and Wales, expressed in numbers of deaths per 1,000 births[13] continued to hover between four and five until the early 1920s, a number well above the irreducible minimum.[14] During the

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9. Jane Lewis, *The Politics of Motherhood. Child and Maternal Welfare in England, 1900-1939 (*1980), p. 117
10. Loudon, 'On Maternal and Infant Mortality', p 31 and Winter, 'Infant Mortality', p. 452
11. Campbell, 'The Protection of Motherhood', p. 15, states the source of the infection is exogenous in nature, being conveyed to the woman during or after labour, through the hands of the attendant, use of unclean instruments, dressings or pads, by the woman's own fingers, or by sexual intercourse.
12. Loudon, 'On maternal and infant mortality', p. 32
13. Loudon, 'On maternal and infant mortality', p. 32 states that in England and Wales, live births were used before 1929 and total births (including stillbirths), thereafter. See also, Lewis, *Politics* p. 53, footnote 38
14. Fox, 'Powers of Life and Death', p. 329 and Lewis, *Politics,* p. 36

period of the Depression, the numbers rose sharply (due to the influenza epidemic) after which there was a noticeable rise on the pre-war figure to over five per 1000 until 1936.[15]

William Farr had commented on the level of maternal mortality in 1870[16] but it was the inter-war years which played an important part in the campaign when the newly formed Ministry of Health considered it necessary to fully address the problem of maternal mortality for two reasons. First, the infant mortality rate was showing a steady decline and second, the period saw maternal mortality show an absolute increase and was the second major cause of death for women between the ages of 15 and 44 years.[17] Whilst it was in the interest of the government to encourage women to have more babies because of the falling birth-rates, the maternal mortality figures were not encouraging to women to have children. Furthermore, it was a particularly sensitive time for the government because of the Depression. The high number of unemployed, affecting many areas of England and Wales, was linked to the poor state of health of many of the working-class who were unwilling to chance further pregnancies at this time. Therefore, although the official story was of 'unimpeded progress towards health' [18] the main strategy of the authorities concerning maternal and child welfare services was concentrated on the education of mothers about personal hygiene rather than direct intervention in the form of extra money or otherwise - to do this would have been tantamount to admitting benefits were inadequate and this was against government policy particularly in the crisis years of the Depression.[19]

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15. Lewis, *Politics,* p. 36
16. Anthony S Wohl, *Endangered lives. Public health in Victorian Britain* (1983), p.13
17. Lewis *Politics,* p. 36 tuberculosis was the major killer of women. See R Woods and N Shelton p. 107, who state that although repeated pregnancies accelerated the development of tuberculosis, the women were probably already infected
18. Webster, 'Healthy or Hungry Thirties', p. 117
19. Lewis, *Politics,* p.17

However, this optimistic line has now been questioned, citing the conflicting evidence that despite advances in medicine and the beneficial changes in obstetric practices and maternity services, the number of maternal deaths increased. Loudon suggests that England and Wales was a country divided by an imaginary line from the Severn to the Wash, and there was cause for concern. in counties north of this line and certain districts of Wales.[20] Unfortunately it is impossible to estimate the rate of maternal morbidity because there are no figures but in the chapter on infant mortality the suggestion was that the mortality rate could not be taken in isolation and similarly improvements in maternal deaths would be reflected in healthier women generally.

Table 8-1: Percentages of maternal mortality in England and Wales, 1911-38

	1911	1921	1931	1938
Sepsis (fever, pyrexia	37	35	40	29
Haemorrhage	16	16	15	17
Albiminuria and toxaemia	19	19	24	24
Other	28	30	20	30

Source: Jane Lewis, Politics of Motherhood, p. 122

The number of enquiries that were carried out regarding maternal mortality is indicative of the problems that were encountered and the failure to allay public fears. Some of the enquires were undertaken representing the Ministry of Health, and others bodies carried out their own investigations.[21] These enquiries were often in conflict with each other and the 'official' investigations tended to consider only the immediate clinical causes of death and ignored broader issues and medical factors such as nutrition and the general health of the mother.[22]

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20. Loudon, 'On maternal and infant mortality', p. 54 and Fox, 'Powers of Life and Death', p. 329
21. For instance Pilgrim's Trust *Men without work* and National Birthday Trust Fund, Williams report 'Malnutrition as a cause of maternal mortality'
22. Lewis, *Politics* p. 117

The direct causes of maternal mortality[23] were mainly puerperal pyrexia (fever. sepsis), puerperal convulsions, septicaemia and placenta prævia (see Table 8-1). Of these, puerperal fever caused the majority of deaths. This was consistent with the general figures, where between 35 per cent and 55 per cent of maternal deaths were attributed to puerperal sepsis. Puerperal pyrexia was defined as a fever occurring within 21 days of birth or miscarriage in which a temperature of 100.4F or more has been sustained during a period of over 24 hours.[24] Haemorrhage accounted for another 20 per cent and toxaemia accounted for a further 20 per cent. According to Loudon, the percentage distribution of deaths was broadly the same whether maternal mortality was low or high.[25] Both the figures for the Registrar General's annual reports and the Ministry of Health's inquiries carried out in the 1930s confirm these findings.[26] It will be shown later that many of the deaths classified as maternal deaths in Nottingham were the consequences of suspected abortions which may have resulted in haemorrhaging or toxaemia.

Table 8-2: Maternal deaths as a consequence of childbirth in Nottingham, 1890-1935

Year	Puerperal septicaemia	Other causes
1890	-	43
1895	20	14
1900	10	27
1905	12	16
1910	4	29
1915	6	13
1920	14	24
1925	4	4
1930	7	17
1935	4	17

Source: ARMOH 1916-28 and B Arblaster, 'Health Services in Nottingham and the provision for women 1860-1940', p. 71

23. Maternal mortality means deaths due to pregnancy and childbirth (puerperal mortality).
24. Campbell, 'Motherhood', p. 66
25. Loudon, 'On maternal and infant mortality', p. 34
26. Lewis, *Politics*, p. 122

The figures in Table 8-2 show that in Nottingham puerperal septicaemia was the significant cause of maternal deaths until the beginning of the twentieth century when there is a decline in deaths from sepsis but an increase in deaths from 'other causes'. The highest recorded number of deaths from puerperal fever was in 1893 when 29 cases were recorded. There is no way of knowing exactly what 'other causes' may have included but it may be significant that following the introduction of the Midwives Act in 1902, the main cause of maternal death i.e. puerperal sepsis, is correctly recorded in the Health Reports.[27] The act was adopted in Nottingham on 1 April 1903, and was intended to secure the better training of midwives and to regulate their practice. It is ironic to note that given the reasons for the passing of the act, in the 1903 health report listing the requirements of the local authority to implement the act, the final paragraph states:

"No steps have been taken for the instruction of midwives, as the Act has not given power to local authorities to incur any expenditure for this purpose."

The introduction of the act also coincided with a 50 per cent increase in deaths from puerperal septicaemia in 1903.[28] However, the health authorities felt that the new act would begin to minimalise the risks in the future, because midwives who were thought to be spreading infection would be suspended. Unfortunately in 1906 a further increase in deaths from puerperal septicaemia was recorded and the unhygienic practices of some midwives were believed to be responsible.[29] As the new act began to work and midwives were now more accountable with notification of the disease[30] being implemented more forcefully, the number of reported cases of puerperal septicaemia diminished after 1910 (see Table 8-2).

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27. *ARMOH*, 1907
28. *ARMOH*, 1903. 13 deaths compared to 8 in the previous year
29. *ARMOH, 1906*, 19 deaths recorded
30. *ARMOH, 1910,* puerperal septicaemia became notifiable in 1899

As with so many diseases at the end of the nineteenth and beginning of the twentieth centuries, the accurate recording of the cause of death was often concealed by reasons of ignorance on the part of the attendant, uncertainty of nomenclature or falsification by the parent. Until better legislation and childbirth facilities were introduced in the later period of the 1920s, pregnancy and childbirth in the poorer areas of Nottingham seemed to be veiled in a world of secrecy. Boobbyer was particularly critical of medical men who failed to notify or ensure the parent notified the authorities of the birth, in contrast to midwives who almost unanimously registered the births they had attended.[31]

A new welfare programme began to evolve for the protection of mothers and babies in Nottingham with the first 'Welcome' opened in Howard Street in 1908, followed by three others over the next seven years. The clinics were designed to reduce infant mortality by offering mothers help, in the form of advice and cheap milk and with a view to increasing the birth rate.

At the time of the introduction of these welfare clinics the Midwives Act had been in place for five years and there were now 67 certified midwives of whom 40 were actively engaged in midwifery duties. The midwives were regularly inspected by Miss Kate Steen and during 1908, the number of births attended by midwives numbered 3,304, just less than half of the registered births. By 1910 the proportion of births registered was 73 per cent. [32] Doctors had been requested to attend on a number of occasions but there had only been six deaths before their arrival, perhaps indicating the growing professionalism of the midwives. Boobbyer expressed his concern that, as only properly qualified women would be allowed to practice in the future, after 1910 there would be a serious shortage of midwives. Boobbyer applauded the work of midwives and from 1916 onwards, they attended over 70 per cent of births. Birth at

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31. *ARMOH, 1911*
32. *ARMOH, 1910*

home could entail numerous dangers and for many women it would have been difficult to secure effective asepsis in their homes.[33] Nevertheless, the midwives attending the births managed very well and any cases of puerperal sepsis occurring after the attendance of the midwife were promptly notified and the strictest of precautions were taken against the spread of the infection.[34]

Boobbyer considered that it was time to invest in a small maternity hospital[35] which would prove of dual benefit - the poorer mothers would be able to give birth in safer surroundings and at the same time, it would provide a school for the new midwives. There was growing view among medical circles (mainly consisting of men) but also among women themselves,[36] that women needed to be hospitalised during childbirth.[37] Such facilities were lacking in Nottingham and the only recourse for the majority of the poorer women in childbirth was to be delivered at home by a midwife. A qualified woman was not necessary, as one woman recollected that when she was small she accompanied her mother to houses in the locality to help deliver babies.[38] It was estimated that as many as 90 per cent of births occurred in the home;[39] the alternative being the Poor Law Infirmary, which to many would have been the very last choice. The General Hospital specifically excluded 'laying-in' women, except in emergencies, until a maternity ward was built in 1930. Despite the town having two hospitals designed for women, it was only after 1901 that the women's hospital accepted 'accouchement (childbirth) cases of married women' and in those days, the women were charged five guineas a week. [40] There was an appeal by the Mayor in

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33. Lewis, *Politics,* p. 127
34. *ARMOH,* 1911
35. ARMOH, 1910
36. Margaret Llewelyn Davies, ed. *Maternity. Letters from working-women*, new introduction by Gloden Dallas (1914) p. 88
37. Lewis, *Politics,* Chapter 4
38. Interviews Nottinghamshire County Council Oral History, (NLSL), A65 and A80 female born 1906
39. Steven Cherry, *Medical services and the hospitals in Britain, 1860-1939* (Cambridge, 1996), p. 50
40. Barbara Arblaster, 'Health Services in Nottingham and the provision for women 1860-1940', (University of Nottingham, MA dissertation, 1985), p. 68

1923 to amalgamate the Women's and Samaritan hospitals.[41] In 1928 the facilities for hospitalised births in Nottingham were still limited, with the Abel Collins home at Sherwood offering 36 beds and the Poor Law infirmary had 30 beds available. An improvement had been made by the private provision of 11 maternity homes, approved by the Nottingham Corporation Act 1925, offering 29 beds. These homes were only available, because of cost to wealthier women. Low-income women still resigned to home births. Maternal facilities did improve and in 1936, John Player donated £25,000 to provide the Women's hospital on Peel Street with 40 more beds, a puerperal block and a nurse's home.[42]

By 1932 there were four municipal ante-natal clinics which held five sessions a month and thirteen per cent of the notified birth mothers had attended these clinics. In addition, there were two voluntary clinics holding weekly sessions, which raised the attendance rate to 28 per cent but this was still considered to be a low figure The Abel Collins home in Sherwood held the only post-natal clinic and this would have been geographically prohibitive to many new mothers as it was a considerable distance from the city centre. In 1934 the maternal mortality rate had declined to 2.4 per 1000 compared to 4.4 per 1000 in England and Wales. This low rate was attributed to a fall in the number of pregnancies because of the fear of childbirth deaths. In 1938 there were only eight reported maternal deaths.

Because of the prohibitive cost, the attendance of a doctor was rarely requested unless there were complications at the birth.[43] The illuminating and moving record of working-women's experiences of pregnancy and childbirth collected in 1914, and re-produced in a book, took the average cost of a doctor to be £1.1s, whereas a midwife charged 10s-12s so it is easy to understand why the doctor's presence was not chosen

41. *Nottingham Guardian*, 12 April 1923 p.8, col.7
42. *The Times*, 27 November 1936 p.16 and PRO MH 66/785, City of Nottingham survey of health services, 1932
43. Interviews Nottinghamshire County Council Oral History Collection, (NLSL), A47 and 14 Doctors charged 5s a visit

when so many men were earning only £1 per week.[44] In a survey of the Health Service within Nottingham during January and February 1932 Dr Sims, author of a report on the Mother and Child Welfare services, wrote that approximately 70 per cent of the births were attended by midwives who were then charging between 30s and 35s.[45] In her work on midwives and childbirth, Fox stated that in 1930 up to 60 per cent of births were attended by a midwife[46] and she suggests that many of the problems associated with maternal morbidity and mortality was due to the medicalization of childbirth and the inefficiency of doctors, rather than to the standards of midwifery.[47] A matter addressed by Dr Andrew Topping in a contemporary article on maternal mortality.[48] These views coincide with those of McKeown who believed that hospital death-rates were many times greater than those at home, due to puerperal infection, and that the introduction of institutional confinement had adverse effects on mortality.[49]

One of the 'unknown' problems that existed for Boobbyer and his colleagues was the number of recorded accidents at childbirth, which were not really accidents, but the result of artificial interference with a pregnancy - abortion. Boobbyer first commented on this in1912 when he suggested that abortion was now so commonly practised that, the three deaths recorded that year, accidents in childbirth, could not be reasonably accepted and there was the likelihood that many more deaths were the consequence of an illegal administration of an instrument or noxious substance in order to bring about a miscarriage. In 1928 he commented that it occurred with 'discreditable frequency' and was no doubt due to the mother's unwillingness to bear a child as a result of an accidental conception. One local woman suggested that abortions

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44. Davies, ed. *Letters from working-women*, introduction
45. PRO MH 66/785. City of Nottingham survey of health services, Appendix by Dr Sims on Maternal and Child Welfare
46. Fox, 'Powers of life and death', p. 336
47. Fox, 'Powers of life and death', pp. 332-53
48. Topping, 'Maternal mortality and public opinion', p.348
49. Thomas McKeown, *The Modern rise of population* (1976), pp. 105-6

occurred quite frequently during the 1930s, because of the poverty which existed in the city.[50] In her study of abortion and maternal mortality in Sheffield, MacIntosh has suggested that it is difficult to disentangle the two.[51] She argued that the economic depression in Sheffield impacted on womens' lives and their way of dealing with the poverty was to regulate fertility through abortion.[52]

During the inter-war period the maternity and child welfare schemes in Nottingham moved into official status. The passing of the Maternity and Child Welfare Act 1918 saw the work pass into the hands of the Health Department. After the local authority had assumed control and accepted financial responsibility, there was no longer any economic hindrance to the establishment of additional centres in the poor areas which had so far deprived of such facilities. On a wider scale the new Ministry of Health began to address the problem of high rates of maternal mortality, which the first Minister of Health, Dr Addison recognised as of paramount importance.

Before 1924 the intention of mother and child welfare clinics had been to reduce infant mortality. The alarming decline of the birth-rate, together with the great loss of fathers and potential fathers during the 1914-18 war was causing concern to the authorities, both nationally and in Nottingham and emphasised the importance of reducing infant mortality hence the clinics focused on child life and not maternal welfare. Maternal welfare schemes were intended to further reduce infant mortality by improving ante-natal care.[53] Ante-natal care of the mother was aimed at protecting the unborn child, similarly post-natal care was more for the successful rearing of the child, rather than the health of the mother. However, it was beginning to be acknowledged by medical men that healthy mothers would bear healthier infants and so by 1924, when

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50. Nottingham Oral History, (NLSL), A 84, female
51. Tania McIntosh, 'An abortionist city - maternal mortality, abortion and birth control in Sheffield, 1920-40', *Medical History*, 44, 1 (January, 2000), p. 76
52. *ibid.* p. 86
53. Lewis, *Politics*, p. 35

the first report on maternal mortality was published[54], attention was now focused on the mothers. Campbell carried out a further enquiry and the findings were published in a report in 1927.[55] In the prefatory note, the Chief Medical Officer, George Newman, considered it a cause for regret that despite the introduction of antiseptic surgery, better-trained midwives, the provision of maternity benefit, and improved conditions for pregnant women working in factories, there had been no obvious beneficial effect in terms of a reduction in the numbers of deaths. Campbell noted that the effects of certain conditions, such as the employment of women during pregnancy, insanitary environment, bad housing and hygiene etc., had quite minor importance compared with pathological conditions which led directly to ill-health during pregnancy and difficulty at labour.[56] Loudon has commented that "It was if the standard of care ...had stagnated and become resistant to each new measure that was introduced."[57]

Newman's opinion was that a complete maternity service should be available to all pregnant women. The Maternity and Child Welfare Act,1918 had given wide powers to local authorities to provide such needs to expectant mothers and these included the provision of meals and milk during the last 3 months of their pregnancy, better trained birth attendants, whether doctor or midwife and better provision of maternity beds, particularly for women experiencing pregnancy complications. The Ministry of Health reports compiled in 1930 and 1932, followed a similar vein concluding with the recommendations for the creation of better education for medical students in obstetrics, improvement in medical practices and better supervision of the mother during pregnancy.[58]

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54. Janet Campbell, *Maternal mortality,* Reports on Public Health and Medical Subjects, 25, (1924)
55. Campbell, 'Motherhood', conclusions
56. *ibid.* p. 6
57. Loudon, 'Regional and international', p. 223
58. Departmental Committee of Ministry of Health '*Interim Report on Maternal Mortality and Morbidity'*, (1928)

The availability of ante-natal care at clinics attracted more women and Winter has considered the importance of these clinics noting that there was an increasing trend for expectant mothers to attend because they would receive medical attention as well as milk and/or free food.[59] The clinics in Nottingham offered milk to expectant and nursing mothers and children under 18 months, should their income be below a certain scale.[60] In 1929 over 2,227 applications were granted for the provision of milk but the highest number of applications came during 1932, when over 4,000 requests were made; by 1937 there was a reduction in applications, possibly due to a rise in employment.

All these enquiries have considered external factors affecting the birth, for example, Winter concluded that '...the drop in maternal mortality was due primarily to a more complete and professional provision of effective ante-natal, obstetrical, and post-natal care.'[61] Loudon saw the fall in maternal mortality, after 1935, due to changes in socio-economic circumstances and improvements in obstetric education and practice, but more importantly a decline in streptococcal virulence.[62] It is possible that the immediate causes may have been extraneous to the mother and more to do with underlying causes; the socio-economic and even political factors of the period and other investigators believe that high maternal mortality was generally due to poor maternal health and nutritional deprivation.[63]

Those who were demanding an increase in the birth-rate assumed that childbirth was a natural process and that pregnancy in healthy women would be uncomplicated and births would only require the most basis assistance. However, this

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59. Winter, 'Infant Mortality', p. 459
60. No details of the scale were given
61. Winter, 'Infant mortality', p. 460
62. Loudon, 'Regional and international', p. 223
63. Sir Henry Brackenbury, 'Maternity in its sociological aspects', *The Social Service Review*, 18 (March, 1937), 37-47. Webster, 'Healthy or Hungry Thirties', 110-127 and 'Health, Welfare and Unemployment during the Depression', *Past and Present*, 109, (1985), 202-230; Mitchell, 'Unemployment', 105-127; Mayhew, 'Nutrition Controversy', 445-464

is where the two schools of thought tend to differ. Whilst a healthy mother needed little assistance and the chance of any problems were negligible, an unhealthy mother who had received poor nutrition during her pregnancy and was in a poor physical state, would have difficulty with the birth and increase the likelihood of requiring medical assistance. Loudon used the example of a woman who suffered from a post-partum haemorrhage due to clumsy management during the third stage of labour by her birth attendant. There was the definite possibility of her dying if she had been under-nourished and anaemic, whereas a healthy woman would probably survive.[64]

Table 8-3: Maternal death-rate per 1,000 live-births, comparing Nottingham with England and Wales, 1920-31

Year	Nottingham	England and Wales
1920	5.7	5.46
1921	3.1	5
1922	3.4	5.16
1923	3.7	4.82
1924	3.1	5.06
1925	4	5.15
1926	3	5.14
1927	3.4	5.43
1928	5.5	5.62
1929	3.3	5.82
1930	3.7	-
1931	4.1	-

Source: ARMOH 1920-1931

The figures for Nottingham compared with those of England and Wales, show that the city had a relatively low rate of maternal mortality,[65] (see Table 8-3) and was

64. Loudon, 'On maternal and infant mortality', p. 36
65. PRO MH66/785, p. 23, the report from 1932 described maternal mortality in Nottingham as low

never as critical as in other areas of the country, such as South Wales which according to Winter was unrepresentative of that of Britain as a whole.[66] Nevertheless Cyril Banks, in his 1931 report stated that all maternal deaths were investigated most carefully, noting that the task was full of difficulties which did not lend themselves to an easy solution.[67] Two years later he believed that 'Nottingham was not a place which had a consistently high rate and ranked as one of the more favoured places.'[68]

There was only one year, 1920, when the figures for Nottingham were higher than the national figures and coincidentally, the birth-rate in Nottingham also went up from 18.3 to 25.7 for that year. The general death-rate, however went down from 14.5 to 13.0 and continued in that trend thereafter. We can deduce from this that there was an increase in births when the men returned home after the cessation of hostilities in 1918. There was also a higher birth-rate in 1921, but the maternal death-rate is nowhere near as high as the previous year, both in terms of Nottingham and the country as a whole. The high death-rates in 1920 came only one or two years after the severe influenza epidemic of 1918-19, which might have affected the health of women, who may already have been suffering from the after-effects and deprivations of the war years. Winter however, conjectures that during the First World War standards of living rose for the majority of the population, particularly the civilian population.[69] He suggested that whilst '...aggregate food supply declined during the war, nutritional levels rose.'[70] He also comments that there was a redistribution of food within the household because the normal breadwinner had been replaced by the woman who was now working in the munitions factories. Loudon, made the point that an improvement in wartime measures (nutrition) during the war of 1914-18, suggested by Winter, is not

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66. Winter, 'Infant mortality', p. 455
67. *ARMOH,* 1931
68. *ARMOH*, 1933
69. J M Winter, 'The impact of the First World war on civilian health in Britain', *Economic History Review*, Series II, 30, (1977), 487-503 and *The Great War and the British People*, (1985), chapter 'Paradox of the Great War'
70. Winter, *Great War*, p. 244

convincing.[71] During the war many women in Nottingham were employed in the local munitions factories and the city had actually established a creche primarily for the reception of children of mothers employed on munitions. This arrangement however, was a purely economic one weighted in favour of the authorities and not for the benefit of the mothers. Boobbyer stressed in his report that, "It must be distinctly understood that these establishments will offer no encouragement of the neglect of homes and children at ordinary times."[72]

The information available on maternal mortality in Nottingham is limited. Little comment is made by the Medical Officer Health other than that used in this chapter. There is no indication in the reports that any of the deaths were as a result of food deprivation but there was obviously a concern in the wider community as the Times reported details of a lecture given by Dr Cyril V Pike on 'Diet in relation to Motherhood'. Dr Pike observed that the two principal causes of maternal death, sepsis and toxaemia, could be minimised by eating a simple diet including plenty of fruit and vegetables.[73] Mellanby et al had earlier commented in the British Medical Journal that the administration of vitamin A during the last months of pregnancy diminished the liability to morbid puerperism.[74]

'Other causes', not sepsis were responsible for maternal deaths which were nearly always higher in Nottingham (see Table 8-4). In her report on the relationship between malnutrition and maternal mortality, Lady Williams noted that results of the feeding schemes in Wales, set up to establish whether there was a prima facie case that the high puerperal death rates in these designated areas was due to malnutrition, showed that the whole of the fall in the number of deaths was in the category 'other

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71. Loudon, 'On maternal and infant mortality', p. 42
72. *ARMOH,* 1915
73. *The Times*, 21 March 1932, 9.d
74. H N Green, D Pinder, G Davis and E Mellanby, 'Diet as a prophylactic agent against puerperal sepsis - special reference to Vitamin A', *British Medical Journal*, (3 October,1931), p. 598

causes'. The suggestion was that those deaths attributed to 'other causes' are more markedly affected by malnutrition. Lady Williams also drew attention to puerperal mortality in relation to economic and unemployment levels. The fall in 1931 is largely due to a fall in 'other causes' which was exactly mirrored in Nottingham (see Table 8-4). The increase in the number of 'other causes' deaths in 1935 and 1936 may well have been affected either by unemployment or low weekly earnings.[75] Williams made the comparison between the city of Nottingham and the county of Northumberland to demonstrate that areas which were prospering tended to show a fall in maternal death rate, as in Nottingham, but where prosperity was decreasing the maternal death rate was rising as in Northumberland.[76]

Table 8-4: Causes of maternal deaths in Nottingham, 1920-37

Year	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Fever	14	6	6	6	4	4	4	2	8	4	7	13	4	7	7	4	5	4
Other cause	25	13	13	14	12	17	11	14	18	11	10	7	10	9	4	16	15	9

Source: ARMOH 1929, 1931and 1937

The effects of unemployment on the nutritional state of citizens throughout the 1930s is a subject that has been debated by both contemporary observers as well as more recent researchers. J M Winter concluded,

'On this basis (the examination of the data available on infant and maternal mortality)...no direct correlation can be made between economic insecurity and the mortality experience of a particularly vulnerable section of the British population...such deprivation as undoubtedly existed did not affect adversely the life expectation of the infant and maternal population.'[77]

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75. Colin Griffin, 'The identity of a twentieth-century city', in J V Beckett, *A Centenary history of Nottingham* (Manchester, 1997), p. 425
76. Williams, 'Malnutrition', p. 17 charts IX and X
77. Winter, 'Infant mortality', p. 440

Other historians[78] do not accept this view and have written at length on the subject. Although there are flaws in Williams's report, especially over the controlled experiment, many writers like Webster and Mayhew have accepted the findings. Loudon is an exception and is of the opinion that, "Levels of maternal mortality were determined most of all by standards of care provided by birth attendants."[79]

Although the Williams' report showed a rise in the deaths recorded due to sepsis, this was explained by a rise in the number of septic abortions.[80] Reflecting on Boobbyer's suggestion that in a number of puerperal sepsis cases, they were due to outside interference, in other words, abortion and in 1936 Banks also commented that the incidence of abortion was very high in the city and of the five deaths attributed to puerperal fever, three were recorded as abortions and one recorded as haemorrhage was as a result of an abortion.[81] Similarly in 1937 of the thirteen deaths, five were due to abortion, of which three were due to septicaemia, one to toxic jaundice and one to haemorrhage. All three of these due to septicaemia were the result of the use of an unclean instrument used in the abortion.[82]

Williams dismissed the improvements in the number of beds available for hospital deliveries and the improvement and extension of medical facilities on the grounds that the available evidence disproved any obvious improvement in the death rates.[83] Nottingham did not have any significant numbers of hospital beds until the new block was built at Peel Street Womens Hospital in 1938. Williams and Banks disagree about the benefits of ante-natal care. Williams suggested that there was little evidence of any benefit, whereas Banks in his 1937 report suggested that only three out

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78. See Mitchell, 'Unemployment', Mayhew, 'Nutrition controversy'; Webster, 'Healthy or Hungry' and 'Health, welfare' for opposing views to J M Winter
79. Loudon, 'On maternal and infant mortality', p. 72
80. Williams, 'Malnutrition', p. 12
81. *ARMOH,* 1936, see also the discussion in Fox, 'Powers of life and death', p. 329
82. *ARMOH*, 1937 pp. 46-7
83. Williams, 'Malnutrition', p. 14

of the thirteen women who died as the result of childbirth had attended an ante-natal clinic during pregnancy.[84] The inference being that more women died because they did not attend clinics. Perhaps Lewis may have been on the right track when she suggested that ante-natal clinics were more for the benefit of the child than the mother.

Commenting on the Williams's paper, Dame Louise McIlroy, formerly Professor of Obstetrics and Gynaecology and University of London, had this to say about diet and pregnancy,

'The influence of diet is of paramount importance in the prevention of most of the complications of pregnancy. The sources of nutritional and nervous derangements are found in most cases to be found in the alimentary tract. Diseases of pregnancy, such as toxaemia, should be classified as deficiency diseases, as they are due to the inadequate supply of substances vital for the maintenance of the health of the mother and for the nutrition and growth of the foetus.....The foetus becomes a parasite rather than an integral part of the mother hostess."[85]

Toxaemia can be generally prevented by an adequate supply of carbohydrates, proteins, vitamins and mineral salts....Toxaemia ranks high in the aetiology of maternal deaths, as predisposing cause of haemorrhage, shock and post-natal disablement. Puerperal sepsis can be traced primarily in many cases to toxaemia or nutritional deficiency, just as, in infants, rickets and allied conditions tend to lower the resistance to infectious diseases.'[86]

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84. *ARMOH*, 1937 p. 47
85. Williams, 'Malnutrition' p.20
86. Williams, 'Malnutrition' pp.19-20

A report by the British College of Obstetrics and Gynaecologists in 1936 suggested an adequate calorific diet which included eggs, milk, a large proportion of fruit and vegetables, but the cost of such a diet was prohibitive to many women.[87]

Conclusion

The causes of maternal mortality have tested many investigators over the years. At its peak in the 1930s, the socio-economic condition and obstetric care given to pregnant women were the suggested causes of the majority of deaths. Titmuss said that to understand why the health of expectant mothers improved, it was necessary to consider the quality of the diet and the general circumstances of their life.[88] Many of the women who gave birth in the twenties and thirties would have been born or growing up at the start of the First World War and so for many their adolescent years would have been ones of deprivation and later during the inter-war period life would also have been difficult due to unemployment and insufficient money on which to live. These circumstances must have been influential on the mother's health, manifesting itself in the way she carried the child and the subsequent birth.

Nottingham did not have the number of deaths in childbirth that were evident in South Wales and the north-east of England, nevertheless there was concern expressed by the Medical Officer about the number of deaths and he believed that the cause of these deaths was linked to the growing number of abortions which took place within the city. The fact that there was a high number of abortions both real and suspected, it could be speculated that the socio-economic status of the women forced them into getting rid of unwanted babies.[89]

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87. PRO MH55/642. Dietaries for pregnant women on low-income levels by William Fletcher Shaw
88. Richard Titmuss, *Problems of social policy* (1950), p. 535
89. Nottingham Oral History, (NLSL), A79, female born 1890

The contribution played by birth attendants can only be speculative, but by the time the high death-rate was causing concern the midwifery service had been greatly improved and was an accepted practice by both women and medical men. From the Health Reports it would seem that the Medical Officers were satisfied with the work of the midwives. Boobbyer's comments are particularly enlightening, given that he was a male Victorian Health Officer of the 'old school'.[90] It has not been possible to examine notes from midwives held at the Nottinghamshire Archives Office because the documents are closed at the present time but from the available evidence it is possible to say that the obstetric care given to pregnant mothers gave no cause for concern.

Lady Williams' conclusions on the death-rates in South Wales regarding malnutrition is difficult to associate with Nottingham as there appears no evidence to show that the authorities were worried about the nutritional levels of pregnant women. The nutritional debate surrounding maternal mortality is an important one and it was considered necessary to examine the evidence from Nottingham.

It is difficult to form a definite conclusion about maternal deaths in Nottingham, but on balance the evidence seems to suggest that obstetric care and poor nutrition were unlikely to have had a great impact on the number of deaths. Where the evidence is more conclusive is in relation to the number of abortions. This raises questions regarding the socio-economic situation of women during the Depression and whether the abortions were a sign of underlying poverty and poor health which the authorities failed to understand and address. Once again this is an area which would benefit from further investigation.

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90. PRO MH 66/785, comments by C J Donelan in the City of Nottingham, survey of Health Services in Nottingham

Chapter 9

Conclusion

The expansion of towns in the nineteenth century was unexpected and unprecedented, and the infrastructure on which they were built proved unable to cope. Poor quality housing, and inadequate arrangements for sewage disposal were soon identified as bringing about an upward spiral in death rates. From the 1830s and 1840s reformers such as Edwin Chadwick sought to bring about improvements to public health which would reverse the rising mortality curve and produce a cleaner and environmentally more healthy urban life. Public health reforms were for many decades seen as the key to an understanding of the fall in death rates towards the end of the Victorian era, but in 1976 Thomas McKeown challenged this assumption when he argued that much of the fall in death rates could be explained in terms of nutritional standards.[1] Subsequently in 1988 Simon Szreter challenged this view by arguing that 'social intervention' carried out at the local level was the key to public health improvements: "... the decline in mortality was due more to the eventual successes of the politically and ideologically negotiated movement for public health than to any other positively identifiable factor. The resulting implementation of preventative measures of municipal sanitation and regulation of the urban environment ... actually arrived on the ground ... during the last third of the nineteenth century and the first decade of the twentieth."[2] This thesis has examined the debate in the context of Nottingham.

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1. Thomas McKeown, *The modern rise of population* (1976), pp. 152-53
2. Simon Szreter, 'The importance of social intervention in Britain's mortality decline c. 1850-1914: a re-interpretation of the role of public health' *Social History of Medicine,* 1, 1 (1988), p. 26

Chapter one was a discussion of the main issues isolated in the thesis, the historiography behind them, including a literature survey and the state of the debate to date. The brief discussion of Nottingham showed that the town had an expanding textile trade which accounted for much of the increase in population and, perhaps, the excess of women over men. The town council wished to maintain its authority and opposed interference from central government, but as conditions continued to deteriorate it was forced into appointing a Sanitary Committee in 1847. This achieved some degree of success, and the Corporation felt it had no need to adopt the 1848 Public Health Act. However, with the spatial growth of the town restricted and environmental conditions deteriorating the 1858 Public Health Act offered the Corporation extensive powers of self-government allowing the appointment of its first Borough Surveyor as well as extending the work of the already overstretched Sanitary Committee.[3]

Chapter two examined conditions down to the Public Health Acts of 1872 and 1875, which altered the way in which public health issues were tackled by the Corporation. By contrast with other major provincial towns, Nottingham had been slow to appoint a Medical Officer of Health. Liverpool (1847), Leicester (1849), Leeds (1866) and Manchester (1868), had all appointed a Medical Officer before legislation in 1872 forced local authorities to make such an appointment. Nottingham appointed Dr Edward Seaton (1872- 1884). His detailed examination of the town in 1873, established a blueprint from which subsequent Medical Officers of Health, notably Philip Boobbyer (1889-1929), worked. The conclusion to be drawn from the annual reports of the successive Medical Officers of Health is that the local authority

3. J V Beckett, ed. *A Centenary history of Nottingham,* (Minicassette, 1997), p.244 and M Elliott, *Victorian Leicester*, (1979), pp. 12-13

was unwilling to accept outside interference from central government, adopting only mandatory legislation. Boobbyer repeatedly urged the council to act on public health issues, but he met with inertia from within the chamber.

Chapter three examined the housing situation. As with many large towns, Nottingham was cursed by insanitary and poor quality housing built before any regulations were in place to ensure minimum standards. Possibly the situation was actually worse than elsewhere because of the pre-enclosure land shortage which had tended to dictate building conditions, and which had led to accusations in the 1840s that Nottingham had some of the worst slums in the British Empire. Under Edward Seaton's guidance the Corporation made some use of legislation in 1866 and 1875 enabling them to demolish insanitary homes, and a start was made on providing public housing with the erection in 1875 of Victoria Dwellings. Unfortunately, as elsewhere, financial constraints persuaded the Council to avoid some of the implications of the 1890 Housing of the Working Classes Act. Pooley's investigation of Liverpool's poorest housing[4] found that the council operated within an ideological and financial environment which constrained the outcome of their decision making. Much the same was true of Leicester – although a start was made on providing working class homes in the town – and Lincoln. The problem in Lincoln, to quote Sir Francis Hill, was one familiar to Corporations in the 1890s, an inability to provide property at a rent the working class could afford: 'it was a choice between "rabbit warrens" and houses at 5s 3d and 4s 3d, which was too much.'[5] Burnett has noted that the upward drift in rent in poor areas sometimes absorbed the whole increase in wages.[6]

4. Colin Pooley, 'Housing for the poorest poor: slum clearance and rehousing in Liverpool, 1890-1918', *Journal of Historical Geography,* 11, 1 (1985), pp. 70-88
5. J W F Hill, *Victorian Lincoln*, (Cambridge, 1974), p. 239
6. John Burnett, *A social history of housing, 1815-1985,* Fourth Edition, (1993), p. 151

From the earliest stages the public health movement had focussed on the connection between bad housing and bad health; for bad housing meant a lack of, or faulty, plumbing, insanitary water supplies and very basic excrement removal, as well as poorly built houses.[7] The type of housing which came in for so much criticism during the nineteenth century was the back-to-back dwelling. They clearly violated all the concepts of good ventilation, overcrowding and in many cases well-built houses. Nottingham had been severely criticised in the 1845 Report on the state of towns and populous districts because of the number of back-to-back dwellings in the town which were subsequently prohibited after 1845. Burnett has presented three case-studies of Birmingham, York and Nottingham, showing that towns of differing size and industrial base, contained a substantial number of back-to-back housing.[8] However, in no town were these dwellings more prevalent than in Leeds, where they were still being built as late as 1937.[9]

Perhaps the housing evil which aroused most concern among reformers was that of overcrowding. Wohl has commented that, 'overcrowding...created the spectre of the moral and physical degeneration of the national stock.'[10] It was shown that in Nottingham there was a very unequal distribution of people especially in the old town. Nottingham recorded 19.4 persons to the acre, which was low in comparison to Plymouth, Brighton and Portsmouth, which were clearly not industrial towns. However, in 1882 the density of the population in Narrow Marsh was 300 per acre,[11]

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7. A S Wohl, *Endangered Lives. Public health in Victorian Britain,* (1983), p. 285
8. Burnett, *Housing*, pp. 166-71
9. M W Beresford, 'The back-to-back house in Leeds, 1787-1937', in S D Chapman, *The history of the working-class housing. A Symposium*, (Newton Abbot, 1971), p. 96. Wohl, *Endangered lives,* p. 294
10. Wohl, *Endangered lives,* p. 299
11. *ARMOH,* 1882

clearly showing the disparity within the town. Wohl noted that the amount of overcrowding in older districts was much higher.[12] Burnett and Wohl have shown that in 1901 the overall figure for overcrowding in the nation was 8.2 per cent, but the range of overcrowding lay between 1.0 per cent in Leicester and 35.5. per cent in Gateshead.[13]

Slum clearance during the last three-quarters of the nineteenth century began a new phase in housing policy. It was a nationwide movement carried out initially under the Torrens Act (1868) and the Cross Act (1875). Nottingham used both acts and began a period of clearance, the most notable being the removal of the Rookeries on Upper Parliament Street in 1881. However, it soon became clear to the Corporation that the costs were too high, in terms of removal and rebuilding and Boobbyer saw that the human cost was also high, as the displaced were forced to find other even more distressing accommodation. Liverpool, during the period 1858-1883, had demolished a considerable amount of insanitary property but the cost served as a reminder that these measures would increase local taxes.[14] So by and large such improvements were restricted and until incentives were offered by central government to the local authorities only piecemeal clearances were made in the majority of towns.

By 1914 the housing stock in Nottingham was inadequate both in quality and quantity. Statistics showed that 70 per cent of Nottingham's houses were rated at less than £12 per year, and over 4,000 were back-to-backs, suggesting that they were of the old type and not ones built on the enclosed lands. This was twice the number in any

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12. Wohl, *Endangered lives,* p. 306
13. Burnett, *Housing,* p. 145 and Wohl, *Endangered lives,* p. 305
14. Wohl, *Endangered lives,* p. 315

other town in the country.[15] Wilson noted that this was particularly so in the south and east of the city, where approximately 13 per cent of houses were without running water, ventilation or sanitation, and they were crowded together averaging between 70 and 120 dwellings per acre.[16] Szreter's view that there was an increase in the provision and standard of housing does not hold true with Nottingham, as there was a lack of good, affordable housing in the city, despite new housing being built in the suburbs.[17] Legislation in 1909 promoted the removal of slum housing through demolition, the council's cautious response was to repair rather than build, but for many property owners the repair costs were prohibitive and consequently many dwellings were demolished, adding to the housing shortage.

An ambitious programme to remove all unfit houses at the end of the First World War met with some local objections, but Addison's Housing and Town Planning Act 1919, and a report submitted by the Housing Committee, prompted a new era in house building in Nottingham. It began slowly, with small developments, but the council was dealt a severe blow when a proposed boundary extension was turned down in 1920. The rejection was because the Council had failed to carry out sanitary improvements within its administrative area. Its response was a massive modernisation programme of the domestic sewage disposal system and by 1926 the vast majority of pail closets had been converted to water closets and a new main drainage system had been approved. By the early 1930s new estates containing three-

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15. *Report of the Health Committee to Nottingham City Council*, 1906, p. 102
16. L F Wilson, 'The State and the Housing of the English working class, 1845-1914, with special reference to Nottingham', (University of California, Berkeley, PhD Thesis, 1970), p.275
17. Szreter, 'Social Intervention', pp. 28-9

bedroom houses with inside bathrooms were being constructed around the city with the aid of government subsidies.[18]

The housing chapter also pinpointed the areas of Nottingham which contained the poorest quality housing. These locations now included the north-east and south-east districts of Nottingham and correlated to those areas which experienced epidemic and endemic diseases such as phthisis, typhoid, infantile diarrhoea, measles, whooping cough and rickets. It would be too simplistic to accept that poor housing was the sole cause of ill-health The chronology of housing improvements demonstrated that little changed until 1920. The decline of phthisis, typhoid and infantile mortality have all been mapped from the beginning of the twentieth century, suggesting that 'social intervention' may have had only a limited effect.

In chapter four it was shown that from the 1870s a slow but gradual improvement in diet was possible by some, if not all, on lower incomes. Burnett observed that improvements were made in the general standard of working class diets from the 1870s.[19] This was measured by counting food outlets. Blackman had argued that the growth in the size of larger towns during the nineteenth century meant that more and more people were separated from the established markets, and then the general provisions store filled that vacuum.[20] The number of small shops in Nottingham multiplied, many situated in the poorer districts. It could be argued that

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18. T C Howitt, *Nottingham Housing Scheme. A review of the first two year's progress of the housing scheme in Nottingham,* (Nottingham, 1928)
19. John Burnett, *Plenty and want. A social history of diet in England from 1815 to the present day*, Third Edition, (1989), p. 176 and Wohl, *Endangered lives*, p. 50 in which he states that the cost of the average national weekly food basket fell by 30 per cent between 1877 and 1889
20. Janet Blackman, 'The development of the retail grocery trade in the nineteenth century', *Business History*, 9-10 (1967-68), p. 116

the increase in the number of shops and outlets in Nottingham is indicative of the increase in population in the late nineteenth and early twentieth centuries. However, whilst this was no doubt contributory it is also posssible to argue that the increased availability and variety of foods indicate that there was an improvement in the diet for some of the working- class, although the problem exists of knowing the exact distribution of food within the family. Without a complete breakdown of a family's diet this remains elusive. Nevertheless, it is suggested that any improvement in the variety of food would give greater resistance to viral and bacterial infection. Scola has shown in his study of the food supply to Manchester that during the nineteenth century there was a proliferation of fixed shops both in Manchester and other major cities, such as York and Leeds.[21] Burnett also noted that 'the town (*compared to rural areas*) had far more shops, and hence a wider choice of food. '[22]

Secondly, it was shown that the primary foods had altered in importance; bread was still probably the staple diet throughout the period, especially for children, but it had been supplemented by other foods such as the potato and ready-prepared foods. As well as an increase in the number of shops, especially in the working-class districts, there was a wider choice of foods available. This was indicated by the growing diversity of shops, such as pork butchers, greengrocers and hot food shops. Meat consumption had increased by the end of the nineteenth century, largely due to the introduction of cheaper frozen imported meat from Australia and America. Pigs played a special role in the poor man's diet but the tendency to keep them added to the already unhealthy conditions noticeable in densely populated areas. Scola has suggested that

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21. Roger Scola, *Feeding the Victorian city. The food supply of Manchester 1770-1870* (Manchester 1992), pp. 256-58.
22. Burnett, *Plenty and want,* pp. 166-67. Author's italics.

meat consumption in Manchester increased in the later nineteenth century, and Burnett has pointed out that more money was spent on meat than on bread in the 1880s.[23]

The sale and consumption of other foods such as fish, fruit and milk products in Nottingham showed an increase. Burnett observed that by the beginning of the twentieth century there was a marked growth in the consumption of protein compared to carbohydrates, but fish, fruit and green vegetables were still comparatively insignificant in the diets of the working-class,[24] as the dietary tables in Chapter five clearly show. Scola commented that although the seasonal availability of fish, because of the long-standing prejudice against purchasing fish during the summer months, affected its presence in the market, the supply underwent the most dramatic transformation of all foodstuffs.[25]

One area of food which showed a rapid increase was the sale of ready-prepared meals. Hot convenience foods such as fried fish and potatoes became very popular among the working-classes in Nottingham. This should come as no surprise as the poorer classes were generally ill-supplied with cooking equipment. Coupled with this, the textile trade employed a great number of women who were supplementing the the family's income, and had no time for domestic cooking and relied on these meals to provide the head of the household with a hot meal. In his study of Manchester, Scola argued that when women were employed full-time there was greater reliance on convenience foods.[26]

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23. Scola, *Feeding the Victorian city,* pp. 261-65 and Burnett, *Plenty and want*, p. 112
24. Burnett, *Plenty and want,* pp. 183-4
25. Scola, *Feeding the Victorian city,* pp. 147-49
26. *ibid.* p. 265

Then there was always the likelihood of food having been adulterated or sold in such a poor condition it was likely to do more harm than good. The introduction of the 1875 Adulteration of Food Act was an attempt to combat the growing problem. Boobbyer and his team were diligent in seizing suspected food and carrying out tests which often led to prosecution. Although there is abundant evidence it is impossible to estimate the quantity of unsound food siezed, and we must presume that the small number of officers limited their effectiveness. However, the opportunity for selling unsound food was now being checked. Scola's conclusions on the quality of food offered for sale in Manchester showed that similar problems existed as in Nottingham, for example, flour was adulterated with alum, water was frequently added to milk and fish and meat were sold diseased and unwholesome. Again there is a similarity with Nottingham as he further stated that the 'dangerous adulteration involving pernicious substances was not "extensively practised in Manchester".'[27]

Chapter five, discussed food consumption and the development of nutritional knowledge. This was demonstrated by looking at the science and socio-economics of nutrition as it developed during the early twentieth century. However, the scientific view could not always be related to the diets of the working class because poverty, culture and education also played a part in the working-class diet.[28] This is demonstrated in the diets which have been examined within this chapter. The rather limited evidence on individual diets is enhanced by those from the workhouse and the prison. The over- riding impression that the diets conveyed was that they were

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27. Scola, *Feeding the Victorian city,* pp. 266-71
28. Burnett, *Plenty and want*, p. 182 and Derek Oddy, 'Working class-diets in late nineteenth century Britain', *Economic History Review, 2nd series*, 23 (1970), 314-322, who noted the problem of working with individual diets because of the unknown area surrounding exactly who ate what within the family.

monotonous, high in carbohydrate and fat, low in protein and vegetables and unevenly divided within the family. Burnett has shown that the wife probably fared worst of all and the husband was the best fed member of the family.[29] Rowntree's study of York showed that for the poor their minimum dietary included no fresh meat and was therefore less generous than in the workhouse.[30]

Where it has been possible to gain a better insight into the diet of the working-class has been from the examination of the provision of school meals. The 1906 Education (Provision of Meals) Act allowed local authorities through their rates to provide meals for children who would otherwise be unable to take full advantage of education. From the late nineteenth century Nottingham had occasionally provided needy schoolchildren with meals. After the introduction of the 1906 Act school meals were provided either free of charge or at a substantially subsided price. In the first few months of the scheme's operation there was a increase in the number of children receiving meals. It was emphasised that the provision of these meals was on a purely educational basis and not related to poverty, this is reflected in the cost of providing the meals and was probably why they were not so different from those that would have been provided at home, in terms of content, but perhaps as they were provided on a daily basis they may have improved the quantity, if not the quality, of children's meals and therefore improved the nutritional status of the child. However, this may not have been the case, since a report submitted in the 1970s suggested that school meals were intended to provide half the recommended daily intake of protein and one-third of the energy but this was not always achieved. However, a survey carried out in Japan

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29. Burnett, *Plenty and want*, p. 164
30. Seebohm Rowntree, *Poverty. A study of Town life,* (1902)

suggested school meals played a major role in increasing heights and weights of schoolchildren.[31]

Welshman has suggested that evidence on the provision of schoolmeals after 1908 was flawed, with wide variations in the provision of meals between Local Education Authorities, especially in the selection of the children and the number of children fed.[32] Winter, citing the Sumner Report (1918) stated that the percentage of schoolchildren in Nottingham, "found in a poorly nourished condition is less than half that of 1913". He has also argued that that there was an overall improvement in diet during the war.[33] Burnett has shown that during the First World War the consumption of certain foods such as bacon, margarine and potatoes increased whereas butchers meat, sugar and butter declined, but overall the gains balanced the losses.[34]

The introduction of the school medical examination scheme provided the health authorities in Nottingham with another important tool with which to tackle health with the examinations giving a much clearer picture as to the extent of ill- health among schoolchildren than had previously been perceived. Although the outward physiological appearance of many children suggested they were far from healthy, medical examinations revealed just how insidious rickets and dental decay, both indicative of a poor diet, were among the poorer classes. The evidence from

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31. A E Bender, 'Nutritional status of schoolchildren', in *Proceedings of Nutritional Society,* 33, (1974), pp. 49-50. See also B J Harris, 'Medical inspection and the nutrition of schoolchildren in Britain 1900-1950', (University of London, PhD thesis, 1989), p. 138
32. John Welshman, 'School meals and milk in England and Wales, 1906-45', *Medical History*, 41, 1 (1977), p. 10
33. J Winter, 'The impact of the First World War on civilian health in Britain', *Economic History Review,* Series 2, 30 (1977), p. 501 and J Winter, 'Infant mortality, maternal mortality and public health in Britain in the 1930s', *Journal of European Economic History*, 8 (1979) pp. 439-462
34. Burnett, *Plenty and want,* p. 248

Nottingham was conflicting with the number of children being fed apparently reduced by up to 50 per cent during 1914-18 implying that there was no longer a need for meals. However, evidence on weights and heights of schoolchildren for the same period, indicated that there had been a reduction in the weight and height of nearly all categories of children, except the better-off boys, suggesting that for most needy children the food in-take was reduced during the war.

Nonetheless we should remember that evidence on the use of weight and heights reflecting a poor diet is confusing. Boobbyer, in his role as School Medical Officer said, '...too much importance should not be attached to the child's weight...in other words, the attempt to express nutrition in terms of weight and height would be unsound.'[35] Paton and Findlay in the 1920s, found there was no link between income, height and weight and concluded that hereditary growth impulse played their part and that slum children tended to develop in a similar way to their parents.[36] A E Bender, in his more recent study on the nutritional status of schoolchildren has argued that the commonly-used criterion of nutritional status was their growth rate, and their inadequate nutrition led to poor growth but abundant evidence has suggested that 'stunting' can be caused by a variety of environmental factors, as well as being genetically determined. [37]

The weakness of the school medical examinations was in the ad hoc method of classification and interpretation by different parties. The methods of classification of a

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35. *ARSMON,* 1909, p. 31
36. N Paton and L Findlay, 'Poverty, nutrition and growth. Studies in child life in cities and rural districts of Scotland', *Medical Research Council (Special Report Series),* 101, (1926), pp. 301-305
37. Bender, 'Nutritional status of schoolchildren', pp. 45-50

child's nutritional state was used by Sir Arthur Newman, Chief Schools Medical Officer, to show that the extent of malnutrition in the country was over-exaggerated. Boobbyer questioned the classifications on the grounds of that each medical officer would have his own agenda on nutrition and those used to expecting poor nutrition would get different figures from those expecting good nutrition.[38] More recent investigations by Webster and Welshman have indicated that the classifications on nutrition were manipulated to the advantage of the authorities. Webster argued that medical examinations in depressed areas was of a more severe standard as the Medical Officer was inured to low standards among the children. Welshman concluded that the methods used to measure the nutritional status of schoolchildren were fundamentally flawed.[39]

There are further conflicting views on how far school meals assisted children's health during the 1930s Depression.[40] In Nottingham there was a rise in those claiming Public Assistance and a downturn in trade in the period. However the city did not suffer to the same extent as some towns in the north-east of England. Nevertheless it should be remembered that Orr's 1936 investigation highlighted the variations in working-class diet depending on their income.[41] The figures for Nottingham, show that the number of children fed during this time remained fairly constant, but the number of meals increased, suggesting that those already in receipt of meals required

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38. *ARSMON,* 1909, P.31 and 1937 p. 9
39. Charles Webster, 'Health, welfare and unemployment during the Depression', *Past and Present*, 109 (1985), p. 214 and Welshman, 'School meals and milk', p. 28
40. For example Charles Webster, 'Healthy or Hungry Thirties?', *History Workshop Journal*, 13 (Spring, 1982), 110-128; M Mitchell, 'The effects of unemployment on the social conditions of women and children in the1930s', *History Workshop Journal*, 19 (Spring, 1985), 105-127 and Winter, 'Infant mortality, maternal mortality and public health', pp. 439-462
41. John Boyd Orr, *Food, nutrition and income: report on a survey of adequacy of diet in relation to income,* Second Edition, (1937)

more. Webster has argued that the cost of providing the meals was halved in the thirties and that the meals were little different to the inferior diet experienced at home.[42]

In the 1930s children in Nottingham were given milk as well as school meals to further supplement their diet,[43] and by 1936 approximately 50 per cent of children attending school were receiving milk, but only just above five per cent of this fifty per cent received free milk, the rest received subsidized milk. Welshman argued that the progress of the milk scheme was slow and not uniform but that by the late 1930s about 50 per cent of children got free or subsidized milk.[44] The evidence presented in this chapter has been conflicting, both within Nottingham as well as with other historical evidence. Perhaps the most we can say is that some children did receive supplementary additions to their diet, which may have increased their nutritional intake, but for others there was no marked improvement. By the onset of World War Two the standard of health of army recruits had improved compared with those in the First World War, indicating that there had been improvemnts in the diet of the nation.

The diseases assessed in chapter six were those which were affected by, or had an affect on, nutrition. McKeown stated that the decline of typhoid fever was rapid and began before the end of the nineteenth century, somewhat earlier than the deaths from diarrhoea and dysentery.[45] The number of cases of typhoid in Nottingham rose throughout the last thirty years of the nineteenth century and it was not until 1915 that

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42. Webster, *Health, welfare,* p. 214
43. Welshman, 'School meals', p. 20
44. *ARSMON,* 1936 and Welshman, 'School meals', pp. 19-20
45. McKeown, *Modern rise*, p. 102

Boobbyer was able comment that typhoid fever was no longer a scourge to the town.[46] This pattern goes against that identified by Szreter who argued that typhoid was all but eradicated by the end of the nineteenth century. Luckin and Hardy have also suggested that there was a significant fall in typhoid cases during the last thirty years of the nineteenth century which coincided with better water supplies provided in towns.[47] It could be argued that as Nottingham had boasted a good, clean supply of water from the early nineteenth century the decline of typhoid was unaffected by improvements in the water supply. However, there was always the problem of the source of supply, the courtyard tap, which was open to interference and the pool of stagnant water around the tap could be the source of disease.

The rise in the number of typhoid cases and deaths from the disease may initially be attributed to the rise in the population after the borough extension in 1877. However, the figures remained high until the end of the nineteenth century. During the course of the nineteenth century several enquiries investigated the shellfish, water and the milk supplies to the town. The shellfish supply, although never above suspicion, was ruled out because the supply to Nottingham formed part of a larger consignment which was sent to Leicester where there were no reported cases. Similarly the milk supply was not above suspicion but in nearly all the investigations it was eliminated. Boobbyer was convinced that Nottingham suffered unduly from typhoid due to the system of excrement removal practised in the town, the use of the pail closet. Nottingham Corporation continued to condone the use of the pail system

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46. *ARMOH,* 1915
47. B Luckin, 'Evaluating the sanitary revolution: typhus and typhoid in London, 1851-1900' R Woods and J Woodward eds. *Urban disease and mortality in nineteenth century England*, (1984), pp. 110-11 and Anne Hardy, *The Epidemic streets. Infectious disease and the rise of preventative medicine 1856-1900 (*Oxford, 1993), Chapter six 'Typhoid'

until 1920, despite widespread recognition that water closets were more hygienic and a better form of waste disposal. The disappearance of typhoid from Nottingham nearly ten years before any radical improvements were made in housing or sanitation indicates that something other than 'social intervention' was more critical in its decline. By contrast, Leicester, a town with a similar population and characteristics, including the manufacture of textiles, had begun to phase out the pail by 1899 and to replace them with water closets. It had a much faster reduction of enteric fever than Nottingham.[48]

Phthisis was a major killer in England and Wales. The problem with phthisis was that no-one really knew its true causes and many cases were hidden by doctors, sufferers and family alike so that its true devastation was unknown. As McKeown commented, "Problems arise both from vagueness and inaccuracy of diagnosis...for example there must be doubts about the diagnosis of tuberculosis at a time when it was not possible to x-ray the chest or identify the tubercle bascillus."[49]

Boobbyer's interest in phthisis is clearly indicated by his enquiries into phthisis fatalities within houses of various rentals and the link with lace manufacture. The evidence clearly shows that those who lived in houses within the middle range of 4s to 6s were more likely to suffer from the illness than those in the higher or lesser rentals. This was not quite what was anticipated at the outset of this research, given the general view that the majority of victims were the poorer working-classes, but other research has shown that whilst employed males were able to rent better accommodation they were more at risk from contracting the disease than their unemployed counter-parts.

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48. *ARMOHLGB,* Thirty-eighth Report, PP.1909, Cd4935 (XXIX), p. xxvi
49. McKeown, *Modern rise*, p. 50

Another explanation could be that the lowest rental accommodation housed a very fluid population and obtaining information from them was difficult. These were the nomadic derelicts that Boobbyer referred to, who came and went without trace. The worst affected districts of Nottingham were the north- east and south-east and remained so throughout the period. These areas included many of the common-lodging houses.

The experience of Nottingham coincides with Hardy's evidence on tuberculosis in London, concerning factors such as the influence of overcrowding and housing density and the problem of estimating the extent of the disease due to many sufferers frequenting common lodging houses.[50] By the beginning of the twentieth century Boobbyer was urging the council to improve the cramped, insanitary housing and found an ally in the Housing Committee chairman, Dr Milner, who shared his view that phthisis found a breeding ground in the poor state of housing in Nottingham. Boobbyer began to realise that whilst improvements in the environment would go a long way to reducing the number of cases and deaths, educating the masses was also important - preventing the disease was better than trying to cure it. This was achieved through educating people against the disease through notification and in 1908 some measure of voluntary notification was adopted in Nottingham, but bearing in mind the stigma attached to phthisis, it was always going to be an uphill struggle and it was a further five years before it became compulsory to notify the disease, increasing the possibility of infection. Hardy has shown how compulsory notification began in Brighton in 1899 and was taken up by Sheffield, Manchester and Liverpool between 1899 and 1903. [51]

50. Hardy, *Epidemic Streets*, chapter 'Tuberculosis', pp.234, 240-245
51. Hardy, *Epidemic Streets,* p. 264

The occupation of the sufferers in Nottingham showed a similarity to other areas in England. Workers in textile factories and those working with hazardous materials which entered their lungs were most at risk. However, the Nottingham enquiry of 1903 into the extent of phthisis among lace workers did not fully support this.[52] Given the knowledge that many of those employed in the lace trade were women and were employed at home, rather than in factories, the lower rate of tuberculosis in women in the town is not surprising. Cronje's investigation into tuberculosis and mortality decline suggested that conditions of work, as distinct from the mere fact of employment especially in the textile trade influenced tuberculosis mortality.[53] Further research carried out by McIvor into the relationship between manual work and industrial health, during the First World War, has found evidence which suggests that conditions special to the occupation were not the only cause of industrial disease, other factors such as fatigue and under-nourishment were just as influential.[54]

McKeown explained that a substantial decline from all deaths came about through a reduction in deaths from tuberculosis. Szreter was sceptical of this, citing the supposed inaccuracy of the early data used by McKeown. However, the figures for Nottingham indicate a downward trend. If so, particularly before 1914, Szreter's argument of 'social intervention' does not seem to apply, especially given that the Corporation had done so little towards remedying the housing and sanitary problems.

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52. *ARMOH,* 1903
53. Gillian Cronje, 'Tuberculosis and mortality decline in England and Wales, 1851-1910', in R Woods and J Woodward, eds.*Urban disease and mortality in nineteenth century England* (1984), p. 99
54. A J McIvor, 'Manual work, technology and industrial health, 1918-39', *Medical History,* 31 (1987), p. 162

John Boyd Orr's work suggested that an improvement in diet was most significant in the fight against tuberculosis, "... and in the great majority of cases it is the resistance of the individual which determined the extent to which the disease develops. … It is probable that the most effective line of attack on tuberculosis is by the improvement of diet."[55] In his view despite its known 'deleterious effect on health', better housing could only play a limited role in the improvement of health.[56] McKeown based much of his work on the decline of mortality on the reduction of tuberculosis and viewed an improvement in nutrition as being the major contributory factor. Although it is difficult to decide how much of the reduction in the incidence of phthisis can be attributed to improvements in nutrition, the limited improvements in housing and sanitation would have had even less impact on its decline and neither seems to offer a complete answer, whereas an improved diet would have increased the immunity of an individual against not only phthisis but other diseases.

After 1908, children began to receive dinners, milk and cod liver oil at school and through the welfare clinics thus improving the nutritional intake of a new generation, the importance of which began to show in the decrease in mortality from measles and whooping cough after 1914. At the same time there was a reduction in the number of phthisis deaths. In other words, the 'damage rate' had been decreased and subsequently the death rate also decreased. By this time food supplies to Nottingham improved, and a greater variety of food was available to a much larger proportion of the town; bread was no longer the staple food and in its place other foods which contained the high protein foods, such as fish, vegetables and fruit were being consumed, albeit in small quantities, but still helping to improve the health of

55. Boyd -Orr, *Food, health and income*, p. 50
56. *ibid.* p. 51

individuals. It is speculative but as there were no obvious improvements in the environment, or medical knowledge on the curative application of tuberculosis[57] and there is no suggestion that the disease altered in type, the remaining alternative for its gradual decline would have to be an increased nutritional intake.

In all three of the childhood diseases, whooping cough, measles and rickets, the environmental conditions played a considerable role in their aetiology. Laing`s enquiry into the prevalence of whooping cough in Aberdeen at the beginning of the twentieth century[58], showed that the case mortality was affected by social conditions, as determined by the size of the house. J L Halliday in the 1920s found that children who lived in tenement buildings in Glasgow were more likely to be exposed to measles and fatalities were higher.[59] There was evidence of a link between whooping cough and measles. In the thirties Haven Emerson suggested that rickets could not be prevented by wise feeding if the environmental conditions were such that the child was deprived of sunlight for extensive periods.[60] Such environmental and overcrowded conditions were prevalent in the north-east district of Nottingham. Evidence on the prevalence of rickets in Nottingham is tangential, obtained through the School Medical Reports, but was known to be a slum disease occurring in children through sunlight deprivation and particularly in those children living in densely crowded housing conditions. It was believed that the incidence of the rickets was greater than at first thought and as it was

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57. The breakthrough in treatment for Tuberculosis came in 1947
58. James S Laing, 'Whooping cough: its prevalence and mortality in Aberdeen', *Public Health,* 13 (1901-2), p. 595
59. J L Halliday, 'An inquiry into the relationship between housing conditions and the incidence and fatality of measles', *Medical research Committee (Special Report Series),* 120, (1928), p. 31
60. Haven Emerson, 'Sunlight and Health', *American Journal of Public health*, XXIII, (1933), pp. 438-39

known to be 'the hidden agenda' for whooping cough, this would indicate that many children suffered from it.

The occurrence of the three diseases has been shown to be affected by nutritional status. Diet was critical in the manifestation of the diseases. Whooping cough tended to infect children in their first two years of life when they had only a limited immunity and lacked the stamina to fight infection. This had a serious weakening effect upon the child and often followed an infection from measles and the combination of the two on a poorly-nourished child was devastating. The data for Nottingham on both diseases concurs with other age-specific findings. [61] Laing found in Aberdeen that the attack-incidence of whooping cough was highest among children three years and under. [62]Hardy has commented that, 'The younger the infant, the more serious whooping cough is likely to be. Babies are born without any natural immunity to the disease..'[63]

There has been some debate about the affect of nutrition on measles but there is evidence to show that an improvement in diet was contributory to its decline after the First World War.[64] McKeown made the observation that

"It is well recognised that the state of health of an individual has a profound bearing on its reaction to infectious disease. Measles is a conspicuous example of a condition in which infection rates are high in all social classes, but the likelihood of serious illness

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61. Hardy, *Epidemic streets,* p. 30
62. Laing, 'Whooping cough', p. 597
63. Hardy, *Epidemic Streets,* p. 15
64. David Morley, *Paediatric priorities in the developing world* (1973), p. 238, D C Morley, "Nutrition and infectious disease", in E J Clegg and J P Garlick, eds., *Disease and Urbanisation* (1980), p. 216. E Mellanby, 'Rickets', *The Lancet*, (15 March, 1919), p. 407

and death largely depends on the health of the child and is much increased among the poor. It is also clear that the general state of health is determined by multiple influences including particularly, previous illnesses and nutrition."[65]

As death was normally from a secondary infection rather than measles itself, it is possible to suggest that improved nursing care, which may have included a better diet, reduced the number of deaths from the secondary infection, whilst the incidence of measles did not decline until the introduction of vaccination in the second half of the twentieth century. The greatest incidence of measles in Nottingham was always found in the poorer sectors of the town, but Hardy has argued that there was more to the decline of measles than housing and rising nutritional levels. She concluded that wider social factors, such as compulsory notification, social changes which accompanied the First World War and greater emphasis on the lives of babies were influential.[66]

Rickets had always been associated with poverty but it was only after the discovery of vitamins that the link between the illness and nutrition was fully appreciated. Despite Mellanby's work between 1918-20 which identified rickets as a deficiency of vitamin D, Paton, Findlay and Ferguson maintained that rickets was not due to dietary deficiencies, but to poor housing.[67] Even in the thirties the full complexity of rickets was unknown.[68] However Mellanby argued in 1919 that rickets reduced resistance to other diseases even though it rarely was the cause of death.[69] This was reflected in Nottingham as the mortality figures for rickets revealed a very

65. McKeown, *Modern rise*, p. 134. This idea is reiterated in McKeown's *The Origins of Human Disease* (Oxford, 1988), pp. 53-5
66. Hardy, *Epidemic Streets,* p. 54-5
67. Welshman, 'School meals', pp.12-13
68. Emerson, 'Sunlight', p. 438
69. Mellanby, 'Rickets', *Lancet,* p. 407

small number of deaths. However, after 1908 the medical inspection of schoolchildren revealed that the number of children found to be suffering from various stages of the disease was alarmingly high. However, there are disparities about the incidence of the disease. The incidence in Nottingham was three times higher than had previously been thought. Boyd Orr believed the incidences of rickets varied widely due to the type of medical examination carried out in different areas and Welshman has cited the case of Stockton-on-Tees, where Dr M'Gonigle, the School Medical Officer found 80 per cent of the children examined had rickets, but that the methods of examination made much of the information useless.[70] It was after the introduction of the provision of school meals, medical examinations and milk that the number of cases of rickets began to decline.

The effects of the three childhood diseases on an immature body have been shown to be devastating, so a reduction in the incidence of the one which underpinned the other two, rickets, by an improvement in diet, would have been beneficial. By reducing the cases of rickets there would be a decrease in the incidence of whooping cough and measles. A reduction in the three diseases would reduce the damage to the body and later adult diseases such as phthisis would be less devastating.

Chapter six has shown that there was a better understanding of disease aetiology after the 1875 Public Health Act. The report on Physical Deterioration stressed the need for girls and women to be taught the rudimentary skills of cooking and child care, so that by the second decade of the twentieth century education was also playing a role in bringing up the standards of diets. Boobbyer, whilst hamstrung

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70. *ARMOH,* 1909; Orr, *Food, nutrition and income*, pp.47-8 and Welshman, *School meals,* p.13

by the council over housing and pail closets, used his considerable powers and knowledge to instigate probing enquiries into why some diseases such as typhoid, phthisis, measles, whooping cough and rickets prevailed, and how to reduce, if not eliminate them. He also highlighted activities in the town which needed serious attention, such as the removal of slaughterhouses from dwelling areas, the need to clean up both town and rural dairies, and the need to educate the individual concerning health care. It is perhaps interesting in a study of the past to note that in the Nottingham Evening Post 9 March 1999, inner city residents were invited to a course to learn how to cook and eat more healthily. The course was designed to promote a healthier lifestyle in St Ann's and inner city Nottingham, both districts which suffer deprivation.[71] G Rosen stated that, "The social history of health and disease is more than a study of medical problems…It requires an understanding of the factors – economic conditions, occupation, income, housing, nutrition, family structure and others – which create or influence health problems." The Pooleys have argued that not until the cycle of structural poverty began to be broken and improvements in medical knowledge, did the structure of urban disease and mortality fundamentally change and health of the working-class urban population substantially improve.[72]

Two areas of health concern which were looked at in more detail were infant mortality and maternal mortality. The causes of both mortalities stretched the understanding of the contemporary health authorities and more recent enquiries have proved equally problematic in isolating a specific cause. Of the two, infant mortality

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71. *Nottingham Evening Post,* 9 March 1999, p.11, col.2
72. G Rosen, 'Social variables and health in an urban environment: the case of the Victorian city', *Clio Medica*, 8 (1973), pp.1-17 as quoted in R Woods and J Woodward, 'Mortality, poverty and the environment', in Woods and Woodward, eds. *Urban disease,* p. 36 and M E Pooley and C G Pooley, 'Health, society and environment in Victorian Manchester', in Woods and Woodward, eds. *Urban disease*, p. 175

caused the most concern in Nottingham. Infant mortality was a particular problem in nineteenth century cities because it increased against the trend of mortality more generally. The infant death rate in Nottingham was well above the national average rate in 1900. While a downward trend commenced around the turn of the century it was nearly fifty years before levels in Nottingham came into line with national figures. (See Table 9-1).

Contemporary investigations often criticised the habits of the mother, particularly whether or not she worked, whether she had maternal skills, and whether she provided a suitable environment for the child. The regular employment of mothers outside the home was frequently cited in the Registrar-General's Annual Report as one of the reasons for the high levels of infant mortality in Staffordshire, Lancashire and other areas employing considerable numbers of women.[73] Nottingham was no exception, but the extent of working outside the home needs to be kept in proportion. Nationally the numbers are unknown,[74] but only about 5 per cent of Nottingham women were recorded as working outside their homes at the end of the first decade of the twentieth century (see Table 1-3 and Table 7-3). Nolan's investigation of Derby showed that when infant mortality peaked, only about 10 per cent, worked outside the home. Williams and Mooney have also pointed to the fact that while areas of high female employment may have coincided with areas of high infant mortality, this was not always the case.[75]

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73. N Williams and G Mooney, 'Infant mortality in an 'Age of Great Cities': London and the English provincial cities compared, c. 1840-1910, *Continuity and Change,* 9 2, (1994) p. 198
74. See Sir Edward Higgs, *Making sense of the census. The manuscript returns of England and Wales 1801-1901,* (1989), pp. 81 and 92
75. G Nolan, 'Infant Mortality as an indicator of environmental and social change, 1890-1939, with special reference to Derby', (University of Nottingham, PhD thesis, 1982), p. 339 and Williams and Mooney, 'Age of great cities', p. 198

Table 9-1: General and infant death-rates in England and Wales and Nottingham, 1886-1909

Year	England and Wales		Nottingham	
	infant deaths	general deaths	infant deaths	general deaths
1886-1890	151	18.9	158	17.9
1891	149	20.2	169	19.5
1892	148	18.9	167	18.4
1893	159	19.2	172	18.4
1894	137	16.6	174	16.7
1895	161	18.7	189	18.5
1896	148	17.1	168	17.5
1897	156	17.4	202	18.4
1898	161	17.6	178	17.2
1899	163	18.3	202	20
1900	154	18.3	178	19.2
1901	151	16.9	210	18.5
1902	133	16.3	196	16.7
1903	132	15.4	193	16.5
1904	145	16.2	159	17.7
1905	128	15.2	165	16.5
1906	132	15.4	176	15.9
1907	118	15	155	17.5
1908	120	14.7	171	15.2
1909		14.5	168	16.3

Source: Annual Health Report 1909 and 1914

Other factors have been investigated, such as overcrowded home conditions, illegitimacy and the effects of poverty and the environment. Waters has shown in her studies on poverty and the environment the difficulties of isolating one variable. Williams also concluded that the inter-relationship between infant mortality, the environment and social class were complex.[76] There is no evidence to compare rates of infant mortality by social class but as in other towns in England and Wales, the highest rate of mortality was usually reflected in the poorer districts of Nottingham.

Although Titmuss suggested that low, or a lack of, earnings was a factor in excessive infant mortality, the period of bad trade in the 1912/13 and the 1930s Depression in Nottingham was also the time when infant mortality was declining. Nolan was also of this opinion in his enquiry into Derby.[77]

Contemporaries, among them Edward Seaton, thought the number of illegitimate births had a significant impact on infant mortality figures. Nottingham undoubtedly had a higher rate of illegitimacy than places such as Coventry and Birmingham, at least in the 1860s, but the specific link with mortality is unclear. In the 1909-10 Annual Report to the Local Government Board, Newsholme argued that the influence of illegitimacy on infant mortality was a minor factor by comparison with other factors such as overcrowding, defective sanitation and poor mothering.[78] Illigimacy may not have been a decisive factor on its own in explaining excessive infant mortality.

Inadequate maternal skills also included the complex problem of breast feeding. The Victorians believed that if the mother failed to breast feed, for whatever reason, the child was likely to be artificially and improperly fed. The problem lay, or so the Victorians believed, in the failure of the mother to breast feed which led to the child being artificially and improperly fed. Williams and Mooney found that between

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76. See P A Watterson, 'Role of the environment in the decline of infant mortality: an analysis of the 1911 census of England and Wales', *Journal of Biosocial Science*, 18 (1986) 457-468; P A Watterson, 'Infant mortality by father's occupation from the 1911 census of England and Wales, *Demography*, 25, 2 (1988) 289-306; R I Woods, P A Watterson, J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921, Part 1', *Population Studies,* 42 (1988) 343-365, Naomi Williams, 'Death in its season: class, environment and the mortality of infants in nineteenth century Sheffield', *Social History of Medicine*, 5, 1 (1997), 71-93
77. Nolan, 'Infant mortality as an indicator of environmental and social change', p. 338
78. *ARMOHLGB,* Thirty-ninth Report, PP.1909-10 Cd5313 (XXXIX), Supplementary Report on infant and child mortality, p. 47

81 and 94 per cent of mothers breast fed their children.[79] Figures for Nottingham suggest that figures were around 90 per cent, largely because breast feding was more convenient and cheap. The alternatives were hazardous. Cows milk was particularly hazardous, and it was fortunate that many mothers shunned its use. Beaver in an influential paper on infant mortality and milk, argued that "If the milk killed many infants it probably saved more",[80] but this has since been challenged by Atkins who considered that, "milk quality was so abysmal that the damage caused by disease may have outweighed the nutritional benefits".[81] As late as 1912 Boobbyer was highly critical of milk entering the town from the surrounding rural areas.[82]

Individually none of these factors seems satisfactory as an explanation of high levels of child mortality. Without much doubt the majority of infant deaths were related to dirrhoea, and it may be the efficiency of the excrement removal system was as much to blame as any other factor for the figures. The death rate from diarrhoea in Leicester was reduced by nearly 25 per cent between 1898 and 1908 as a result of the rapid replacement of pail closets with water closets, whereas in Nottingham, where the corporation made late and painfully slow progress in this area, suffered much higher levels of infant mortality particularly over the period 1889-1908 .[83] Boobbyer blamed the excrement removal system for the excessive number of typhoid fever cases, and it may also explain the numbers of cases of infant diarrhoea. Greenhow's investigation in 1860 into the extent of diarrhoea in specific areas of Nottingham lends credence to

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79. Willams and Mooney, 'Age of great cities', p. 198
80. M W Beaver, 'Population, infant mortality and milk', *Population Studies*, XXVII (1973), p. 246
81. P J Atkins, 'White Poison? The social consequences of milk consumption 1850-1930', *Social History of Medicine*, 5, 2 (1992), p. 226
82. *ARMOH*, 1912
83. *ARMOLGB*, 1909. See also Williams, 'Death in its season'.

Boobbyer's findings. The belief that poor excremental removal was the cause was reinforced when during hot, dry summers the number of infants dying from diarrhoea related illnesses rose sharply. Nottingham's infant mortality matched the national cyclical upturn in the 1890s, which Woods et al have argued was the result of several hot, dry summers which had increased diarrhoeal mortality among infants and had caused infant mortality to rise dramatically.[84] Areas reliant on the conservancy method were picked out and failed the sanitary test. This has been demonstrated using the examples of Nottingham and Leicester, which had one of the highest infant mortality rates in the country, and the rural areas surrounding Nottingham. Whilst Leicester at the very end of the nineteenth century rapidly changed to water carriage excrement removal, Nottingham continued to use pails and conversion to water-carriage was piecemeal and slow which would not guarantee immunity during the hot summer months.

By the inter-war period infant mortality rates had fallen by 50 per cent, not least because of the introduction of the Mother and Baby clinics, however a blip in 1929 showed how fragile the rates could be, when a period of hot weather forced the figures up quite dramatically. During the 1930s, diarrhoea was challenged by pneumonia as the major influence on infant deaths. This was the time when a vast slum clearing programme was underway and the complete conversion to water carriage was finalised. The reduction in the number of deaths from diarrhoea was attributed by the Medical Officer to the increased work of the welfare clinics which educated and encouraged women in better maternal and domestic skills. In this respect Nottingham seems to have beeen fortunate as the local authority guided by Boobbyer

84. R I Woods, P A Watterson and J H Woodward, 'The causes of rapid infant mortality decline in England and Wales, 1861-1921. Part II.', *Population Studies*, 43 (1989), p. 129

had opened several clinics in neccesitous areas and had employed health visitors to visit and advise families.

The two closest urban areas to Nottingham, Derby and Leicester, show how variable health care could be. The authorities in Derby saw the importance of health visitors and according to Nolan, "The health visiting service made probably the greatest single contribution to the improvement in infant health and the reduction of mortality in the town." [85] Leicester on the other hand employed only 2 official visitors in 1913.[86] However, the benefits of this education would have been limited within a hostile environment so improvements in the disposal of sewage and water supplies, better housing and improved feeding, including a cleaner milk supply were also important.[87]

Maternal mortality caused less concern in Nottingham than had infant mortality, but there was still an unacceptable number of deaths in childbirth. The experience of Nottingham shows that a substantial number of maternal deaths were as the result of incompetent abortions. Although there is no evidence available at this time, it may be suggested that these abortions were made out of desperation by economically-challenged women. Mitchell's work has shown that women and children suffered real deprivation, even malnutrition during the Depression, and McIntosh's study of Sheffield supports the view that abortion was probably a solution to severe economic deprivation in the inter-war period.[88]

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85. Nolan, 'Infant mortality as an indicator of environmental and social change', p. 346
86. Williams and Mooney, 'Age of great cities', p. 199
87. McKeown, *Modern rise*, p. 121
88. Mitchell, 'The effects of unemployment', p. 119 and Tania McIntosh, 'An abortionists city- maternal mortality, abortion and birth control in Sheffield, 1920-40', *Medical History,* 44, 1 (January, 2000), pp. 84-6

During the 1930s there was no evidence linking any of the maternal deaths in Nottingham to malnutrition. Lady Rhys Williams's report which linked maternal deaths in South Wales to malnutrition,[89] is counteracted by Loudon who has argued that this is not the case given that long-term trends in maternal mortality show that there have been similar rises in times of plenty.[90]

Nevertheless it may be argued that poverty and therefore, poor nutrition played their part in the number of maternal deaths through abortions. A question remains as to why women who it is thought had better nutrition throughout their childhood and adolescence from the beginning of the twentieth century were to suffer from death in childbirth? We must return to the suspicion that many of these deaths were from abortions.

The examination of an individual town throws up some anomalies which a national survey masks. Local case-studies can refine large-scale conclusions[91] and this has been clearly demonstrated by the investigation of Nottingham. The correlation between sanitation, housing conditions and mortality had been established at an early stage, but how different urban councils reacted to the problems determined the future conditions of the next generation. Nottingham developed quite rapidly but was geographically restricted which resulted in a profusion of over-crowded, poor quality housing with limited sanitary facilities. The town's saving feature was its unlimited supply of clean water but the benefits of this were lost because of the continued use of

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89. Lady Rhys Williams, 'Malnutrition as a cause of maternal mortality', *Public Health*, (October, 1936) pp. 11-21
90. Irvine Loudon, *Death in childbirth. An international Study of maternal care and maternal mortality 1800-1950* (Oxford, 1992), p. 244
91. McIntosh, 'An abortionists city', p. 77

the pail system, despite the reports of the Medical Officer condemning them as the nexus of the high death-rates from typhoid and infantile diarrhoea. Compounding this was the unsatisfactory housing situation which was not fully addressed until after 1920. The councillors of Nottingham having had their fingers burnt once, in the removal of the unhealthy area between Long Row, Market Street and Upper Parliament Street circa 1881, were not going to allow the same thing to happen again and withdrew from the housing market after the 1890s.The town entered the twentieth century with a proliferation of poor housing and six times the number of pail closets to water closets, compared to Leicester which had approximately the same number of pail closets, as Nottingham had water closets.[92] The limited public health improvements can, therefore have had little to do with the falling death-rates in the city.

Szreter's argument in favour of a "negotiated expansion of preventative public health provision" [93] and "all of this (public health)...was only achieved as a result of ... local skirmishes between...health officials ... against parsimonious representatives of the majority of ratepayers,"[94] only partially addresses the problem of regional variations. Boobbyer's concerns for over three decades to improve housing and replace pail closets with water closets were sidelined by the council who argued that its debt was such that it could not afford the improvements proposed. The 'expansion of public health provision' took a considerably longer time to materialise in Nottingham than Szreter expressed in his article.

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92. *ARMOH,* 1894, P. 71
93. Szreter, 'Social Intervention', p. 5
94. Szreter, 'Social Intervention', p. 25. The author's italics

The study of Nottingham shows that, in hindsight, the Victorians were wrong to concentrate only on public health, and the environment, because it was issues concerning private health, in the domestic arena, which were probably more important, for example the improvements in quality and quantity of the food supply. The better fed a population was, the better it could fight disease. McKeown commented that, '...extensive experience in developing countries now leaves no doubt that malnourished populations have higher infection rates and are more likely to die when infected.'[95] After the introduction of legislation in the 1870s a greater understanding of illness helped to shape the way they were dealt with. Part of this shaping was to educate the population in domestic hygiene. The report on Physical Deterioration had stressed the need for girls and women to be educated in the rudimentary skills of cooking and child care. It was here, within the home, that many of the problems began and it mattered little what was done outside, if the home was unhygienic, there was a lack of cooking facilities and the women of the house were unable through poverty or ignorance, to provide nutritious food.

This thesis has focussed on Nottingham in the context of the debate between McKeown and Szreter. Nottingham was not untypical of many provincial English towns, among them its neighbouring East Midlands county towns of Leicester and Derby, and in this sense it may perhaps be taken to represent industrial towns more generally. It had long standing housing and sanitation problems which proved hard to resolve. Despite the best efforts of successive Medical Officers of Health, a cash-strapped and ratepayer-dominated Corporation proceeded only slowly and falteringly along the road to public health improvements. Arguably only in the light of central

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95. McKeown, *Modern rise,* pp.157-8

government intervention after 1918, and particularly of the boundary extension rejection in 1920, that the Corporation began to take seriously the need to provide improved housing and to tackle the urgent problems of sanitation which were all too apparent to the government inspector who investigated the extension application.[96] The programme of improvements triggered by the events of 1918-20 came a decade and a half after there was a substantial decline in deaths from typhoid, tuberculosis and infantil mortality, all of which were influenced by environmental conditions. This being so, the mortality pattern needs to be explained in a different way. Rather than changes in public health being the key, alterations in food consumption and, particularly, nutritional status, must have been the vital changes in this period. Without doubt there was an increase in the number of outlets for food, and in the variety of goods available. It is only to be regretted that there is insufficient evidence to show just how far down the social scale a better diet penetrated in the later nineteenth and early twentieth centuries. What cannot be doubted is the improvements in public health alone are not a sufficient explanation for the patterns of mortality which occurred in Nottingham.

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