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POVERTY AND POPULATION

POVERTY AND POPULATION

A FACTUAL STUDY OF CONTEMPORARY SOCIAL WASTE

BY

RICHARD M. TITMUSS

MACMILLAN AND CO., LIMITED
ST. MARTIN'S STREET, LONDON
1938

PRINTED IN GREAT BRITAIN
BY R. & R. CLARK, LIMITED, EDINBURGH

FOREWORD

By Lord Horder

Although a recognition of the great importance of the present and of the probable future happenings in regard to the population trends in this country is slowly penetrating our social consciousness, most of us are still inclined to rationalise the facts so as to harmonise them with our mental comfort. As who should say: "the subject needs expert enquiry; there are many questions to which we do not know the answers and until we do know the answers it is useless to consider the remedies for the disease, if disease it be".

But neither humanist nor economist can escape the implications of the facts which are so clearly discovered in this book nor the obligations which the knowledge of these facts impose upon both of them.

The author's sub-title, "A Factual Study of Contemporary Social Waste", gives us, in a short sentence, the motif of his research. Its purpose is "to assess the extent, character and causes of social waste and to relate the findings to the problem of an ageing and diminishing population which, in turn, according to some authorities, will be faced with a decline in the mean intelligence quotient of the nation and a reduction in social competence".

The future population, as Mr. Titmuss reminds us, is determined years ahead. It is therefore urgent that we do our utmost to stop avoidable mortality in children, in young people and in potential parents *now*. This is the most important of all the sociologist's immediate considerations when the population problem is under review, and it is a consideration which applies far more to the working-classes than to any other, since the major part of any increase in the birth rate that may be forthcoming must arise in this class. It follows from thoughts like these that any effective measures which can be taken in our time against the national calamity that faces us in regard to the population problem must all of them be directed against the still more fundamental problem of poverty.

An important part of the author's technique in dealing with this question is the measurement of vital statistics of one area in the country against another: he makes a careful study of "regional" as against "national" health. In doing this there is revealed a close association of high death rate, high sickness rate and high inefficiency rate with poverty—end-results, all of them, in the main, of malnutrition. An interesting illustration of the author's method is shown by some recruiting figures. In 1936 the rejection rate in the Home Counties was 32 per cent, whereas in the whole of England and Wales it was 48·2 per cent. This means that if the same standard of health had

obtained all over the country as obtained in the more favoured districts 5993 more men would have joined the army in this one year.

But far more important illustrations of the method are provided in the chapters on Maternal Mortality and Premature Deaths. The " regional " statistical method shows that whereas during the two years 1934–6 there was a percentage decline per 1000 deaths of childbearing women of 30 for Greater London, the figure was only 12 for the North and was as low as 3 for North I (Durham and Northumberland). This is evidence confirming my own repeated contention that research will probably discover that the essence of this particular problem (Maternal Mortality) lies in the fitness of the mother to produce her child. The author's analysis of the dynamics of Premature Deaths demonstrates that one factor stands out prominently above all others as causative—the availability of food for adequate nutrition. His studies of " regional " unemployment and " regional " overcrowding are no less significant. North I shows a higher Infant Mortality, a higher Death Rate in children, and in all other age-groups also, than any other area except South Wales.

The brunt of the burden of poverty falls inevitably upon the children, and the tragedy surrounding the fact (if Orr's estimate is correct) that four and a half million people spend an average of four shillings a week upon food lies in the certainty that it is the child who suffers most. Paradoxically, as

the author points out, we consider three shillings a week sufficient to maintain a child in health, yet if it were certified as a mental defective we should spend thirty shillings a week upon it for life. He might have added that if it is a juvenile delinquent, much the same paradox would apply.

The 59 tables and the 3 diagrams which illustrate the book are unusually clear. They mobilise for the first time a large amount of material bearing directly upon the question of poverty in its relation to premature death, to disease and to incapacity. In these tables, and in the text, the author has, it seems to me, rendered us all a signal service. For it is only by such careful and convincing work that we are likely to change our present apathy for a conviction that this problem does not lie with the future generations but with us, and that effective action lies in our own hands.

AUTHOR'S ACKNOWLEDGMENT

It was, I think, Sir Josiah Stamp who stressed the need for mobilising the facts of modern society that scientific research has brought to light.

It is indeed work that merits attention, as any student immersed in the study of any form of social physiology will readily confirm.

A fact, *per se*, is of little value unless it be, first, disposed in its proper context ; secondly, related to allied established facts and knowledge ; and thirdly, understood and interpreted in terms of its influence and importance on other facts and on the whole field of social knowledge. When that point is reached, understanding must be translated into action. The measured facts of human birth, life and death, expressed in terms of the pain and suffering that is past, must be used to transform the conditions of the living.

The aggregate of accumulated social knowledge is now so diverse, so vast, that as a result of enforced specialisation each branch of scientific research tends to be driven into isolation. Unfortunately, for many research workers isolation spells academic meaninglessness. Despite, therefore, the great advance in knowledge, we may still retain a nodding acquaintance with the attitude which resulted in the British Navy taking two hundred years to realise that scurvy was caused by inadequate diet.

During the last twenty years or so there have been initiated innumerable experiments and researches into the causes and effects of the malfunctioning of the human organism and yet we have no synthesis of the isolated results; no correlation of the obscure but nevertheless connascent effects to the fundamental nature of human ills.

It is to be deplored, therefore, that so much valuable information, so many relevant facts, are lost and buried in the avalanche of statistics, blue books, reports, bulletins, books and research pamphlets that descend on the sociologist every year.

If in this book I have rescued a few of these facts from threatened eclipse, or if I have done something towards relating our vital statistics to the factors that determine when and why the people of this country die, then my debt of gratitude to the many who have permitted me to quote from their researches and works, and to those who have helped me with advice and suggestions will be manifestly increased. Though I have drawn upon many sources, I hope, that in doing so, I have not unwittingly misrepresented the material.

I have also to acknowledge the assistance I have received at the hands of Government Departments, particularly the Ministry of Labour and the Registrar-General's Office.

On a different plane, however, I recognise that it is my wife, Kay—not only by her part in the publication of this book, but through her work

among the unemployed and forgotten men and women of London—who has helped me to visualise the human significance, and often the human tragedy, hidden behind each fact, and the purblind social waste that the forces of poverty and unemployment relentlessly generate.

R. M. T.

LONDON, *July* 1938.

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"The Foundations of National Glory are set in the Homes of the People."

HIS MAJESTY KING GEORGE V

INTRODUCTION

THERE can be no subject of more fundamental importance to any nation than the physical and mental well-being of its people. The measure of its importance can be gauged by its influence on the nation as a social and economic entity. Faced with the prospect of diminishing descendants, the momentousness of the problem is accentuated.

In a period—like the Victorian era—when the reproduction rate was above unity, the nation could, apart from humanitarian issues, afford to allow the poorer sections of the population to return a high mortality rate. Whilst every generation was more than replacing itself, social waste and inefficiency was, of course, to be deplored; but premature death did not endanger the future social and economic life of the country.

To-day an ageing population confronted with the certainty of the approaching decline must re-assess the value of the poor to the community. It is from these, the poorer sections of the population, that the architects of the future are being increasingly disproportionately recruited.

It is somewhat disconcerting to learn, therefore, that at a time when the falling birth-rate and ageing population is occasioning serious concern to the Government of the country, little or no attention is being directed to the continued prevalence of

early and unnecessary mortality among children, potential parents, and, in fact, all sections of the people. Nor is it a matter for congratulation that such concern—implying recognition of the attendant problems—should fail to appreciate the absence of any relationship to-day between wage rates and family responsibilities, size of family and housing policy; and should fail to remedy the present lack of any national investigation into the cause and extent of premature death, excessive morbidity, ill-health and social deterioration.

The inauguration of the Government's nation-wide fitness campaign does little more than imply the existence of ill-health and inefficiency in our midst to-day. The *sequelae* of ill-health must in the end be premature ageing and premature death for the majority of those who suffer. Men, women and children are dying before their time. Is excessive mortality and its related factors characteristic of the whole of England and Wales or only of certain regions? Are some parts of the country healthier than others, and, if so, why? What, however, is of fundamental importance is to determine the extent of premature death, because an unduly high death-rate from all or certain causes implies an equally high or even higher rate of ill-health, sickness, malnutrition and inefficiency, which at the same time must be sowing the seeds of premature death in future years.

As there is at present no means of clinically assessing the health of the nation, recourse must be

made to mortality statistics. These, in turn, are not complete; they lack much information that is desirable and they do not represent a perfect method of measuring the extent of ill-health. But an analysis, age group by age group, of all the available data according to its regional distribution does provide, in broad terms, an accurate indication of the conditions extant in certain large areas of England and Wales. Just as we have as yet no reliable scientific standards for measuring malnutrition, so we cannot assess subnormal health. "Normality" and "average" are often confused when interpreting the health level of the nation. Many school medical officers of health, for instance, interpret normal health by subjective means if it approximates to the average health of the community in which they work, regardless of the conflux of heterogeneous factors in that area tending to produce a high or low level of communal well-being. In a similar way, it is a common fallacy to regard any regional or local departure from a national mortality rate as representing the extent of the particular problem. The publications of the Ministry of Health, the Registrar-General and the Board of Education, bearing on public health, invariably do so, however, when contrasting the distribution of physical phenomena in one area with that of another. There are, of course, in many cases extenuating circumstances and difficulties in the way of adequate compilation and presentation of vital statistics, and, whilst naturally there

is no intention whatever of minimising discrepancies in, for instance, regional death rates, the results of a comparison of regional rates with the national rate are extensively used and quoted, the implications always being that the variation is quite small and not in itself sufficient cause for investigation or alarm. Take, for example, the Registrar-General's discussion on the distribution of infant mortality in 1935 in which he states that the rate for North I is in excess of the national rate by 33 per cent as compared with 32 per cent in 1934. The continual use of this national rate as a standard to judge favourable or unfavourable conditions can be a source of much error. The standard is a debased one and therefore can provide no adequate basis for measuring the extent of the geographical distribution of a particular factor. In the case of infant mortality in North I just instanced, the excess deaths, when judged by the rate obtaining in the Home Counties (South East of England excluding London), amount to 65 per cent.

This book attempts, therefore, to assess the extent, character and causes of social waste and to relate the findings to the problem of an ageing and diminishing population which, in turn, according to some authorities, will be faced with a decline in the mean intelligence quotient of the nation and a reduction in social competence. The qualitative aspect of the problem cannot be ignored, because no form of social progress is possible unless there is a continuous improvement of individuals.

In the following chapters the South East of England and component areas such as the Home Counties (Registrar-General's Division " Remainder of South East ") and London have in most cases been taken as the optimum health standard at which to aim, but at the same time it is perhaps necessary to point out that there is considerable room for improvement in these areas. Nevertheless, an analysis on this basis takes us further towards assessing the totality of the issues involved, and more than suffices to provide a picture of the problems to be solved.

Having judged the extent of the problem, what are the predominant causative factors ? Accordingly an attempt is made to evaluate the correlation between premature death and its close relatives ill-health, malnutrition and " life without interest ", and factors such as unemployment, poor relief and unsatisfactory environment not productive in large measure of communal well-being.

In general the statistics cited are those for 1936, but it should be added that analyses of previous years confirm the findings for the twelve months under review. According to provisional figures for 1937 supplied by the Registrar-General before publication, no material change is apparent. The crude death rate reveals an increase of 0·3 above 1936, and the birth rate an increase of 0·1.

Throughout the succeeding pages, in considering any one of the many problems discussed, two factors

should be kept in mind: (1), that those regions suffering from economic under-privilege and most exposed to malnutrition-inducing conditions contain by far a higher proportion of our children; and (2), that it is only higher fertility in these regions that has prevented an earlier and probably calamitous fall in the size of the population.

In the final analysis, the children are the nation's most valuable asset; out of them it grows; they are its future; on them must descend its government; and upon them will its position and influence among the comity of nations depend.

Not only does this book attempt to assess the extent, character, and causes of social waste quantitatively and qualitatively, in relation to the future, but it tries to connect and mobilise much of the available material, statistical and otherwise, bearing on the influence of poverty in determining avoidable ill-health and untimely death in the interests of those who realise that, just as man by his actions creates ill-health and misery, so can man by his work create health and happiness.

CHAPTER I

THE PROBLEM OF POPULATION

(1) The Approach to the Problem.
(2) Population Trends.
(3) Economic and Social Consequences.
(4) Immediate Aims.

CHAPTER I

THE PROBLEM OF POPULATION

(1) THE APPROACH TO THE PROBLEM

THE governing outlook on life of the majority of English people to-day has its counterpart in the minds of those who lived in the Victorian era. It can perhaps best be described as an unreasoning belief that, despite the cataclysm of the last war and the menace of the next, the future will resemble the past. This majority may concede that scientific progress will bring some few changes in its train, but, rightly or wrongly, they cling to the principles of the obscurantist. They have been taught to believe that physical and spiritual contentment is incompatible with a belief in a dynamic and changing future. The continuance of their contented, dull, mass-belief lives, and their happy but nevertheless asocial preoccupation with respectable ritual depends on the trends of to-day and the shape of to-morrow remaining hidden. In their blind refusal to face the reality of fundamental issues they create in their own minds a future society akin to the contented one they occupy to-day. They even picture another war on the background of 1914 painted in with the colours of 1870. No disturbing thoughts must

intrude on their faith in the rigidity and rightness of the only society they know ; not even the future prospects of national suicide. The fact that they are not replacing themselves raises no fears and evokes no interest in the placidity of their minds. The appearance during the last few years of the population problem in, for instance, the daily press and over the wireless is dismissed as sensationalism ; a reversion to witchcraft and demonology. They summon the ghost of Malthus and say that just as he was proved to be wrong, so too will the sociologists of to-day. They refuse to believe because they do not wish to believe. If, as they hold, the future is full of promise for themselves and their children, surely, then, there is nothing to disturb their peace of mind. Nothing to do but mount, mass upon mass, the ironmongery of destruction. Thereby they remove the necessity to think, to understand and to work.

In the opinion of the writer these tenets are held in the main by the majority of the ever-growing urban population ; by those who represent an increasingly important proportion of our total population—the great middle and lower middle class groups living in the sprawling suburbias of our towns and cities. Theirs is a mechanomorphic cosmology. As Aldous Huxley remarks, " They move through life hollow with pointlessness, trying to fill the void within them by external stimuli—newspaper reading, day-dreaming at the films, radio music and chatter, the playing, and above all the watching, of games,

'good times' of every sort". It is they who, by their attitude, represent the danger to democracy from within. Despite their relatively prosperous condition, it is they who, judged by the statistics for the South East, have a lower birth rate than any other region of England and Wales. The mile upon mile of uniform villas have rightly been described as "birth control barracks". It is these large groups of people whose sense of communal responsibility is adolescent. But upon its development—in time—probably depends the future of the country, of democracy, and possibly of civilisation. The choice lies between words and facts, infantilism and adult responsibility. It is these classes who know practically nothing of conditions in the North and Wales and at present recognise no responsibility. They do not realise that it is the poor who have maintained, and are maintaining, even our present low rate of replacement; that our numbers are being increasingly disproportionately recruited from amongst the unemployed, the unhealthy and mal-nourished, the mentally sub-normal, and from the ranks of those reared in the most unsatisfactory environment and subjected to social and economic hardships.

A century ago Malthus administered a profound shock to our sensibilities. He disturbed complacency, and that, in this country, appears to be a social crime.

Facts, particularly when unpleasant, are disliked and evaded. As Mr. Keynes has remarked, "There is nothing a government hates more than

to be well-informed; for it makes the process of arriving at decisions much more complicated and difficult". Nevertheless the only sound approach for government or people to the problems of population is through the known and ascertainable facts. In the following pages, therefore, an attempt is made to present in as brief terms as possible the position to-day, the probable circumstances to-morrow, and the resultant economic and social consequences.

(2) POPULATION TRENDS

The forces of population trends have ebbed and flowed unceasingly through time, seemingly without purpose or direction, and always with little or no attention from governments to their momentous influence on the welfare and destiny of mankind. The action of these forces in the past now presents us with problems which, by the implicit nature of their national and consequently international importance and urgency, demand and merit attention.

We are living on the high fertility of past generations and are not reproducing ourselves to-day. The birth rate has been declining for sixty years and the net reproduction rate now stands well below unity at 0·734. This means that every one thousand newly born girls will, before they die, give birth to 734 girls. In 1875 the birth rate was about 35 per 1000; in 1936 it had fallen to 14·8. Incidentally the average annual number of births during 1933–6 was lower than in any year since 1849, when the popula-

tion stood at 17,500,000. Alongside, the standardised death rate fell from 20·9 per thousand living (1871–5) to 9·2 in 1936. Mortality cannot, of course, continue to decline. The reason why the population has not already started to diminish is this reduction in the death rate, which has fallen concurrently with the birth rate. We have now reached the stage, however, when the death rate trend has changed, the rate now beginning to rise as a result of the population gradually growing older. The following table illustrates the decline in replacement rates :

TABLE 1

FERTILITY RATES

	Average Number of Children born to each Woman passing through the Child-bearing Period ; with the Fertility Rates, found in Different Years in England and Wales	Average Number of Female Children born to each Woman in the Same Circumstances
1851	4·49	2·20
1861	4·61	2·26
1871	4·78	2·34
1881	4·64	2·28
1891	4·16	2·04
1901	3·51	1·73
1911	2·94	1·44
1921	2·72	1·32
1931	1·91	0·93
1934	1·79	0·87

These figures do not, it must be remembered, take into account deaths between the ages 0 and 50. If fertility remains at its present level the population will decline at a rate of approximately 24 per cent in every generation. On the other hand if present trends continue, and there is no reason to suppose

at any rate an immediate change, the position will be more serious.

Chief among the better-known estimates of the future population are those by Dr. Enid Charles.[1] These calculations were made on the basis of varying postulates. Dr. Charles' second method appears to represent the most logical extrapolation of recent tendencies and has therefore been adopted for the purposes of this book. It assumes that both mortality and fertility rates will decline in accordance with recent trends. The result shows that if the rates decline for another fifty years in the same proportion as they have in the past, the descendants of the present population will, one hundred years from now number approximately 4,500,000 (or less than half the present population of London). At that point the population over sixty years of age will, on this estimate, be substantially in excess of the population under that age. Even by the end of the present century the figure for England and Wales will have dropped from 40,500,000 to 17,500,000. The profound effect of these tendencies on the age composition of the population can be visualised when it is realised that on the basis of the 1931 census the number of children will in seven years—by 1945—have decreased by 25 per cent and the number of elderly persons (over sixty) will have increased by 36 per cent.

Diagram Number I illustrates the probable trend

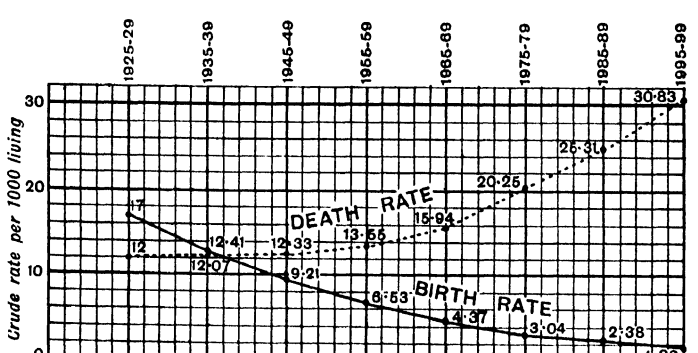
[1] Special Memorandum No. 40 of the London and Cambridge Economic Service, 1935.

DIAGRAM No. I

Trends in Population and Birth and Death Rates

(Each whole block represents two million persons)

	Children	Workers	Old People
1935	■■■■▮	■■■■■■■ ■■■■■■	■■▮
1955	■■■▮	■■■■■■■ ■■■■■▮	■■■
1975	■■▮	■■■■■■■ ■■▮	■■■▮
1995	■▮	■■■■■■	■■▮
2015	■	■■■	■
2035	▮	■▮	▮



in population based on Dr. Charles' estimate. The diagram that follows indicates the probable trend in birth and death rates. Both diagrams represent, in the light of the information we have, reasonable assumptions, but they cannot, of course, be accepted as accurate forecasts. Migration has been ignored.

It must be remembered that for the period to 1956 the population over 20 years of age is already born. During this period the change in age structure is likely to have a more profound effect on our economic and social life than any decline in total population, thus :

Per Cent of Total Population

	0-4	5-14	15-59	60 up
1935 . .	7·05	16·27	64·23	12·45
1950 . .	4·46	10·94	67·58	17·01
1960 . .	3·23	8·57	67·50	20·69

As Mr. Duncan Sandys, M.P., remarked at the Conservative Party Conference in September 1937, " Perhaps the most disquieting phenomenon of a declining birth rate is the progressive rise in the average age of the population ". An ageing population is always a sign of a declining one. The remarkable change in the age structure when comparing 1950—twelve years ahead—with 1931 is self-evident. Even in the last six years for which published figures are available (1931–6) the number of young children under 10 fell by 550,000, whilst the number of people over 60 rose by 729,000. By looking further ahead—sixty years hence—instead of there being nearly 24 children in every 100

people (as in 1931) there are likely to be only 3–4, whilst the proportion of old people will have risen from 11 in 1931 to 44. As to the immediate future, the following table provides an example on a small scale of one facet of the problem.

The industrial population is almost entirely composed of people between the ages of 15 and 65, and the table shows the annual increase in the male and female population between those ages from 1871 to 1930, together with estimates to 1950. As those who will be 15 in 1950 are already born, the estimates can only be affected by a considerable increase or decrease in the death rate for children or by emigration on a large scale.

TABLE 2

ANNUAL INCREASE OF POPULATION OF WORKING AGES (15–65) IN ENGLAND AND WALES

	Males	Females
Between 1871 and 1881	92,000	97,000
,, 1881 ,, 1891	100,000	114,000
,, 1891 ,, 1901	143,000	108,000
,, 1901 ,, 1911	130,000	187,000
,, 1911 ,, 1921	70,000	125,000
,, 1921 ,, 1931	124,000	113,000
,, 1931 ,, 1935	162,000	144,000
,, 1935 ,, 1940	75,000	60,000
,, 1940 ,, 1945	30,000	2,000
,, 1945 ,, 1950	1,000	-50,000

In *National Income and Outlay*, Colin Clark gives estimates of the occupied male population based on Dr. Charles' assumptions. For 1935 he states the percentage of occupied males to total population as 32·9. By 1950 he estimates that it will rise to

36·1. These figures are referred to later. As to the inactive age groups, in the next 20 years the 4–14 group (to which elementary school children belong) will decrease to 57 per cent of its present figure. At the other extreme the group 60 and over will increase to 143 per cent of its present figure.

Dr. Charles' statistics represent—to quote her own words—" a more reasonable forecast of the trend of population, if no new social agencies intervene to check declining fertility ". Subsequent to Dr. Charles' first estimates she and Pearl Moshinsky contributed a chapter, " Differential Fertility in England and Wales ", to *Political Arithmetic*, published in 1938. After a detailed statistical analysis of differential fertility the authors' remark: " The main result of this enquiry, therefore, is to remove any justification for a complacent view of the possibilities examined elsewhere ". In discussing the prospect of a reversal ensuing when all except the most fertile stocks have been eliminated, they say: ". . . we are at least entitled to urge that *such a contingency is too remote to prevent a large-scale decline in the total population during the next half-century* ".

Before, however, turning to a consideration of the consequences of the changing size and age structure of the total population it is necessary, as this book is concerned with the regional incidence of mortality and poverty, to refer briefly to differential fertility in the areas in question. The

figures of county gross reproduction rates are taken from, " Changes in Fertility in England and Wales " (*Political Arithmetic*), by Mr. D. V. Glass, to whom the author is indebted. The rates, based on census years, are for the fifty-five registration counties. In 1931 Durham and Monmouthshire were first and second with 1·275 and 1·140 respectively, Surrey and London being fifty-second and fifty-fourth with 0·767 and 0·780 respectively. For the particular purposes of this book the rates for the counties in the North, Wales and the South East have been expressed in terms of Durham = 100, thus :

North I.	
Durham	100
Northumberland	81
Remainder of North	
Yorkshire North Riding	89
Yorkshire East Riding	85
Cumberland	84
Yorkshire West Riding	71
Lancashire	70
Cheshire	66
Westmorland	66
Wales I.	
Monmouthshire	89
Brecknockshire	81
Glamorganshire	81
Carmarthenshire	72
Wales II.	
Montgomeryshire	85
Anglesey	82
Radnorshire	81
Pembrokeshire	80
Flintshire	79

Wales II.—contd.	
Denbighshire	78
Merionethshire	76
Caernarvonshire	67
Cardiganshire	60
South East	
Hampshire	77
Oxfordshire	73
Berkshire	72
Essex	72
Buckinghamshire	70
Bedfordshire	68
Hertfordshire	65
Middlesex	63
London	61
Sussex	61
Surrey	60

As Mr. Glass points out, in 1931 only two regions of high fertility remain, Monmouthshire and the Durham–North Riding region. Of the fifty-five registration counties only one, Durham, appeared to have a net reproduction rate above unity in 1931. The gross reproduction rate for England and Wales as a whole in 1931 expressed in terms of the Durham rate was 73. It can therefore be seen that of the registration counties in the South East only Hampshire exceeded this figure, whilst the great majority of the Northern and Welsh counties were above the national rate. In the chapter "Infant Mortality" it is indicated that assuming the birth-rates (per 1000 women aged 15–44) in the South East had operated in the North and Wales during the decennium ended 1936, our child population would have been reduced by a figure approaching 250,000.

By applying this assumption to the whole of England and Wales the reduction would have been in the neighbourhood of 500,000. Obversely if the rates for Durham and Northumberland had obtained throughout the same period in the South East we should have had approximately 500,000 more children, and if in the whole of England and Wales approximately an additional 1,100,000.

That in brief is a review of (*a*) population trends, (*b*) age structure and (*c*) differential fertility.

For a detailed description of the statistical methods employed in arriving at certain of the estimates reference should be made to the works of Kuczynski, Charles and Glass. The influence of migration can be discounted unless there is a return to large-scale emigration or immigration, which at the present appears extremely remote. Extensive emigration would merely intensify the problem by not only reducing our population but by further distorting the age structure. It is somewhat difficult, therefore, to appreciate the recent movement among certain circles in this country to stimulate youthful emigration to the Dominions and Colonies. It may be inspired by the colonial demands so fashionable to-day, or by the rather selfish attitude on the part of some Dominion Authorities. For instance, Senator Sir George Pearce, when speaking in Perth on 9th March, 1938, said that Australia must "populate or perish", and added, "The best way to encounter the problem was to increase the flow of British immigrants". This does

not indicate a true appreciation of the problems that we in this country will have to face.

On the other hand, as most, if not all, the countries with white populations have declining birth rates, it is unlikely that we could recruit from them, and it does not seem feasible to suggest that we should look to the coloured races for assistance.

Any consideration of this problem must, of course, assume that we shall avoid a major war. It should be remembered that our population will continue for many years to bear the marks of 1914–18. War is always dysgenic ; that means to say it always kills the best types from amongst the biologically important age groups.

It is not the purpose of this book to discuss why the birth rate is falling in such a fashion or to suggest possible lines of approach towards a solution of the problem but to analyse contemporary mortality and poverty. In any case it is difficult to assess the value of, for instance, family endowment until our vital statistics are more adequate. Chiefly unsatisfactory are our statistics relating to fertility. At what ages do mothers have first and subsequent children ? What is the duration of marriage and the proportion of childless marriages ? How long do parents wait before having their first child ? What is the gap between subsequent children and why ? What occupations involve a lower birth rate and a small-sized family ? What is the maternal mortality rate for second and subsequent children ? What is the infant mortality rate for first children

and does it show an improvement for subsequent children ? How do these questions affect calculations of the mean expectation of life which in 1933 stood at 60·8 ?

Incredible though it may appear, none of these vital questions can be answered. If, for instance, we wish to know the fertility of British mothers in the age group 19–24, we have to rely on (*a*) a process of deduction and conjecture mainly empirical, or (*b*) formulae compiled by foreign countries on their own nationals. The second method is more generally adopted, but as it is based on women living under totally different conditions, *e.g.* Germans, Norwegians, Swedes, etc., it is bound to involve some margin of error.

Much of the information that we lack to-day Sweden has had for 164 years and recognised as vital in 1774. It is also true to say that many other countries with white populations can answer most, if not all, of the questions propounded above.

It will be seen, therefore, that with so many imponderables we are hardly in a position to judge the value of different methods of family endowment. It is earnestly to be hoped that the recent Population (Statistics) Bill will provide us with much of the information we now require. It must, however, be some years before the additional statistics are available. In the meantime, and even when the results are ready for use, it seems of paramount importance to prevent unnecessary and avoidable mortality among the children, young people and parents of to-day.

(3) ECONOMIC AND SOCIAL CONSEQUENCES

Just as the size and age composition of the population has determined economic, social and even foreign policy in the past, so it will in the future. However repellent it is to those who dislike facts and refuse to face their implications, it is not an overstatement to suggest that the changes to be wrought by a declining and ageing population will be profound and far-reaching, not, as many imagine, in some far-distant future, but within the lifetime of the majority of our present population. Concurrently with these changes it is logical to assume continued technological and productive advances. Particularly will these factors influence and change the lives of the children, young people and those approaching middle age—like the author—within the next ten to twenty years. As Sir William Beveridge said, when speaking at the Geographical Association's Conference on 6th January, 1937: " In twenty-five years we shall be in a panic about the population of this country ". He added that, " For the last seventeen years economists have been talking about nothing but banking policy and the gold standard, but the centre of the social sciences is going to be the problem of population ".

It is not possible—even if it were desirable—to outline the whole range and variety of consequences of a declining and ageing population affecting every minute and insignificant aspect of our economic and social life. What follows, therefore, is an attempt to

indicate some of the major difficulties that are likely to arise.

As the changes in the age distribution become more pronounced and influential, conjointly with a stationary and then declining population, consumption demand on all forms of industry is likely to vary to a considerable extent. Many examples come to mind, such as bath-chairs for perambulators, to cite one perhaps rather extreme instance of the change-over from the requirements of youth to those of old age. The need for more durable goods such as furniture will also diminish as the smaller number of children now being born reach a marrying age. This factor will also affect the demand for houses and flats. The increasing number of old people will call for different types of housing or flat accommodation. The provision of many of the social services will have to change as childish complaints decline and diseases of old age increase, thus affecting hospitals, institutions, clinics and practically all medical services. The higher proportion of women over the age of 50 is a contributory factor. The ratio of females to males in this age group will increase from 1·204 (1935) to 1·268 (1950). All these tendencies may at first quite possibly involve over-production in certain classes of industry. One has only to recall the deplorable plight of the coal and cotton trades since the war, superficially due to loss of overseas markets, but actually, of course, attributable to a falling-off in the number of purchasers, to appreciate

the consequences of a contracting market to particular industries at first, but eventually to all forms.

There is every indication that a declining population will not result in declining unemployment. On the contrary, the incidence of unemployment is likely to increase as a result of the change-over with its impact on all forms of economic and social activity. It should also be remembered that simultaneously the shift in age structure will reduce the flexibility of labour supply.[1] This process can already be seen operating in miniature in parts of the North and Wales, where employers are, for example, unable to obtain young workers due to declining numbers and emphasised out of all proportion by transference and migration. They are faced, therefore, with having to employ either older men (implying higher wages) or transferring their factories to districts where the supply of labour is more mobile. The experience of the North and Wales shows that a background of declining population (with a distorted age structure) is not attractive to industry. The view that declining and ageing numbers are likely to increase unemployment is also held by Sir William Beveridge, Chairman of the Unemployment Insurance Statutory Committee, by Mr. H. D. Henderson and other noted economists. In any study of social demography there is, therefore,

[1] For example, see Report of London Regional Advisory Council for Juvenile Employment (issued April, 1938), warning employers in the London area of shortage of juvenile workers. In ten years the position will grow far more serious.

one factor of incalculable importance which permeates and influences any consideration of the consequences to be wrought by changes in the size and composition of the population. This factor can be described by saying that the type of expanding predominantly youthful population which has prevailed in this country since the Middle Ages is fast becoming a characteristic of the past.

The whole of the industrial system in this country as we know it to-day was born into and grew up—and thrived—on continually expanding home and foreign markets. This influence was of major importance in impelling rapid recovery from periodic business depressions. The very pressure of increasing numbers and expanding demand not only conditioned the tempo and extent of recovery, but also prevented the depression from touching the lower levels which might have been experienced with a stationary or falling population. It does not appear, therefore, that in the future we can expect any automatic solution of our economic problems.

The twin factors of technical progress and overproduction in a stationary or declining community will naturally lead to a reduction in the price levels —especially for primary products. If this consequence is met by State restriction of production and the artificial raising of prices to meet declining demand, the result may well be a considerable lowering in the standard of life. On this aspect it is, of course, unpleasant to dwell, but such tendencies, giving added impetus to rationalisation and

productivity, will lead to an increase in the *incidence* of unemployment and again to a lowered standard of living.

The question of over-production of goods has already been referred to, but accompanying the change in demand may be an insufficiency of investment outlets to absorb surplus savings. This, in itself, may be disastrous, but nevertheless it is predictable and may develop from a number of causative factors : one, for example, being a decline in building demands (factories, municipal buildings such as schools, and notably houses and flats). This question of a decline in the house-building industry from the inflated demand in recent years may assume considerable importance within the next ten years or so, particularly as the numbers reaching adult age diminish together with the recent tendency for the age at marriage to increase (1931–5, bachelors 27·30–27·53, spinsters 25·47–25·59). This last factor of " delayed marriage " may be due to economic stress and to the growing numbers of elderly and old people dependent on fewer young people for support. These considerations lead in turn to the influence of a growing burden of taxation on the " occupied " population.

As Mr. Duncan Sandys, M.P., emphasised at the Conservative Party Conference in September, 1937 : " A declining population must inevitably involve a deterioration in the whole standard of life of our people. With a population whose numbers are declining, and whose average age is rising, we shall be

faced with the situation of a smaller and smaller proportion of active workers having to support an ever-increasing proportion of old people. Old-age pensions at present amounted to £40,000,000. In less than thirty years' time they will be costing nearly £65,000,000." Lt.-Col. J. Sandeman Allen, M.P., later remarked appropriately that " it was little short of criminal " for municipalities and firms to prevent men and women from getting married.

It would appear that Mr. Sandys is somewhat exaggerating the position. Earlier in this chapter Colin Clark's estimates of the occupied population were quoted which indicate a rise—not a fall—up to 1950. But what, however, must not be overlooked is that whilst there may be a rise the occupied population will be considerably older and more heavily concentrated in the higher age groups. Clark assumes—on the basis of the 1931 census—that:

86 per cent of the age group 60–64 will be at work.
65 ,, ,, 65–69 ,, ,,
33 ,, ,, 70 and over will be at work.

These assumptions leave out of account the recent tendency for a reduction in the retiral age. It is to be hoped that this tendency will not be checked even if it does involve a smaller occupied population. Nevertheless, the burden of inactive age groups is likely to grow. Old people do not repay investment and generally speaking are more expensive to maintain than children, particularly as many require separate households. To maintain

this burden women may tend to remain longer in employment thus postponing marriage. The decline in the number of new female entrants to industry may add an incentive by a consequent rise in female wage-rates.

On these related questions of housing, marriage, and the birth rate it is not out of place to reflect on the character of existing housing and Overcrowding Acts. To what extent will the houses at present being erected by various authorities come within the existing definition of overcrowding should the average size of the family increase as a result of some form of Family Endowment or the financial encouragement to parents to have larger families? Also, will the tendency in many of our large towns to erect flats defeat any desire to raise the birth rate? As a typical example of the complete lack of foresight on the problem, the recently introduced Housing (Financial Provisions) Bill intended to make special provision for agricultural housing will, unfortunately, tend to influence local authorities to erect smaller houses.

There is another aspect of the change-over from an increasing and then stationary population to a shrinking one that relates to the provision and cost of social services. This is discussed in the chapter on "Inter-Regional Migration" (Economic Consequences). Schools, roads, transport, telephone and postal, water, electricity, gas and other essential services will still be required all over the country but by a smaller and ageing population, whilst

an ageing "occupied" class will have to pay for them. As the demand for the volume of these services such as electricity and gas diminishes, it is likely that the cost will rise. Instances of the education question can already be found in many parts of the North and Wales (where the population is now declining) and in Scotland. Village schools at one time taking over twenty children now have to teach less than ten, but the school and the staff are still required. This problem of the cost of essential services is likely to be further intensified if the present tendency for industry and large numbers of the population to migrate to the South continues unchecked. Reference here should, however, be made to the particular chapter on migration and its social and economic consequences. Apart from these essential services and other forms of expenditure, there is also the question of the growing burden of the major item in the national budget—Defence Forces—and its partner the National Debt. Defence is not likely to grow less expensive when there are fewer to protect. Mr. Chamberlain may possibly have had this in mind in stating, when discussing on 7th March, 1938, the expenditure of £1,500,000,000–£2,000,000,000 on armaments: "I need not impress upon Hon. Members the gravity of these figures or of the prospects which lie before us if no alleviation of the situation can be obtained".

There is little doubt that the slower rate of recovery from the abnormal world depression of

1930–33, can be partly explained by the diminished pressure resulting from the slowing-up in population increase not only at home but abroad. It follows on, therefore, to enquire to what extent has this process given rise to the growth of economic nationalism. Conjointly with the factors of rationalisation, mass production and scientific agricultural output, the slowing-down in the rate of demand by industrial countries (such as Great Britain) for agricultural products reacted unfavourably in turn on the demand for industrial commodities. The scope of the subject is, of course, far too wide to discuss in all its bearings, but unquestionably population growth is a contributory factor. It seems unlikely that, failing a considerable rise in the standard of life of the millions of natives of Africa and Asia, this country can look for an extensive expansion in foreign trade, as the Dominions and most of the countries with white populations have similar replacement problems to our own. As the population question grows in importance in this and other countries, it is fervently to be hoped that the world will be sane enough not to extend the dominance of economic autarchy, but, remembering the past, it is not out of the question.

The speech by Mr. Duncan Sandys has already been cited, but it is not irrelevant to quote here the press report of his statement that "whilst he was not advocating what was called 'breeding babies for cannon fodder', nevertheless, we should be shirking our responsibility if we were to con-

ceal from ourselves the fact that a great Empire like ours, whose population would be growing progressively smaller and older, must inevitably become increasingly vulnerable to attack". It seems that Germany has already been giving attention to our declining birth rate. Professor Schultze remarks in *Neues Volk* (January, 1938) that "England is more than saturated with colonies which it cannot exploit, because it lacks the men and women. It must be said, with all emphasis, that it is high time to satisfy German Colonial demands".

Discussing the same problem in *Ends and Means*, Huxley writes: "In the past Sweden, Portugal and Holland attempted to keep up the status of a Great Power on the basis of a population that was absolutely and relatively small. All of them failed in the attempt. If only for demographical reasons, Britain should take all possible steps to avoid a struggle for imperial power which, if not immediately fatal, will almost certainly prove fatal a couple of generations hence." There is no intention, however, to enter here upon a discussion of the impact of population on foreign policy, but Sir Kingsley Wood, Minister of Health, stated at the Conservative Party Conference, that this was a matter which considerably affected our National and Imperial destiny. It was one of considerable moment in determining our future social and economic policy. Future population, he remarked, was determined many years ahead, and if we

ignored this problem now, it might well be too late.

It is not too much to hope that if steps are taken to raise the replacement rate they will not be actuated by pressure from those who may feel that our declining birth rate will have serious consequences to National or Imperial security. Military considerations were responsible for the censuses carried out in the kingdom of Ancient China in 788 B.C. and 589 B.C. Reasons of a like nature are at work in similarly autocratic European countries to-day, despite their claim to be both progressive and modern, but nevertheless it is to be desired that in a democracy such as ours other considerations of a higher social order will have both value and influence.

The demographic problem in four to five years' time can be summarised as the impact of a progressively declining and ageing population, with a heavy proportion of "suspended mortality", on our delicately balanced economic and social structure.

Mr. J. M. Keynes thinks that "the first result to prosperity of a change-over from an increasing to a declining population may be very disastrous". On the other hand, he is of the opinion that, always assuming (by no means a justifiable assumption) we show the necessary wisdom and foresight, we may be able to utilise the change-over to raise the general standard of living. The importance of his views are such that the concluding words of the Galton Lecture

he delivered before the Eugenics Society on 16th February, 1937, follow:

"Yet there will be many social and political forces to oppose the necessary change. It is probable that we cannot make the changes wisely unless we make them gradually. We must foresee what is before us and move to meet it half-way. If capitalist society rejects a more equal distribution of incomes and the forces of banking and finance succeed in maintaining the rate of interest somewhere near the figure which ruled on the average during the nineteenth century (which was, by the way, a little *lower* than the rate of interest which rules to-day), then a chronic tendency towards the under-employment of resources must in the end sap and destroy that form of society.[1] But if, on the other hand, persuaded and guided by the spirit of the age and such enlightenment as there is, it permits—as I believe it may—a gradual evolution in our attitude towards accumulation, so that it shall be appropriate to the circumstances of a stationary or declining population, we shall be able, perhaps, to get the best of both worlds—to maintain the liberties and independence of our present system, whilst its more signal faults gradually suffer euthanasia as the diminishing importance of capital accumulation and the rewards attaching to it fall into their proper position in the social scheme. A too rapidly declining population

[1] Professor Warnring of the University of Copenhagen predicts (in relation to population decline in Denmark) that the rate of interest will become lower; the supply of capital will be greater; and the demand smaller.

would obviously involve many severe problems, and there are strong reasons lying outside the scope of this evening's discussion why in that event, or in the threat of that event, measures ought to be taken to prevent it. But a stationary or slowly declining population may, if we exercise the necessary strength and wisdom, enable us to raise the standard of life to what it should be, whilst retaining those parts of our traditional scheme of life which we value the more now that we see what happens to those who lose them."

It is undeniable that if we are to "exercise the necessary strength and wisdom" it is essential that the full extent of the problems and consequences to be faced should be weighed, appreciated and understood.

There has, however, been no intention in this chapter to give undue weight to the related factors: merely to indicate some of the consequences logically predictable which may ensue from ascertainable short-term demographic trends. Because, after all, the potential mothers and fathers for the next fifteen years are already born—nothing we can do can alter that fact except to reduce to a minimum infant, maternal and child mortality and premature deaths at all ages. The impression conveyed by an outline of the economic and social consequences may have been somewhat unpleasant, but that is not unusual when one is confronted with the almost illimitable multiplication of problems that follow from a review of the impending population decline.

This seems to have been appreciated by the Earl of Listowel, who stated in the House of Lords on 1st March, 1938, that "whatever the results of the enquiry under the Bill [the Population (Statistics) Bill], the Government (he hoped) would not delay to take action. This was a problem that waxed in magnitude with the passage of every year, and he hoped that shortly they would be able to welcome very drastic and far-reaching measures to cope with it. Otherwise it would mean the eclipse of this country as an independent nation and an increase in poverty such as one could hardly conceive in one's wildest dreams." [1]

Or as Professor A. M. Carr-Saunders (Chairman of the Population Investigation Committee) puts it: "The population of this country has now almost reached its peak; decline will shortly set in, and even if fertility remains at its present level that decline will soon become rapid. . . . Such a decline is not likely to be arrested, however, unless, as the result of careful investigations into all aspects of the matter, measures are taken to modify the social and economic situation in so far as it affects married people when they decide upon the size of their families. Hence the need for a considered policy, for the construction of which much more information and experience are needed than are available at present." [2] The Bill, it is hoped, will provide this data.

[1] *Times* Report.

[2] In Preface to *The Struggle for Population*, by D. V. Glass.

There appears little doubt, however, that the Government will eventually have to take far-reaching steps. Even such an eminent authority as Dr. R. R. Kuczynski, who has probably contributed more valuable work to our knowledge of population problems than any other living sociologist, significantly remarked in a paper read to the Eugenics Society on 25th May, 1937: "In a few years from now the Government very likely will be compelled to embark on a population policy which may become as costly as its present rearmament policy".

(4) IMMEDIATE AIMS

Whether they do or do not need not interest us at the moment. Our immediate concern should be the lives of the present population, and in particular the welfare of our young people upon whom the future will depend.

Before we come to measures to raise the birth rate it would appear to be essential that the preliminary steps should primarily comprise a consideration of our present treatment of these young people.

That being so it seems somewhat short-sighted for people like the Earl of Listowel and even the economist Mr. R. F. Harrod, to indulge in alarming prophecies. It is a trifle incongruous to worry over problems that may arise fifty years hence *before we know* how many young lives are being stunted,

deformed and wasted *to-day*. Any approach to the problem at the present time in which the demand for more children is either made or implied betrays insufficient or superficial enquiry into the reasons for such a demand or else a motivation similar to the aims influencing totalitarian ideologies. It is both illogical and inefficient to contemplate inducing people to have more children until we have judged the extent of contemporary waste in human life. It is a sobering thought that the House of Commons, in debating the declining birth rate in February 1937, contrived to fill 54 columns of Hansard without calling for an assessment of present-day premature mortality.

That is the fundamental purpose of this book—to attempt to discover whether everything that is humanly possible is being done to safeguard the present population, especially the younger generations, from premature death. Judged from every aspect of this problem, our first care should obviously be for the children already born. Therefore it should always be borne in mind in this and succeeding chapters that, but for higher fertility in the North and Wales in the past, the population of this country would by now be declining; and, what would be more serious, with great rapidity. The purpose of subsequent chapters is therefore to ascertain whether mortality rates for infants and children have been brought down to an irreducible minimum. Further, are the lives of our young people as healthy and as free from inherent disease as is

consistent with their future responsibilities as parents? In short, is there at present any avoidable wastage of lives among children and among potential mothers between the ages of 15 and 44?

What we are doing for those who are alive and who will have to face these population problems in ten to twenty years will not only condition the extent and effect of the problems, but appears to be at the present time by far the most important preliminary consideration. Therein lies the explanation of the importance of ascertaining the incidence of poverty in relation to the future population, for as Mr. D. V. Glass concludes (in *The Struggle for Population*): "If there is to be any significant increase in the birth rate, the major part must come from the working-class. Consequently, no action is likely to have a permanent influence unless it provides conditions in which the working-class is able to bring up children without thereby suffering from economic and social hardship."

The next chapter deals very briefly with the problem of population from the qualitative aspect. This book is, however, largely concerned with the incidence and impact of poverty on population and the factors which tend to malnutrition and premature death. Owing to the size and complexity of the numerous inter-related problems it no doubt falls short in many places, but an attempt is made to bring together as much as possible of the available information, for the student of these

problems might do well to remember Sismondi's saying: "The true problem of the statesman is to find the combination and the ratio of population to wealth which will assure most happiness to the human race on a given area".

CHAPTER II

THE PROBLEM OF NATIONAL INTELLIGENCE

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THERE is an ever-growing volume of information, statistics and opinions on the quantitative aspect of population; less attention is, however, being paid, and has been directed, to the qualitative point of view, with perhaps the exception of Dr. Cattell's book *The Fight for our National Intelligence*, and the work of the Eugenics Society.

It is axiomatic that any attempt to assess the national average level of intelligence (graded for instance according to range of intelligence quotient) is not only extremely difficult but highly complex. Further, if it is attempted to observe changes in the level over a given period, the complications brought to bear by the coactive influence of many inter-related socio-economic factors are greatly intensified.

The scope of this book cannot, of course, extend to cover such wide, one might almost say illimitable, fields. It is only intended here to emphasise that in any consideration of future numbers the qualitative aspect must not be overlooked.

It is held by many sociologists that intelligence is inherited. To an extent that may be so, but it does not necessarily follow that unsatisfactory treatment and environmental conditions will make

no difference to the development and future potential use of the innate characteristics. American psychologists such as Holzinger, Freeman and Mitchell have demonstrated to considerable effect the modifying influence of changes in environment on the intelligence of children even at comparatively late ages. There is, too, undoubted evidence attesting to the fact that certain defects (mainly nutritional in origin) during early childhood lead to a definite deterioration in intelligence. Recent research among school children in Iowa showed that malnutrition affected intelligence. Many a child classed as dull or backward should have been recorded as deficient in vitamin A. A definite quantity of vitamin intake is necessary to maintain the nervous system in condition to respond to stimuli. A child deficient in some food constituent may be apathetic and dull. E. V. McCollum has demonstrated in the U.S.A. that malnutrition is the cause of listless, irritable children, many of whom evince spasmodic nervous activity. There are substantial reasons for thinking that dietetically balanced meals increase mental output. A recent experiment at Roding School, Essex, carried out by Dr. A. H. Seymour and J. E. F. Whitaker aimed at comparing the educational, psychological and physiological effects of a properly balanced breakfast with those of the breakfast normally received by a group of infant school children of five to six years of age, below the average in intelligence, and coming from poor homes. Although the experiment was on a relatively small scale, and therefore

caution is necessary, it would seem, to quote the words of the investigators, " highly probable that when an adequate, dietetically balanced breakfast is given to infant school children below the average in intelligence, they develop a greater gain in weight, a higher hand temperature, greater mental output, and greater progress in school subjects (English, poetry and arithmetic) than is shown by an otherwise identical group of infant school children (the control group) who continue to have their unsatisfactory breakfasts at home (quantities of bread and jam and tea). These children come, on the whole, from the poorer homes ". Summarising their work, the investigators write, " The results of the present experiment suggest that a better breakfast may effect at least a 10 per cent improvement in mental output and in school progress " [1] From the growing volume of evidence there appears to be little doubt that sustained vitamin and mineral deficiencies have a harmful effect on mental ability. Once the damage has been done it is doubtful whether it is possible to eradicate deleterious effects. It is often overlooked that mental and physical injury can be sustained before school age. Pronounced differences in intelligence quotients among children of school age with approximately similar family environments are not necessarily a valid index of inborn endowment. Such differences may well be the logical result of satisfactory or

[1] See also reference to Oslo experiment in free breakfasts (Chapter IV).

unsatisfactory uterine and neo-natal environment. Recent research into twin resemblance supports this view. The extent and influence of poverty—implying malnutrition—in its bearing on the national intelligence is therefore apparent; its importance being in direct ratio to the spread and degree of differential fertility. Given a relatively insignificant incidence of differential fertility, as was perhaps the case in the early nineteenth century, the conditioning influence of poverty on national intelligence was consequently limited, but to-day its effect on the destiny of the nation is demonstrably increased.

From the growing use of intelligence testing among children the results illustrate in most cases that children drawn from the "higher" social groups tend on the average to be placed above those coming from the "lower" or poorer groups. But so far no evidence is forthcoming to prove that the reason may not be found among social causes. There is indeed plenty of evidence to support the environmentalist's case, as we still have no conclusive proof of the simple inheritance of intelligence. Moreover, it is extremely doubtful whether we shall have until some means are found to either isolate or standardise environmental influences.

Elsewhere in this book it is statistically adduced that we are becoming more and more dependent in even maintaining our present low rate of replacement on the children born, not in the more favourable economic environment of the South, but in

the less satisfactory conditions existing in the less prosperous areas of the country. The majority of our present child population are being "educated" and brought up in those areas of England and Wales most exposed to malnutrition-inducing conditions.

Although we have insufficient knowledge of differential fertility in this country, there is no doubt from a study of the tables included in later chapters that wealth and babies are distributed inversely throughout England and Wales. Whether children produce poverty, poverty produces children, or the absence of children tends to wealth, cannot be scientifically assessed. But at least what can be inferred is that such a distribution does not appear from a national standpoint to be a sensible arrangement. Whilst the presence or possession of wealth does not by any means imply intelligence or the possession of those qualities which make for a stable, responsible, co-operative member of the community, it is, on the other hand, difficult to avoid the conclusion that high and sustained unemployment, unfavourable environment, overcrowding and excess mortality and morbidity will, sooner or later, tend to reduce the local-regional-national incidence of independent, responsible, co-operative and intelligent citizens. Thus, on broad lines, it can be laid down that if we continue to rely in increasing numbers on depressed communities for our children, and then in many cases at an unduly early age move and redistribute them over the country, no surprise need be

evinced if there is a consequent rise in the number and incidence of unstable, irresponsible, unemployable, delinquent, dull and backward individuals. With the experience of prolonged unemployment for the last fifteen years or so, social workers have by now come to appreciate something of the demoralising and devitalising effects on not only the workless themselves and their families but on the constituent community which is suffering from a sustained high incidence. Innate intelligence may be there in the children but the constant pressure of unsatisfactory home conditions, "unemployment atmosphere", malnutrition and other factors, will have the tendency to produce dull, backward, temperamentally unstable and slightly subnormal children. With the whole background of their lives unsatisfactory, it is not improbable that whilst their bodies are being damaged physically their immature minds are also suffering.

What will be the cumulative effect of past and present socio-economic conditions on the national level of intelligence it is difficult to foresee, but Dr. Cattell, in his book, draws some depressing conclusions. He bases these primarily on what he thinks is our "tendency for the population to be recruited increasingly from the sub-men". He holds that the distribution of intelligence in our population approximates to an easily discoverable and fairly definite form—that of the normal distribution curve. This curve reveals that about half the population is composed of people with intelligence quotients

ranging between 85 and 115, that one-quarter straggles below 85, some 4 per cent being below 70, and that about one-quarter consists of more or less gifted individuals above 115 with a small fraction rising to 180 or more. Now, according to Dr. Cattell, psychologists have become aware of the fact that this distribution curve is at present altering in such a way as to reduce the number of high intelligences and increase the proportion of low ones through the birth rate of the latter being considerably higher than among the former. A survey of intelligence was recently carried out by Dr. Cattell. In one typical industrial city and one unspoilt rural area all the children born in a certain year were tested with intelligence tests, which were of a non-verbal kind designed to avoid as far as possible any effects due to differing social backgrounds. In both areas the findings were the same: an inverse relation between intelligence and size of family throughout the whole range of intelligence. The highly gifted group was far from maintaining its numbers, whilst the dull and defective were contributing an increasing proportion to the population of the next generation. Consequently if intelligence, as thus tested, is inherited, and there are no large counteracting factors, we may expect the distribution curve in the next generation to show a marked decline above an I.Q. of 110 and a decided bulge at the level of the dull and subcultural. On the same basis, Dr. Cattell is of the opinion that in thirty years' time we may expect a 24 per cent increase in mental deficiency, and, what

is probably more important, a reduction of the number of gifted children of secondary school type—above an I.Q. of 120—by about 35 per cent. This forecast cannot be regarded with complacency when we remember that the last commission on mental deficiency, the conclusions of which, embodied in the Wood Report, are generally agreed to have been very cautious, admitted the probability of an increase in mental deficiency, whilst its statistical findings, if taken at face value, showed that the percentage of feeble-minded persons had almost doubled in twenty years. Professor J. B. S. Haldane in a recent book, *Heredity and Politics*, in discussing dysgenic trends, remarks: "If the existing differences in fertility of social classes continue we may expect a slow decline of perhaps one or two per cent per generation in the mean intelligence quotient of the country. That is, on the whole, deplorable."[1]

Related to this question of the distribution of innate ability is the factor of educational opportunity. To what extent is the opportunity for higher education restricted for the children of the poorer classes? In an important study, involving statistical research and the application of intelligence tests to a sample of over ten thousand children in all the main types of English schools, J. L. Gray and Pearl Moshinsky reach two conclusions: first,

[1] Dr. H. Crichton-Miller, in giving the Sir Charles Hastings lecture at the British Medical Association's headquarters on 7th April, 1938, emphasised that the intelligence quotient of the nation was declining.

that ability is widely distributed, there being no shortage of gifted children in the community ; and second, that about half the children of high ability do not enjoy the opportunity of higher education.[1]

It is easily visualised how basically important is this question of the opportunities for higher education, more particularly if differential fertility is affecting the national level of intelligence and assuming, as appears likely, that environment conditions ability. It is indeed difficult to disprove the assertion that through the weighting of educational opportunity in favour of the economically privileged classes there is a considerable social wastage of valuable personnel.

From the more restricted viewpoint of the intelligence level in specific communities and areas with declining populations, it does not appear unreasonable to postulate that intensive migration of the best types of individuals drawn mainly from young age groups will have detrimental effects. The possibility, for instance, of marriage for those who remain will be confined. It is not unlikely, as experience has shown, that greatly depopulated communities with an unfavourable environment will tend to develop into " clusters of subnormals ".

According to the Fifth Report on the Work of the Children's Branch, published by the Home Office in January, 1938, the amount of Juvenile Delinquency is on the increase despite a fall in the

[1] *Political Arithmetic : A Symposium of Population Studies.*

child population. Taking the main group (boys under 14), the number found guilty has risen from 5997 (estimated population 1,956,900) in 1929 to 13,702 (estimated population 1,909,800) in 1936. An increase is also registered for boys 14–16 and girls under 14 and 14–16. This is confirmed by the figures included in the Criminal Statistics for England and Wales (1936), the increases in the number of child offenders being described by *The Times* as " disquieting ". The number of offenders under the age of 17 rose from 20,540 in 1934 to 27,126 in 1936, again, it should be remembered, with a falling population.

It is a matter for regret that we have no statistics relating to the regional incidence of juvenile delinquency, because these boys and girls are not born with criminal characteristics. Considerable influences must be at work to result in a rise in law-breaking, and although there are probably many causational factors, poverty, malnutrition and environment must loom large in the scale. There is an undoubted relationship between the criminality rate (implying the presence of poverty and unsatisfactory environment) and unemployment figures. For example, see S. K. Ruck, " The Increase of Crime in England ", *Political Quarterly*, vol. 111 (2), 1932.

Another indication of the rise in the number of those who are mentally deficient is shown by the increase in the rate-aided patients in mental hospitals. From 106,658 on 31st March, 1930, the

number rose to 119,867 on 1st January, 1937.[1] It is doubtful, however, whether any considerable value can be attached to these figures when the rising average age of the population is taken into account.

From a study of all the available material one solution which constantly offers itself is that the most likely method of effecting an improvement in national intelligence and social competence would be to raise the social conditions under which the majority of our children are reared. As it has been indicated that the major proportion of our future citizens are drawn from the depressed North and Wales, this conclusion applies with added force to these particular regions.

[1] In 1937 the cost of Mental Hospitals and Mental Deficiency Institutions amounted to £10,602,374. Yet nothing apparently was spent by the State on research into the relationship between diet and mental deficiency.

CHAPTER III

MORTALITY ANALYSIS

(1) Introduction.
(2) Explanation of Tabulated Statistics.
(3) Tabulated Statistics:
    (*a*) North.
    (*b*) North I.
    (*c*) Wales and Wales I.
    (*d*) Explanation of Diagram No. II.

CHAPTER III

MORTALITY ANALYSIS

(1) INTRODUCTION

THE causes of many of the pathological conditions are now known, and it would therefore seem to be of national importance that knowledge of the incidence of such conditions should be fully available. If we are without that knowledge we cannot estimate the relative importance to the community of different causative factors. It is particularly regrettable that, apart from school children, we have not had, and still do not possess any means of assessing the physical condition of the nation. Nevertheless, it is beyond dispute that in the mass of the people there has been a great improvement during the last thirty to forty years.

The very existence of this fact should not blind us from recognising that, even judged on the higher standard achieved in some districts and areas, we have travelled but a small part of the way towards perfection. The wrongs of to-day and the creation of evils to-morrow cannot be legitimately dismissed by recounting the errors of yesterday.

The only means we possess to-day of measuring

the condition of the people are the vital statistics supplied by the Registrar-General's Office. These are invariably used by the Government when comparisons are made concerning the health of the nation, the emphasis being laid generally on the improvement in the expectation of life at different ages and the maternal and infant mortality rates. Nevertheless, it is becoming evident, particularly from the viewpoint of the distribution of the population over the whole of the country, that deficiencies exist in the collection and arrangement of these vital statistics. This aspect has been referred to in regard to the Population (Statistics) Bill, but there is another, equally important, and that is the correlation and presentation of the ascertained facts.

The presentation of the relative vital statistics in this chapter in a rearranged fashion raises, *en passant*, the suggestion that the Registrar-General might with advantage adopt such a revised format. A clearer and condensed regional analysis would assist in directing social and economic legislative efforts in the right channels and for those whose needs are most urgent.

Reference has already been made to the fact that from even a superficial examination of the statistics certain areas have reached a higher level of health than others. To eradicate any possibility of bias, large regions have been chosen for analysis, thus obviating any purely localised favourable or unfavourable factors. Scotland, where conditions would appear to be far worse than in either the North or Wales, has

not been included for the reason that it should properly form the subject of a separate enquiry.

For England and Wales, mortality in different age groups in certain large regions has been investigated and the results compared with the region producing the healthiest figures. The chief "killing" diseases have also been analysed age group by age group and the results disclose the regional incidence of certain causative factors. Statistical attention has also been paid to the distribution of maternal and infantile mortality and Army and Air Force rejection figures as providing confirmatory evidence of the value of the main regional analyses. The Tabulated Statistics are prefaced by tables showing (1) the age composition of the regions in question, and (2) the distribution of deaths in age groups expressed as a percentage of the total regional mortality. The latter afford correlative evidence of considerable value and should be contrasted with other indices quoted in later chapters.

Much of the data could have been subjected to more refined treatment and certain other statistical processes in addition to the operations the vital figures have already undergone, but this might have involved overloading the analyses with considerable technical matter.

As this book is intended in the main for those conscious of the serious nature of many of the problems that afflict our society to-day, and not just a select minority of statisticians, sociologists or economists, it appeared undesirable to subject the

statistics to further treatment of an advanced nature.

(2) EXPLANATION OF TABULATED STATISTICS

In the majority of cases, comparisons have been made between the North and Wales and that area round London described by the Registrar-General as " Remainder of South East ", but abbreviated to, and represented in this book as " Standard ". This region covers Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Oxfordshire, Southampton, Surrey, Sussex and the Isle of Wight, but excludes those sections of certain counties coming within the area of Greater London, (population mid-1936, 5,616,940). This area appears, in the majority of age groups analysed, to have reached a higher level of health than any other geographical grouping employed by the Registrar-General. There are, however, some instances, such as Maternal Mortality, in which another region—in this particular case Greater London—produces better figures. In broad terms it is true to say that there is little deviation between mortality rates for " Standard " and the whole of the South East, which includes all the counties listed above, together with Greater London (population mid-1936, 14,192,640, equal to about one-third of the entire population of England and Wales).

It must be borne in mind that this region is not by any means residential; the South East is be-

coming industrialised to an extent not yet realised. Middlesex, in fact, is described by the compilers of *The Home Market* as "predominantly industrial". During recent years extraordinarily large industrial centres have grown up in London's outer ring. These centres include for example Barking, Dagenham, East and West Ham, Walthamstow, Watford, Slough, Reading, Luton, Chatham, Dartford, Gillingham, Gravesend, Acton, Enfield, Wembley, Willesden, Portsmouth and Southampton. That their population often outnumbers by thousands well-known industrial towns and cities in the Midlands and the North is generally overlooked. For instance, Willesden, which with all its industrial development can hardly be regarded as a dormitory centre, outnumbers both Huddersfield and Blackburn by approximately 70,000. Out of thirteen Welsh counties, the population of Willesden is only exceeded by two, Glamorganshire and Monmouthshire.

In the following tabulated statistics, and also in other tables in later chapters, attempts have been made in as many instances as possible to measure the extent of improvement that has already been achieved in either the "Standard" area, Greater London or the South East as a whole. The primary object is not to use some utopian standard of health but to assess *what has already been done in preventing premature death* and thereby to measure the extent of the surplus and unnecessary mortality in the North and Wales. Thus, in the realm of social

physiology, our tasks will be clearly and unmistakably defined.

The tabulated statistics show the percentage of actual deaths exceeding or falling short of the expected deaths, *i.e.* the deaths that would have occurred had the " Standard " rate obtained. The excess percentages indicate, therefore, the extent of departure above " Standard " rates, or, in other words, the extent of excess deaths above the number of deaths which would have occurred if the " Standard " rate had obtained in the area under consideration.

Notes

A. The various populations quoted (for any year excluding census years) are those estimated by the Registrar-General as obtaining at mid-year.

B. South Wales is described as Wales I (see Tabulated Statistics). Durham and Northumberland are described as North I (see Tabulated Statistics).

C. The appended list of causes of death cited in this book shows the numbers adopted by the Registrar-General (abridged list) and the corresponding number in the Detailed International List.

LIST OF CAUSES OF DEATH

Registrar-General's Abridged List	*Detailed International List*
No.	No.
2. Measles	7
3. Scarlet fever	8
4. Whooping Cough	9
5. Diphtheria	10
6. Influenza	11
7. Encephalitis lethargica	17
8. Cerebro-spinal fever	18
9–10. Tuberculosis of respiratory system and other tuberculous diseases	23–32
13. Cancer, malignant disease	45–53
16. Heart disease	90–95
17. Aneurysm	96
18. Other circulatory diseases	97–103
19–21. Bronchitis, pneumonia and other respiratory diseases	104–114
29–30. Puerperal sepsis and other puerperal causes	140–150
31. Congenital debility, premature birth, malformations, etc.	157–161
32. Senility	162
33. Suicide	163–171
34. Other violence (accidental deaths, mainly road deaths, etc.)	172–198

TABLE 3

Age Structure of Certain Regional Populations

(Based on Table 2 of Registrar-General's Statistical Review, Part I, Medical, for 1936 (Estimated Resident Populations by Sex and Age, Mid-Year 1936))

Region	Age Groups									
	0–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75 Up	
North . .	7·1	15·9	16·1	16·7	14·4	12·5	10·0	5·5	1·8	100·0
North I . .	8·0	18·7	16·2	16·2	13·7	11·5	9·1	4·9	1·7	100·0
Wales . .	7·1	17·7	15·7	16·1	14·1	11·9	9·8	5·5	2·1	100·0
Wales I . .	7·3	18·5	16·0	16·3	14·4	11·7	9·2	4·9	1·7	100·0
South East .	6·5	14·3	16·3	17·0	14·3	12·6	10·2	6·2	2·6	100·0
"Standard" .	6·5	14·3	15·4	15·9	14·0	12·7	10·8	7·2	3·2	100·0
England and Wales	6·9	15·4	16·1	16·7	14·2	12·4	10·1	5·9	2·3	100·0

TABLE 4

DEATHS BY AGE GROUPS EXPRESSED AS A PERCENTAGE OF THE TOTAL MORTALITY IN EACH REGION

(Based on Table 20 of Review as above (Deaths at Different Ages, 1936))

Region	Age Groups											
	Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 Up	
North .	8·0	3·0	2·3	3·2	4·0	5·4	9·9	17·8	24·5	18·1	3·8	100·0
North I .	10·1	3·6	2·9	4·0	4·4	6·1	9·3	16·6	22·8	16·6	3·6	100·0
Wales .	7·2	2·4	2·0	3·8	4·6	5·5	9·6	17·1	24·3	18·9	4·6	100·0
Wales I .	7·7	2 5	2·2	4·1	4·9	5 9	10·5	17·7	23·9	16·8	3·8	100·0
South East .	6·5	2·2	1·7	2·9	3·8	4·9	9·1	16·1	23·7	21·8	7·3	100·0
"Standard"	5·4	1·6	1·6	2·6	3·4	4·5	8·4	15·1	24·7	24·0	8·7	100·0
England and Wales	7·1	2·5	2·0	3·1	3·9	5·1	9·3	16·6	24·0	20·6	5·8	100·0

TABULATED STATISTICS

(a) *North*

(1936: Durham, Northumberland, Cumberland, Westmorland, Yorkshire, Cheshire and Lancashire: population, 13,129,537)

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
AGE GROUP 0–1			
11% excess births above South East (being a reduction for the North from 63·5 in 1935 to 63·3 per 1000 live births to women in the age group 15–44)	Stillbirths	30	2160
	Deaths— All causes	50	4487
	Congenital debility, premature birth, malformations, etc.	31	1665
	Bronchitis, pneumonia and other respiratory diseases	84	1211
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 48%			

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
AGE GROUP 0–4			
This group represents 7·1% of total population or 9% more than the same "Standard" group. 21,600 less children than in 1935	All causes	58	6883
	Congenital debility, premature birth, malformations, etc.	30	1637
	Bronchitis, pneumonia and other respiratory diseases	85	1901
Deaths in the age group (1–4), expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 88%			
AGE GROUP 5–14			
This group represents 15·9% of total population or 11% more than the same "Standard" group. 61,900 less children than in 1935	All causes	48	1296
	Diphtheria	208	650
	Tuberculosis	65	190
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 44%			
AGE GROUP 15–24			
This group represents 16·1% of total population or 5% more than the same "Standard" group. 9400 more persons than in 1935	All causes	31	1308
	Tuberculosis	63	789
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 23%			
AGE GROUP 25–34			
This group represents 16·7% of total population or 5% more than the same "Standard" group. 6400 less persons than in 1935	All causes	23	1257
	Tuberculosis	7	116
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 18%			
AGE GROUP 35–44			
This group represents 14·4% of total population or 3% more than the same "Standard" group. 24,800 more persons than in 1935	All causes	27	1927
	Tuberculosis	11	153
	Heart disease	74	591
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 20%			

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
AGE GROUP 45–54			
This group represents 12·5% of total population or 2% less than the same "Standard" group. 3900 more persons than in 1935	All causes	31	3948
	Cancer	17	475
	Heart disease	57	1276
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 18%			
AGE GROUP 55–64			
This group represents 10% of total population or 7% less than the same "Standard" group. 15,400 more persons than in 1935	All causes	39	8436
	Heart disease	52	2790
	Cancer	15	811
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 18%			
AGE GROUP 65–74			
This group represents 5·5% of total population or 24% less than the same "Standard" group. 14,100 more persons than in 1935	All causes	42	12,207
	Heart disease	45	4334
	Cancer	13	786
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 1%			
AGE GROUP 75 UP			
This group represents 1·8% of total population or 44% less than the same "Standard" group. 4100 more persons than in 1935	All causes	29	8328
	Heart disease	28	2981
	Bronchitis, pneumonia and other respiratory diseases	30	768
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 33%			

MORTALITY AMONG WOMEN

AGE GROUP		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
15–24	All causes	46	834
25–34	" "	23	632
35–44	" "	26	902
			2368
Maternal Mortality (Based on rate per 1000 live and stillbirths)			
15–44	(above Greater London)	101	464

(b) *North I*

(1936: Durham and Northumberland: population, 2,222,270)

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
AGE GROUP 0–1			
29% excess births above South East (being a reduction for North I from 75·0 in 1935 to 73·1 per 1000 live births to women in the age group 15–44)	Stillbirths	25	333
	Deaths— All causes	65	1096
	Congenital debility, premature birth, malformations, etc.	35	349
	Bronchitis, pneumonia and other respiratory diseases	105	279
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 87%			
AGE GROUP 0–4			
This group represents 8·0% of total population or 23% more than the same "Standard" group. 7600 less children than 1935	All causes	67	1507
	Congenital debility, premature birth, malformations, etc.	29	305
	Bronchitis, pneumonia and other respiratory diseases	96	409
Deaths in the age group (1–4) expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 125%			

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
AGE GROUP 5–14			
This group represents 18·7% of total population or 31% more than the same "Standard" group. 13,600 less children than in 1935	All causes	49	263
	Diphtheria	227	141
	Tuberculosis	112	65
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 81%			
AGE GROUP 15–24			
This group represents 16·2% of total population or 5% more than the same "Standard" group. 500 more persons than in 1935	All causes	52	373
	Tuberculosis	125	265
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 54%			
AGE GROUP 25–34			
This group represents 16·2% of total population or 2% more than the same "Standard" group. 2500 less persons than in 1935	All causes	33	297
	Tuberculosis	36	103
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 29%			
AGE GROUP 35–44			
This group represents 13·7% of total population or 2% less than the same "Standard" group. 2900 more persons than in 1935	All causes	44	507
	Tuberculosis	40	92
	Heart disease	96	126
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 36%			
AGE GROUP 45–54			
This group represents 11·5% of total population or 10% less than the same "Standard" group. 500 less persons than in 1935	All causes	28	562
	Cancer	17	73
	Heart disease	41	140

		Percentage of Excess Deaths above "Standard" Rates	Excess of "Actual" over "Expected" Deaths
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 11%			
AGE GROUP 55–64			
This group represents 9·1% of total population or 16% less than the same "Standard" group. 1400 more persons than in 1935	All causes	36	1214
	Heart disease	47	385
	Cancer	12	94
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 10%			
AGE GROUP 65–74			
This group represents 4·9% of total population or 32% less than the same "Standard" group. 1600 more persons than in 1935	All causes	40	1784
	Heart disease	38	560
	Cancer	12	105
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 8%			
AGE GROUP 75 UP			
This group represents 1·7% of total population or 47% less than the same "Standard" group. 300 more persons than in 1935	All causes	26	1157
	Heart disease	16	258
	Bronchitis, pneumonia and other respiratory diseases	29	111
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 38%			

MORTALITY AMONG WOMEN

AGE GROUP			
15–24	All causes	74	217
25–34	,, ,,	37	162
35–44	,, ,,	40	216
			595
Maternal Mortality (Based on rate per 1000 live and stillbirths)			
15–44	(above Greater London)	120	102

ARMY REJECTIONS, 1936

(Young Men, Age Group approximately 15–24. Percentage of Rejections to Total Recruits and Applicants)

War Office Regional Grouping	Rejections	Excess above Rejection Rate for Home Counties
	%	%
Northumbrian . .	51	59
West Riding . . .	49	53
West Lancashire . .	57	78
East Lancashire . .	58	81

(c) *Wales and Wales I*

(1936: Whole of Wales: population, 2,516,880. Wales I, comprising Brecknockshire, Carmarthenshire, Glamorganshire and Monmouthshire: population, 1,830,720)

		Percentage of Excess Deaths above "Standard" Rates		Excess of "Actual" over "Expected" Deaths
		Wales	Wales I	Wales
AGE GROUP 0–1		%	%	
17% excess births above South East. A reduction for Wales from 68·4 in 1935 to 66·2 per 1000 live births to women in the age group 15–44. For Wales I a reduction from 69·2 in 1935 to 66·9	Stillbirths	59	61	801
	Deaths— All causes	38	38	645
	Congenital debility, premature birth, malformations, etc.	32	32	322
	Bronchitis, pneumonia and other respiratory diseases	40	44	107
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 33% Wales, 43% Wales I				
AGE GROUP 0–4				
This group represents 7·1% of total population (Wales)	All causes	36	37	830
or 9% more than the same "Standard" group. 8700 less children than in 1935	Congenital debility, premature birth, malformations, etc.	27	27	285

		Percentage of Excess Deaths above "Standard" Rates		Excess of "Actual" over "Expected" Deaths
		Wales	Wales I	Wales
	Bronchitis, pneumonia and other respiratory diseases	33	39	141
Deaths in the age group (1–4) expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 50% Wales, 56% Wales I				
AGE GROUP 5–14				
This group represents 17·7% of total population (Wales) or 24% more than the same "Standard" group. 15,100 less children than in 1935	All causes	14	13	82
	Diphtheria	51	41	34
	Tuberculosis	48	55	30
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 25% Wales, 38% Wales I				
AGE GROUP 15–24				
This group represents 15·7% of total population (Wales) or 2% more than the same "Standard" group. 1000 more persons than in 1935	All causes	55	58	433
	Tuberculosis	128	136	298
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 46% Wales, 58% Wales I				
AGE GROUP 25–34				
This group represents 16·1% of total population (Wales) or 1% more than the same "Standard" group. 3000 less persons than in 1935	All causes	49	49	499
	Tuberculosis	63	66	205
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 35% Wales, 44% Wales I				

		Percentage of Excess Deaths above "Standard" Rates		Excess of "Actual" over "Expected" Deaths
		Wales	Wales I	Wales
AGE GROUP 35–44				
This group represents 14·1% of total population (Wales) or under 1% more than the same "Standard" group. 2300 more persons than in 1935	All causes	32	35	431
	Tuberculosis	19	21	51
	Heart disease	86	108	132
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 22% Wales, 31% Wales I				
AGE GROUP 45–54				
This group represents 11·9% of total population (Wales) or 6% less than the same "Standard" group. 1200 less persons than in 1935	All causes	35	43	810
	Cancer	16	19	82
	Heart disease	71	92	288
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 14% Wales, 25% Wales I				
AGE GROUP 55–64				
This group represents 9·8% of total population (Wales) or 9% less than the same "Standard" group. 1400 more persons than in 1935	All causes	38	44	1556
	Heart disease	53	65	529
	Cancer	14	12	134
Deaths in this age group expressed as a percentage of the total mortality in the area exceed those in the same "Standard" age group by 13% Wales, 17% Wales I				
AGE GROUP 65–74				
This group represents 5·5% of total population (Wales) or 24% less than the same "Standard" group. 1500 more persons than in 1935	All causes	40	49	2249
	Heart disease	44	59	822
	Cancer	7	5	83
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 2% Wales, 3% Wales I				

		Percentage of Excess Deaths above "Standard" Rates		Excess of "Actual" over "Expected" Deaths
		Wales	Wales I	Wales
AGE GROUP 75 UP				
This group represents 2·1% of total population (Wales)	All causes	24	27	1471
or 34% less than the same "Standard" group. 1000	Heart disease	19	25	445
more persons than in 1935	Bronchitis, pneumonia and other respiratory diseases	33	38	180
Deaths in this age group expressed as a percentage of the total mortality in the area are less than those in the same "Standard" age group by 28% Wales, 37% Wales I				

Mortality among Women

AGE GROUP		%	%	
15–24	All causes	100	108	322
25–34	,, ,,	59	63	286*
35–44	,, ,,	33	39	204
				812
Maternal Mortality (Based on rate per 1000 live and stillbirths)				
15–44	(above Greater London)	138	145	120

* Whilst maternal mortality showed a fall (on 1935) of 12% in Wales, the percentage surplus of this group (25–34) showed an increase from 48% (246 surplus). The rate increased from 3·7 to 3·8 (Wales I, 3·9) against a fall in England and Wales as a whole from 2·9 to 2·7. The other two groups show slight falls in percentage surplus from (Wales) 105 to 100 and 38 to 33.

Army Rejections, 1936

(Young Men, Age Group approximately 15–24. Percentage of Rejections to Total Recruits and Applicants)

War Office Regional Grouping	Rejections	Excess above Rejection Rate for Home Counties
	%	%
Welsh	47	47

TABLE 4A

PERCENTAGE OF DEATHS BY VIOLENCE AND SUICIDE TO TOTAL DEATHS

Region	Age Group		
	5–14	15–24	25–34
	%	%	%
North	11	14	11
North I	9	11	11
Wales	11	15	11
Wales I	12	14	10
South East	15	18	13
"Standard"	15	22	14

NOTE.—These deaths, it must be remembered, have been included in the general death rates for the various age groups and produce a higher death rate in the South East, thus reducing the surplus deaths in the North and other regions when compared with the rate for deaths from all causes in the South East. The position, therefore, particularly for these three age groups in the North and Wales, is made to appear better than it actually is.

(*d*) EXPLANATION OF DIAGRAM NO. II

A. 0 represents throughout the "Standard" rate.

B. Dark shading. Difference in population (by age groups) between North I and "Standard". In other words, the percentage excess or deficiency after comparing the proportions of constituent age groups in each areal population. (Total population in each area = 100.)

C. Light shading. Deaths in each age group have been expressed as a percentage of the total areal mortality. This shading thus indicates the excess or deficiency as compared with the "Standard" percentage. (Total mortality in each area = 100.)

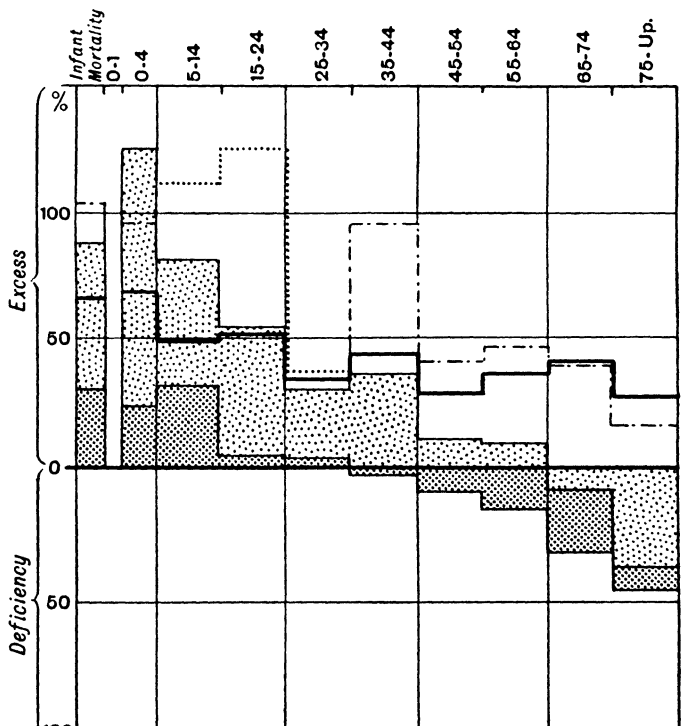
D. Heavy black line. Percentage of excess deaths in each age group above "Standard" rates.

E. Dots–dashes for age groups 0–1 and 0–4. Percentage of excess deaths above "Standard" from bronchitis, pneumonia, and other respiratory diseases.

F. Dots for age groups 5–14, 15–24 and 25–34. Percentage of excess deaths above "Standard" from tuberculosis.

DIAGRAM II

THE DISTRIBUTION OF POPULATION AND MORTALITY BY AGE GROUPS IN THE "STANDARD" AND NORTH I AREAS (1936)



G. Dots–dashes for age groups 35–44 upwards. Percentage of excess deaths above "Standard" from diseases of the heart.

The population line (B) is a reflection of excess deaths (and, to a very limited extent, voluntary migration and industrial transference) in the past. With a high excess of births in the past (29 per cent for 1936) there should be—after allowing for "Standard" death rates obtaining at all ages—a correspondingly high number of persons in each component age group, the percentages of which should thus approximate to the "Standard".

The correlation between B, C and D should be noted. It will be observed that, despite the fact that there is a much smaller proportionate number of old people (65 +) in North I, there is still a considerable excess in the death rates as compared with "Standard". The fact that fewer survive, therefore, does not appear to indicate that those who do are "conditioned". On the contrary the excess rates rise in the older and more susceptible age groups until 75 + when there is a fall, due no doubt to the fact that so few survive in the North to 75 in comparison with "Standard". To a certain extent those that do may no longer be sensitive to the pressure of those factors that induce excess mortality in the younger age groups. As regards causes of death, the diagram illustrates clearly:

1. High excess mortality from bronchitis, pneu-

monia and other respiratory diseases during ages 0–4.

2. High excess mortality from tuberculosis during ages 5–24.
3. High excess mortality from diseases of the heart during early middle age, namely, 35 + .

CHAPTER IV

INFANT MORTALITY

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INFANT MORTALITY

THE Prime Minister, speaking at Edinburgh on 12th November, 1937, said, in discussing public health, "sometimes we take infant mortality rates as a sort of general pointer to show how health is improving. If you do that, the story is very wonderful, because in the last forty years . . . that is not much more than half my own lifetime . . . the infant mortality rate has come down from 156 to 59 per 1000."

Enlarging on the subject of this improvement, Sir Arthur MacNalty, the Chief Medical Officer of Health, in his Introduction to the latest Annual Report (1936), states: "Maternity and Child Welfare continues to hold a prominent place in public interest both in this and in other countries. There is a real concern that unnecessary suffering and illness of both mothers and children should be avoided and that the toll of deaths should be reduced as far as this is humanly possible. There is a universal desire that maternity should be safeguarded and that young children should be given every opportunity for development which makes for healthy growth and for well-being in both body and mind."

In his Report he illustrates the saving of life by saying : " In 1936, 35,425 infants died under one year of age. If the 1901–10 rate had obtained in 1936, 77,477 infants would have died in the latter year. There has, therefore, been a saving to the country of about 42,000 lives of the newly-born." Later he notes that " Nothing is more remarkable than the decrease in infant mortality in the last thirty years, and, as was noted in the Annual Report for 1933, no spectacular improvement can now be anticipated. The lower the rate, the nearer one approaches the irreducible minimum." By adopting, however, the same approach as the Chief Medical Officer, it appears that if the same conditions and the same infant mortality rates that existed in 1936 in many towns of a " depressed " nature such as Jarrow, and Gelligaer (South Wales), etc., had obtained throughout the whole of England and Wales the nation would have lost in that one year approximately 25,000 more infants.

Yet similarly high rates operative in the quinquennium 1896–1900 were stigmatised by the Chief Medical Officer of Health (*Daily Telegraph and Morning Post Fitness Supplement*, 17th January, 1938) as " the wastage of human lives in the process [of improvement] has been terrible in the past ". When in this country in ten to twenty years' time the day-to-day state of the birth rate may well be " front page news ", it is difficult to avoid the conclusion that the wastage to-day may equally be described as " terrible ". Judged from the quanti-

tative aspects and ignoring any humanitarian standards, the attitude of complacency in 1901 based on improvement over the preceding forty years was perhaps understandable, but to-day, equipped with the great advances that medical knowledge has made and in the light of an impending population decline, but whilst still oblivious to the sum-total of human pain, can it be justified? Why, then, is it necessary to wait perhaps twenty years until we can have the courage that reality demands to describe infant mortality to-day as "terrible"? Despite, therefore, the opinion of the Chief Medical Officer of Health, it is not apparent from a thorough analysis of the geographical distribution of infant mortality that we are yet approaching the "irreducible minimum".

It is inconceivable that there can be more than one "irreducible minimum" in the world, yet New Zealand has reduced infant mortality to 32 per 1000 live births (1935) as against 57 for England and Wales (1935), and 59 (1936). Compare the rates in Table 5 on next page.

The fact that there are many countries in Europe and the rest of the world with a higher infant mortality rate is irrelevant whilst such wide divergencies exist within England and Wales.

Assuming that England and Wales as a whole achieve a national death rate equivalent to that prevailing in New Zealand (the highest expectation of life in the world, namely 65 years, obtains

in this Dominion), we should save over 16,000 infants per annum out of a total number of 35,425 deaths. Unless and until, however, those factors obtaining in the South (and in New Zealand, Scandinavia, etc.), conducive to a decline in infant mortality, prevail *pari passu* in the North and

TABLE 5

INFANT MORTALITY. COMPARISONS WITH OTHER COUNTRIES, 1935

(Per 1000 Live Births)

Coulsdon and Purley	32	New Zealand	32
Surrey	41	Natal	32
Home Counties	42	South Australia	35
South East as a whole	47	Queensland	37
Middlesex	48	New South Wales	39
Greater London	51	Australia as a whole	40
Midlands	59	Holland	40
Wales	63	Sweden	47
Glamorgan	63	Norway	48
North	68	Switzerland	48
Gelligaer	74	Province of Ontario (comprising one-third of total population of Canada)	56
North I	76		
Durham	76		
Scotland	77	U.S.A.	60
Sunderland	92	Union of South Africa	64
Jarrow M.B.	114	Germany	68
Riverside Area, Stockton-on-Tees. Mean of 1928–32 (see *Poverty and Public Health*)	134	Canada as a whole	71

Wales, we can look for no "spectacular improvement". But let it be said that as this improved rate has been achieved in some parts of the country, there appears to be no fundamental reason why it should not also obtain throughout England and Wales. That there is ground for improvement is exemplified by the tabulated statistics which disclose that over 5000 excess deaths occurred among

infants under the age of 1 in the North and Wales during 1936, or something like 30,000 surplus deaths since the slump of 1931.

The standard for measuring public health is surely not what was but what might be. As long as we fall short of that standard there is scope for improvement.

TABLE 6

INFANT MORTALITY IN CERTAIN COUNTIES AND TOWNS

Region	Population	Live Births	Deaths Under One	Rate	Deaths based on Surrey, 41·7	Excess Deaths	%
Durham .	1,458,520	25,528	1853	72·6	1065	788	74
Glamorgan .	1,182,590	18,129	1120	61·8	756	364	48
Surrey . .	1,368,800	18,927	789	41·7	..	..	..
						1152	
					On Coulsdon and Purley, 32·8		
Jarrow M.B.	30,675	559	58	103·8	18	40	222
Gelligaer .	38,400	689	59	85·6	23	36	157
Coulsdon and Purley	51,460	641	21	32·8	..	..	..
						76	

For example, one has to go back twenty-one years to find an infant mortality rate for England and Wales that exceeds that for Jarrow in 1936. Similarly in the slum area (Riverside, Stockton-on-Tees) quoted by Dr. G. C. M. M'Gonigle, the rate of 134·0 per 1000 live births (mean of 1928–32) is not exceeded by a national rate unless one goes back to before 1905.

If one compares Jarrow with a community in the South East of roughly the same size, for ex-

ample Coulsdon and Purley, the results disclose an excess of infant mortality of 222 per cent. Gelligaer, an Urban District (like Coulsdon and Purley) in South Wales and approximately the same size, has an excess of 157 per cent.

Table 6, on previous page, illustrates the disparities in existence in 1936.

In the realisation of what all this social waste involves, the words of Sir Kingsley Wood that the

TABLE 7

INFANT MORTALITY FROM CERTAIN CAUSES (COUNTIES)

	Congenital Debility, Premature Birth, Malformations, etc.					Bronchitis, Pneumonia and Other Respiratory Diseases				
	Deaths	Rate	Deaths based on Surrey	Excess deaths	%	Deaths	Rate	Deaths based on Surrey	Excess deaths	%
Durham .	885	34·7	628	257	41	401	15·7	135	266	197
Glamorgan	632	34·9	446	186	42	164	9·0	96	68	71
Surrey .	465	24·6	..	..	..	101	5·3	..	..	..

infant death rate is "one of the best tests of health progress" [1] should not be forgotten. The application of the test to the North and Wales may, judged on the rates operative fifty years ago, yield reasons for congratulation, but not by any stretch of the imagination are there grounds for complacency if comparisons are made with the South of England to-day.

The evidence in Table 7 that out of 401 deaths in Durham from bronchitis, pneumonia and other

[1] 5th October, 1927, when Parliamentary Secretary to the Ministry of Health.

respiratory diseases two-thirds (or 266) would not have occurred if the conditions in Surrey had prevailed in Durham, hardly constitutes an endorsement of the Minister of Health's statement when praising our Health Services that " no one can measure the sum of their achievements in preventing impaired health in mothers and initial weaknesses in their babies, and in setting the latter firmly on their upward path. For these services are not just saving lives—they are making better the lives that are saved as well."

The two chief causes of infant mortality in the North and Wales are shown in the tabulated statistics. Reference should also be made to the chapter " Impact of Unemployment on Mortality ", which quotes from the Pilgrim Trust Unemployment Inquiry Reports on Infant Mortality.

It will be seen that the trend of excess deaths above " Standard " from (1) congenital debility, premature births, malformations, etc., and (2) bronchitis, pneumonia and other respiratory diseases from the North to North I is in the *expected* direction, *e.g.* 31 and 84 per cent to 35 and 105 per cent. These two causes accounted for 3305 out of a total excess death-roll of 5132 for the North and Wales in 1936. In addition to these 5132 surplus deaths, there were 2961 excess stillbirths in the North and Wales. The determination of infant mortality as a percentage of the total areal mortality affords corroborative evidence.

An analysis of neo-natal deaths at different

ages, *e.g.* 1, 2, 3, 4, 5 and 6 days, and 1 to 4 weeks, exhibits similar upward trends from the South to Wales and the North: likewise infant mortality at ages over 1 month to 1 year.

A comparison of the distribution of infant mortality from some of the principal causes in 1935 is also indicative:

TABLE 8

INFANT MORTALITY FROM SOME OF THE PRINCIPAL CAUSES (REGIONS)

(Rates per cent of those for England and Wales)

	Measles	Whooping-cough	Tuber-culosis (all forms)	Bronchitis and Pneumonia	Congenital Debility	Con-vulsions
England and Wales	100	100	100	100	100	100
"Standard"	17	61	93	58	80	48
North . .	188	129	98	132	135	147
North I .	217	163	121	142	163	222
Wales . .	154	113	105	111	124	248
Wales I .	208	121	91	117	137	241

The excessive mortality from measles and whooping-cough implies a widespread prevalence of rickets, because a reduction in the two first-named diseases in the past has been ascribed to a diminished incidence of rickets. Further, a decline in rickets has been paralleled by a reduction in the prevalence of epidemic diarrhoea. This disease, with its terrible drain on nutrition and the occurrence of prolonged "marasmus" is far more widespread in the North and Wales than in the South East, and thereby leaves behind many debilitated, rachitic survivors.[1] The relatively high

[1] *E.g.* diarrhoea and enteritis. Rates per 1000 live births, 1936: North I, 9·53; "Standard", 2·65.

incidence, therefore, in the North and Wales, of these crippling diseases not only implies malnutrition and poverty but accounts for many premature deaths later in life.[1]

Table 8 does not reveal the true extent of the disparity, for reasons discussed elsewhere, mainly that the percentages are based on the national "average" and not the "optimum" standard. The Registrar-General (1935 Review, Text), in analysing the causes of high infant mortality in certain county boroughs, states in connection with congenital malformations and diseases of early infancy (accountable for the majority of deaths under 1 year of age) that "large numbers of these deaths are due to remediable causes and that considerable improvement in the death rate from this group of causes is possible of achievement in many large towns". He concludes by stating that "it ought to be possible for every northern town to achieve a rate below 50 (infant mortality) and for every other town to achieve a rate below 40. The realisation of such rates would mean an annual saving of more than 4,000 infant lives in the County Boroughs alone." Apart from suggesting that because divergencies have existed in the past they should continue to do so in the future, it is difficult to justify the distinction in the risk of infant survival between the North and other parts of the country.

[1] Dr. T. H. C. Stevenson showed in the Registrar-General's Annual Report, 1911, that diarrhoeal mortality was far heavier among the poor than the well to do.

Assuming, however, the realisation (apparently "practical politics") of a rate of, say, 45 per 1000 live births for the whole of England and Wales, this would effect an annual saving in infant life of over 8000, or by 1946 of something like 60,000 to 70,000 future citizens. On the practicability of achieving improvement it is of interest to note the results of the Oslo experiment. Every child in the town, rich or poor, can have at school a breakfast of protective foods which brings its diet up to a higher standard. This, together with other measures for improving housing and feeding, has raised the national level of health considerably. The infant mortality rate in Oslo, which was 46 in 1931, is now down to 30.

So far as the North of England and Wales is concerned, there appears little doubt, by studying area by area the rise and fall of infant mortality with the incidence of unemployment, over-crowding, public assistance and trade depression, that these unnecessary deaths are caused in the main by malnutrition in the mother and/or child, or, in other words, poverty.

The fact that fewer babies are being born, not only in the North and Wales but throughout the whole of England and Wales, should mean, for that if for no other reason, that none should needlessly die.

To emphasise the fundamental importance of the interaction of infant mortality on the problems surrounding the future of the population, it is

as well to quote again the words of the Prime Minister. He said, when delivering his Budget Speech as Chancellor of the Exchequer on 15th April, 1935 : " I must say that I look upon the continued diminution of the birth rate in this country with considerable apprehension. At the present time it may seem that we have here a larger population than we are able to support in England. At the same time, we know the difficulties which the Dominions find in accommodating a larger population, when they themselves are troubled with unemployment. But I have a feeling that the time may not be far distant when that position will be reversed, when the countries of the British Empire will be crying out for more citizens of the right breed, and when we in this country shall not be able to supply the demand."

From a study of the differential regional birth rates it is abundantly clear that it is only the higher fertility rates in the North and Wales which are saving the country from a more rapid, and consequently more disastrous, decline in population. If the birth rate (live births per 1000 women aged 15–44) which obtained in the whole of the South East of England in 1936 had also applied to the North and Wales, there would have been over 25,000 less births, or, in the dimensions of one decennary, approximately 250,000 less children. If this rate in the South East had obtained throughout the whole of England and Wales the number of future potential parents would have been

reduced in one year by over 40,000, and in a decennary by a figure approaching 500,000. Obversely, if the birth rate for Durham and Northumberland in 1936 had operated in the South East in the same year we should have had over 55,000 more children (an increase of 29 per cent for the latter area), and if for the whole of England and Wales, over 115,000 more (an increase of 21 per cent). Again, regarded in decennial terms, this would have meant additions to our child population of approximately 500,000 and 1,100,000 respectively. These are, of course, only approximate figures, but after allowing even a considerable margin of error, they still indicate the basic nature and extent of the problems and impress, not only by the range of the figures, but by the social implications which underlie them. In the chapter "The Problem of Population" statistics are provided illustrating the gross reproduction rates (1931) in certain registration counties. A study of these, especially when they cover, for instance, the last eighty years, reveals social trends both local and national, affecting the whole fabric of individual life.

Our child population is steadily declining, and the aspect of its present and changing regional distribution is dealt with in Chapter XIII.

If the children born to-day and within the last ten years are, as an integral part of our population, our chief national asset—"There is no wealth but life", says Ruskin; "that country is the richest

which nourishes the greatest number of noble and happy human beings"—then it hardly seems an ideal arrangement to allow the major proportion of those children who survive the "terrible wastage" to grow to manhood and womanhood in those areas known to be most depressed and most exposed to malnutrition. Neither, let it be said, can we, in face of the uneven risks attending entry into life, lay claim to "the democracy of birth" in this country.

CHAPTER V

CHILD MORTALITY

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A COMPREHENSIVE review of the present state of the physical and mental health of our children up to school-leaving age requires far more space than can be allotted under this chapter; nevertheless, an attempt is made to present some aspects of the problems that have been created in a spirit of obscurantist complacency in the past, are still being generated by neglect to-day, and may have serious repercussions in the future.

At this stage it is advisable to remember that the children of to-day will inherit the consequences of our present political and economic actions, and, further, that they will be confronted—as we are fortunate in not being faced at the present time—with the actual fact of a declining population.

As Aldous Huxley remarks in *Eyeless in Gaza*, "politicians will have to be"—when the decline sets in—"about twenty times as intelligent as heretofore". He then asks, "Will the supply of intelligence be equal to the demand?" To this question—like the author of this book in Chapter II—he attempts no answer. But, if our children are to have a reasonable chance of maintaining some kind of ordered and civilised society, it is our

responsibility to see that they are at least equipped with healthy minds and bodies.

In 1936 children under 15 numbered 9,074,900, or 22·3 per cent of our total population. This represented a reduction of over 460,000 in five years (from mid-year 1931). Of the total population in the areas under review children under 15 constituted in 1936 :

	Per cent
North I	26·7
Wales I	25·8
Wales	24·8
North	23·0
South East	20·8
"Standard"	20·8

According to the trends outlined in the chapter on " The Problem of Population ", within the lifetime of these children—thirty years—the section of the population under 15 years of age will have fallen to approximately 5,500,000, or 13·9 per cent of the total.

It is widely held that whilst there may be some slight incidence of defects still to be eradicated in certain small areas of the country, the health of the school child has made great advances in the last ten years or so and is now—taking the country as a whole—satisfactory. The *Daily Telegraph and Morning Post*, in discussing the 1936 Report of the Chief Medical Officer of the Board of Education, sums up this belief by saying : " Anxieties, not unnatural, as to the extent to which economic conditions have conduced to malnutrition are shown

to be, for the most part, without foundation. In two successive years the nutrition of more than 1,700,000 children has been assessed." Quoting from the Report, they continue: "Nearly 89 per cent were classed as normal or better, 10·5 per cent were found slightly subnormal, less than 1 per cent bad". The editorial then concludes that, except for some parts of the special areas, "the absence of any widespread under-nourishment is thus proved".

This general belief, based on the School Medical Officer's assessment of malnutrition, is thus found to be at variance with the cognate implications which irrevocably follow from the statistical evidence produced by an analysis of the distribution of actual deaths in 1936. Further, the correspondence of other factors with the main mortality analysis is too striking to be explained away. For example, the tabulated statistics reveal that of the recorded deaths the majority, and particularly the high percentage of surplus mortality in the North and Wales, were from diseases the causal factors of which are, as medical research has proved, largely nutritional in origin.

On what basis, therefore, is this assessment of nutrition made? Up to the age of 5 a proportion of the child population is medically examined under the Child Welfare Services. This examination is not, however, compulsory, and, the records being consequently largely incomplete, no special conclusions can be drawn. It is proposed, therefore, to discuss only the routine medical inspection of Elementary

School children. During his or her school life each child is medically examined at 5 years of age (Entrant), at 8 years of age (Intermediate) and at 12 years of age (Leaver). Roughly, a third of the Elementary School population is examined every year. Each routine examination lasts on the average six minutes. Each child therefore receives approximately eighteen minutes of routine examination during his or her nine years of school life.

In addition, a very large number of "special" examinations are made annually of children who suffer, or are believed to have suffered, from defects, obvious or thought to be obvious, to non-medical observation.

The medical officers have to classify the children examined under four main heads according to their "condition of nutrition", *e.g.* A (Excellent), B (Normal), C (Slightly Subnormal) and D (Bad).

The 1935–6 results for England and Wales were :

	A and B	C	D
1935 . .	88·7	10·6	0·7
1936 . .	88·8	10·5	0·7

The validity of these figures for estimating the health of the child population is based fundamentally on the standard of "normal nutrition" adopted. On that issue the value of the results stand or fall. This question of "normality" and "average" as related to nutritional examinations is referred to in the opening chapter. A study of the multitudinous reports from medical officers all over the country confirms the fact that, in the absence

of any accepted standard for assessing nutritional conditions, the officer is forced to base his examinations on the general average standards of the particular area in which he works and on the health level of the children examined.

In a recent book *National Fitness*, which, incidentally, is a valuable contribution to the study of public health, one of the authors remarks that, having regard to the loose interpretation of " nutrition " and the " brevity of the examinations made, a 'subjective impression of the child's well-being' would be a more accurate interpretation of the word as used in the Board's regulations and reports ".

It seems logical to suggest, therefore, that the officer for the Dowlais or Rhondda areas, for instance, will use one standard of normality, whilst the officer for Eastbourne or Bournemouth will adopt another, and considerably higher, standard. Mr. R. Huws Jones, Statistician to the University of Liverpool, when lecturing to the Royal Statistical Society on 16th November, 1937, remarked : " Even more striking was an inquiry into how far doctors were consistent in their own judgments. Four of the staff of the Cheshire County Council took part in an inquiry held at Northwich on dates seven days apart. There were three remarkable results. First, the extraordinary differences between the various doctors : thus on the second occasion one doctor found only 3 subnormal boys, another found 90. Secondly, the difference between the judgment of

the same doctor on the two occasions; thus one doctor increased the number of "excellents" and decreased the number of "subnormals" by about half. Thirdly, on the second occasion every doctor found more boys excellently nourished and (with one exception) fewer subnormally nourished. On an average they placed one boy out of four in a different grade on the second examination" (100 boys were examined).

What reliance, may it be asked, can be placed on *ex parte* statistics of this kind?

An article, "The Geographical Distribution of Defects Among School Children", which appeared in *The Medical Officer*,[1] adequately sums up the case against the present methods and their value. This article states: "The geographical distribution of disease and defect is a matter of great importance, and a consideration of the annual reports of school medical officers indicates great variation in the incidence of defects in various localities. Before drawing any definite conclusions from a comparison of such figures, the searcher after truth asks himself whether the figures compiled in the different districts are really comparable. The personal factor in the compilation of clinical records must always constitute a factor of error, but if to this error is added the further factor of imperfect standards, the value of the conclusions reached by a comparison of the data supplied by the School Medical Officers of the various Local Educa-

[1] By Dr. G. C. M. M'Gonigle, 16th July, 1927.

tion Authorities is problematical. No one who reads the reports of School Medical Officers can fail to be impressed by the enormous variation exhibited in the incidence of defects. . . . Are these variations due to local causes or to imperfect standardisation of clinical methods? Until this question is answered, comparison of the findings of School Medical Officers is of but little value."

In 1935 the Medical officer for Brecknockshire, Dr. W. F. W. Betenson, attempted to find an answer. He asked two officers from his own county, two from Glamorganshire and two from Carmarthenshire, to examine independently the same 100 children (50 of each sex) in certain Brecknockshire schools. These children were distributed in age among the three examination groups, and all discussion was deferred until all the cases had been examined. Judged by economic conditions Glamorganshire is relatively bad, Carmarthenshire relatively good, whilst Brecknockshire lies somewhere between. As to the results:

The two Carmarthenshire doctors found	37	and	41%	subnormal	
,, ,, Brecknockshire	,,	,,	20	,, 28%	,,
,, ,, Glamorganshire	,,	,,	13	,, 15%	,,

Dr. Betenson commented: "All six doctors only agreed unanimously on 19 children out of the 100". Further, that, "In no less than 17 instances the same child was assessed as excellent by some and slightly subnormal by others, while other children were similarly labelled as normal by some and bad by others".

In the 1935 Report on "Nutrition Assessment" the following extraordinarily conflicting results can, among many others, be instanced: Reading (1·7), Bath (8·68), Southend (23·34), Exeter (25·2) had less excellently nourished (A) children than Grimsby (39·3) and Smethwick (48·3). If one accepts as a premise the Board's interpretation of "Excellent" as proximating to Sir John Orr's definition of the ideal of nutrition as "a state of well-being such that no improvements can be affected by a change of diet", one is eventually driven to the conclusion that in the "nutritional condition" of, for instance, 98 per cent of Reading's children and 91 per cent of Bath's children, there is room for improvement. These two towns had even less "Excellent" than a town like Hebburn (10·74) with something between 40 to 50 per cent male adult unemployment. Accrington (0·67) and St. Helens (3·25), with roughly 25 per cent male adult unemployment, had far less "slightly Subnormal" (C) and Bad (D) children than Reading (4·92), Bath (7·49), Southend (8·63) and Exeter (10·4). Of the Counties, Cumberland (19·3) had far more "Excellent" than Essex (4·52) and Berkshire (5·68), whilst the Isle of Wight (80·0) had less "Excellent" and "Normal" than Cumberland (91·1), Nottinghamshire (92·2) and Staffordshire (86·67).

Cumberland had only 0·3 "Bad" whilst Wiltshire had 6·2. The Isle of Wight had 20·0 "Subnormal" and "Bad" against 7·8 for Nottinghamshire and 13·33 for Staffordshire.

Can it be that supposedly unsatisfactory environment generated by a high incidence of unemployment, poor relief and bad housing tends to produce healthy and well-nourished children ? This solution is so patently absurd it can be concluded that with such a high degree of inconsistency no reliance can be placed on either the local, regional or national figures. Not only are they contradictory and misleading in the totality of their results but in most cases they cannot be reconciled with the known prevalence of economic depression, unemployment, and poor relief, and in many instances, when compared with the ascertained high death rate either from all causes or certain " nutritional diseases ", their tendency is divergent not convergent.

It is indisputable that some evidence of defects or diseases showing themselves in a debased level of health either through such indices of nutrition as skin colour, state of the eyes or hair, weight and growth, presence or absence of impetigo, posture and general behaviour, must surely have been apparent some time before these thousands of surplus deaths ensued.

The surplus deaths of over 9000 children between the ages of 0 and 14 in the North and Wales during 1936 must have been the end-results of preceding illnesses.

It may well be asked, therefore, why the implications to be drawn from a study of the Tabulated Statistics and the following figures are not

reflected in the results of the School "nutrition assessments" or in the Annual Reports of the Chief Medical Officer of the Board of Education and the Chief Medical Officer of the Ministry of Health.

The first table illustrates the mortality among infants of 1–2 years from all causes and compares the 1935 rates with the mean rates for the preceding four years. If the figures are read in conjunction with mortality at later ages, it can readily be seen that mortality at 1–2 years is one of the most sensitive indices of regional variations in standards of health.

TABLE 9

DEATHS AT AGES 1–2

(Per 1000 living)

	Rate, 1931–4	Rate, 1935	Deaths in 1931–4 per cent of "Standard" Deaths	Deaths in 1935 per cent of "Standard" Deaths
North . .	18·65	13·18	222	226
North I . .	22·05	15·03	262	258
Wales . .	14·14	11·39	168	196
Wales I . .	15·44	12·91	184	222
"Standard" .	8·40	5·82	100	100
South East .	10·94	6·12	130	105
Greater London .	12·55	6·31	149	108

Expressed in terms of the health in the "Standard" area, it will be seen that whilst Greater London and the South East exhibited considerable improvement during the period, the North showed no lessening of the disparity, and Wales and Wales I moved

steadily in a worsening direction. Whilst it can be conceded that rural areas might be expected to return higher mortality rates, especially where maternal cases and infants are concerned, it is doubtful whether this factor can play any significant part in influencing this excessive mortality, especially when it is remembered that North I and Wales I are highly urbanised.

In the age group under discussion, Wales II, which is certainly mainly rural, returned rates not appreciably above the South East and Greater London, namely: 1931–4, 10·12 (actually below Greater London) and 1935, 6·81. Much the same can be said of the East, again chiefly rural. The following table for ages 2–5 makes similar comparisons as in the case of ages 1–2:

TABLE 10

DEATHS AT AGES 2–5

(Per 1000 living)

	Rate, 1931–4	Rate, 1935	Deaths in 1931–4 per cent of "Standard" Deaths	Deaths in 1935 per cent of "Standard" Deaths
North . .	6·01	4·88	194	194
North I . .	6·57	5·49	212	219
Wales . .	5·02	4·10	162	163
Wales I . .	5·34	4·32	172	172
"Standard" .	3·10	2·51	100	100
South East .	3·80	2·58	123	103
Greater London .	4·25	2·62	137	104

Here again a considerable improvement is witnessed in the South East and Greater London, whilst the North and Wales register no movement towards a

reduction in the disparity. In the case of North I, and Wales as a whole, there is a tendency in the reverse direction. Despite the changes in the rates, the remarkable and significant steadiness in the disparities should be observed.

The principal causes of death at ages 1–5 in 1935 were pneumonia, diphtheria, tuberculosis, measles, whooping-cough and violence. The combined rate for measles, whooping-cough, pneumonia and bronchitis was :

Per 100,000 *living* [1]

North I	524	Greater London	283
North IV	475	Midland II	273
North II	413	Wales II	196
North III	376	East	190
Wales I	354	"Standard"	167
Midland I	303	South West	165

This combined death rate, which, although it varies

[1] North I : Durham and Northumberland.
North II : Cumberland, Westmorland, and Yorkshire (East and North Ridings).
North III : Yorkshire (West Riding), and York C.B.
North IV : Cheshire and Lancashire.
Wales I : Brecknockshire, Carmarthenshire, Glamorganshire, and Monmouthshire.
Wales II : the remainder of Wales.
Midland I : Gloucestershire, Herefordshire, Shropshire, Staffordshire, Warwickshire, and Worcestershire.
Midland II : Derbyshire, Leicestershire, Northamptonshire, Nottinghamshire, and Soke-of-Peterborough.
East : Cambridgeshire, Isle of Ely, Huntingdonshire, Lincolnshire, Norfolk, Rutlandshire, and Suffolk.
South West : Cornwall, Devonshire, Dorsetshire, Somersetshire and Wiltshire.
"Standard" : (see Mortality Analysis).
Greater London : (see Mortality Analysis).

considerably from year to year according to the epidemic prevalence of measles and whooping-cough, is, as the Registrar-General remarks (1935, Text), "A peculiarly sensitive index of an unsatisfactory environment when averaged over a series of years, and it was shown in the Review for 1932 that mortality rates of young children from these causes in the county boroughs were more highly associated with the proportions of the populations living under over-crowded conditions than with the geographical situations of the towns".

This opinion in regard to geographical situation and the apparent lack of association with high mortality should be borne in mind not only in this chapter but in other sections of this book bearing on high death rates. Westmorland, a relatively prosperous county returning favourable mortality rates, confirms this view in a striking fashion.

The high association between the index instanced by the Registrar-General and overcrowding is corroborated by Dr. J. L. Halliday in a report made to the Medical Research Council demonstrating the prejudicial effects of bad housing in generating measles at an earlier age.[1] The importance of delaying the attack-age cannot be underestimated as an analysis of the measles mortality rate for every year from the age of 0 to 10 confirms.

The school age group is dealt with in the Tabulated Statistics (1936), but the following table

[1] Special Report Series No. 120, 1928.

provides some indication of the excess mortality from certain of the principal causes of death as compared with the " Standard " rates for the preceding quinquennium :

TABLE 11

DEATHS AT AGES 5–15

(Deaths in 1931–5 per cent of " Standard " Deaths based on Mean Annual Death Rate per 100,000 living)

	Diphtheria	Tuberculosis (all Forms)	Heart Disease	Digestive Diseases	All Causes
North I . .	111	300	200	127	157
Wales I . .	161	188	317	120	135
" Standard " .	100	100	100	100	100
England and Wales	139	144	183	107	123

Deaths from heart disease during these ages, being mainly of rheumatic origin, thus provide an index of the damage done by rheumatic fever to the hearts of young children in the North and Wales before and during 1931–5.

In 1936 the chief " killing " disease in the age group 5–14 in the North, North I and Wales was diphtheria. For Wales I it was tuberculosis (all forms—73 deaths) (diphtheria—72 deaths).

Tuberculosis was the second principal cause of death in the three first-named areas.

For the whole of the South East and " Standard " it is an entirely different story. It certainly cannot be said that the main cause of death in these areas is due directly to unemployment, malnutrition or poverty. Outnumbering other diseases to a con-

siderable extent, the chief cause of death in these areas is, according to the Registrar-General's classification, " Violence " : in other words, mainly road accidents. It seems incredible that to-day, in the twentieth century, after the triumphs of modern medicine and an improved standard of life have helped to eradicate mortality from disease in this age group from this particular part of the country, we should promptly create another method of killing off our young children, and at a time when the falling birth rate is causing such serious concern to our statesmen. It seems logical to postulate that if the road problem is insoluble, then we are neither capable nor likely to find an answer to the questions surrounding a falling birth rate.

On the basis of the present figures, every fourth or fifth child born in Great Britain is destined to be killed or injured in a road accident according to Mr. H. M. Vernon, a member of the Technical Advisory Board of the National Institute of Psychology.[1] Lt.-Col. J. A. A. Pickard, General Secretary of the National Safety-First Association, states that " Children under the age of eight are being killed at the rate of two a day ". Further, " Of persons killed on foot, more are killed between the ages of three and seven than at any other age ".[2]

With regard to the regional relationship which deaths by violence bear to total deaths among

[1] " Accidents and their Prevention."
[2] *News Chronicle*, 16th November, 1937.

children, reference should be made to the Tabulated Statistics.

What emerges from this necessarily brief review on mortality among children in the North and Wales cannot be more adequately phrased than in the words of the Chief Medical Officer of the Board of Education, who, in his Report issued on 1st December, 1934, stated: "I fear we are not doing all that is practical for the malnutrition, physical education, nurture, and health of the normal child. Yet, if we are failing to ensure the physical health of the normal child under fourteen years of age, we must not complain or be surprised if such neglect brings with it in later years hordes of preventable impairment or incapacity of body and mind. *Medical science has proved that disease and incapacity in adolescence and adult life find their source all too often in the seed-time of childhood.*[1]

"To this neglect is due much of the excess of sickness and mortality under forty years of age; some of the maternal mortality; some of the recruits rejected on physical grounds for the army; some of the lost time in industry and some of the lack of resistance to infective diseases."

The future of the nation lies in the hands of our young people, but malnutrition and malfunctioning in their early days, causing serious damage to immature bodies, can never be wholly rectified by improving nutrition later in life. The responsible

[1] Author's italics.

authorities should therefore see that preventive action should be taken *before* malnutrition shows itself and not wait until defects and diseases appear. If, as the authors of *National Fitness* trenchantly remark, "the seed takes root, the soil must be hospitable".

CHAPTER VI

ADULT MORTALITY

(1) Regional Incidence (1936).
(2) Distribution of chief " killing " Diseases.
(3) Comparisons with 1935.
(4) Army and Air Force Rejections.
(5) Excess Mortality (North and Wales).

CHAPTER VI

ADULT MORTALITY

(1) REGIONAL INCIDENCE (1936)

DOCTORS have always known that a considerable proportion of men and women of all ages are far from being examples of physical perfection, and, further, that many fall short of a certain—generally fairly low—standard of health.

What is not known, however, is the size of the proportion and the seriousness or otherwise of the defects that cause them to fall below this average. As has been pointed out previously, there exists no means at present of medically examining the whole of the population. The records of one valuable and large-scale examination do, however, exist. In 1920 the Ministry of National Service (1917–19) published a Report (Volume I) upon the Physical Examination of Men of Military Age by National Service Medical Boards from 1st November, 1917, to 1st October, 1918. " The primary object ", the Introduction to the Report states, " of the organisation of the Medical Department of the Ministry of National Service was to conduct the examination of all men of military age called up for medical examination under the Military Service Acts. . . .

Incidentally the fulfilment of this task afforded the opportunity to make a far-reaching medical survey of the male population of Great Britain."

There is very little reason to think that there is any considerable variance in the incidence of defects in comparing to-day with those years, but the public were alarmed at the findings of the Ministry when the Report was published. This is far too long to quote in full here and should be consulted for reference, but the conclusions of the Report state that "These results may be summarised by saying that medical examination showed that, of every nine men of military age in Great Britain, on the average three were perfectly fit and healthy; two were upon a definitely infirm plane of health and strength, whether from some disability or some failure in development; three were incapable of undergoing more than a very moderate degree of physical exertion and could almost (in view of their age) be described with justice as physical wrecks; and the remaining man as a chronic invalid with a precarious hold on life". It should be noted that 2,425,184 men were examined.

At what ages did these men die? Is it unreasonable to suggest that the presence of defects in six out of nine men resulted in premature death? As there is no evidence to suppose that these findings do not equally apply to women, what proportion of our population are we losing to-day through their lives being cut short? That we do not know at present, but at least we can measure

the vital statistics of one area against another and thereby ascertain to what extent mortality in the less prosperous areas exceeds the standard deaths in the relatively happier regions. That is one of the principal objectives of this book; to weigh the fatality experience of the North and Wales against that of the South East. To adapt the words of the Introduction to the Report of the Ministry of National Service: "Analysis of them [*the records*] should therefore reveal the nature and distribution of physical disabilities among our manhood [*and, for the purposes of this book, among our women and children*], and also show to what extent the national [*regional*] health falls below an attainable standard. This information, once harvested and sifted, should indicate unmistakably the directions in which efforts should be made to improve the national [*regional*] health by preventing what is preventable, and by ameliorating or palliating what is unavoidable." That the examination of regional mortality included in the Tabulated Statistics and elsewhere indicates the direction in which far-reaching efforts should be made is beyond doubt.

It will be noted from a study of the Tabulated Statistics that contributory evidence as to the value of the results as a whole is forthcoming from the analysis of the regional distribution of the population over the various age groups.

As a consequence of higher fertility, the North in the first ten-year group, 5–14, has an excess of

11 per cent. This percentage is gradually reduced with advancing age until eventually the scale is turned at the comparatively early age, be it noted, of 45–54. At this stage there are 2 per cent fewer people. The percentage then rapidly increases to age 75 and upwards when we find that, starting with an excess population of 11 per cent, the North has now 44 per cent fewer people aged 75 and over.

In North I the changes in age structure stand out more sharply. From 31 per cent more children in the group 5–14 to only 5 per cent more young people at 15–24 and then to 2 per cent fewer at 35–44, thereafter rapidly declining until this area has practically 50 per cent fewer old people over 75 than the "Standard" area. The almost dramatic reduction between the groups 5–14 and 15–24 is due in some measure, no doubt, to industrial transference and voluntary (or enforced) migration.

Wales shows similar trends. An excess of 24 per cent at 5–14 drops to an excess of 2 per cent at 15–24. At 45–54 there are 6 per cent fewer, and over 75, 34 per cent fewer persons. The extensive decline in numbers between 5–14 and 15–24 may again be accounted for by transference and migration, but only in part, as the death rates in these groups for both Wales and the North emphasise. That is one distinct method from which certain general conclusions emerge.

A second approach is based on the method of expressing the deaths in each age group as a per-

centage of the total mortality. This should not necessarily weigh in favour of areas with high fertility. An increased birth-rate should naturally lead to a larger population in each age group.

By this method the groups 0–4 and 5–14 in the North return percentages exceeding the " Standard " area of 88 and 44 per cent respectively. A fall to 25–34 is then observed, when the percentage excess remains at around 18 up to 55–64. In the last two groups, 65–74 and 75 upwards, the percentage drops rapidly, being less than in the " Standard " area by 1 and 33 respectively. The conclusions which follow from this approach appear in their general outline to coincide with the results of the first method.

In North I this process of assessing premature death shows, as might be expected, more pronounced variations than the whole of the North from the " Standard " percentages of mortality in each age group. Wales and Wales I reveal congruent trends, the latter being also more decided at all ages.

The undoubted resemblance, age group by age group, in all four regions, between the results of these two methods should be carefully noted.

Finally the results of the two approaches should be contrasted with the analysis of deaths by age groups. The marked associations between these three distinct and separately calculated methods of ascertaining the extent of premature death is indicated beyond question in the following tables :

TABLE 12

Excess Mortality (North and Wales)

The North

Column 1	2	3	4
Age Group	Percentage of Excess Deaths according to Age Group that would not have occurred had the "Standard" Rates obtained	Population of Age Group expressed as a Percentage of the total Areal Population	Deaths in Age Group expressed as a Percentage of the Total Areal Mortality
		Excess or Deficiency on "Standard" Percentages	
	%	%	%
0–1 (I.M.)	50 excess	11 excess (births)	48 excess
0–4	58 ,,	9 excess	88 (age group 1–4 only) excess
5–14	48 ,,	11 ,,	44 excess
15–24	31 ,,	5 ,,	23 ,,
25–34	23 ,,	5 ,,	18 ,,
35–44	27 ,,	3 ,,	20 ,,
45–54	31 ,,	2 deficiency	18 ,,
55–64	39 ,,	7 ,,	18 ,,
65–74	42 ,,	24 ,,	1 deficiency
75 Up	29 ,,	44 ,,	33 ,,
North I			
0–1 (I.M.)	65 excess	29 excess (births)	87 excess
0–4	67 ,,	23 excess	125 (age group 1–4 only) excess
5–14	49 ,,	31 ,,	81 excess
15–24	52 ,,	5 ,,	54 ,,
25–34	33 ,,	2 ,,	29 ,,
35–44	44 ,,	2 deficiency	36 ,,
45–54	28 ,,	10 ,,	11 ,,
55–64	36 ,,	16 ,,	10 ,,
65–74	40 ,,	32 ,,	8 deficiency
75 Up	26 ,,	47 ,,	38 ,,
Wales (Wales I shown in brackets)			
0–1 (I.M.)	38 excess (38)	17 excess (18) (births)	33 excess (43)
0–4	36 ,, (37)	9 excess (12)	50 (56) (age group 1–4 only) excess
5–14	14 ,, (13)	24 ,, (29)	25 excess (38)
15–24	55 ,, (58)	2 ,, (4)	46 ,, (58)
25–34	49 ,, (49)	1 ,, (3)	35 ,, (44)
35–44	32 ,, (35)	Under 1 ,, (3)	22 ,, (31)
45–54	35 ,, (43)	6 deficiency (8)	14 ,, (25)
55–64	38 ,, (44)	9 ,, (15)	13 ,, (17)
65–74	40 ,, (49)	24 ,, (32)	2 deficiency (3)
75 Up	24 ,, (27)	34 ,, (47)	28 ,, (37)

The calculation of the excess births under column 3 has been based on the number of live births to women aged 15–44.

By carrying the analysis a step further and considering for instance the results of applying the process (column 4) of estimating the deaths in each age group as a percentage of the total mortality in a given area to counties, the following evidence is elicited :

TABLE 13

DEATHS IN AGE GROUPS EXPRESSED AS PERCENTAGES OF TOTAL MORTALITY IN DURHAM AND GLAMORGAN COMPARED WITH PERCENTAGES FOR SURREY

	Excess or Deficiency Percentages over Surrey	
	Durham	Glamorgan
0–1 (I.M.)	81	33
0–4	100	25
5–14	83	33
15–24	48	41
25–34	19	35
35–44	19	15
45–54	3	20
55–64	6	20
65–74	6 (deficiency)	1 (deficiency)
75 Up	36 „	36 „

Whilst the results of this technique cannot for a number of reasons be regarded as providing completely reliable evidence of the age distribution of deaths, either regionally or locally, they show in every case a definite association with other indices and always, it should be noted, illustrate the trend of mortality *in the expected direction.*

The probable reasons for the decline in each

case in the percentage age 75 and up (column 2, table 12) may be: (*a*) the number of those that have survived to this age are far less; (*b*) those that have, are "conditioned"; and (*c*) the lives of those who reach this age may be removed from the mortality inducing factors of poverty and malnutrition.

The reciprocal relationship between the results of these three separate and distinct approaches surely points conclusively to the fact that a considerable mass of the people in the North and Wales, young, middle-aged and old, and irrespective of sex, representing nearly 40 per cent of the entire population of England and Wales, die from preventable causes long before their time.

Sir Arthur Newsholme once wrote that "Not only are poverty and a high death-rate always closely related, but a high death-rate implies also a high rate of sickness and of inefficiency among those who survive".

This statement means, then, that the results of these investigations imply a far wider and deeper extent of poverty over one-third of England alone than has hitherto been realised or recognised.

If these premature deaths are weighted by poverty, then they are, when all is said and done, but the end-results of malnutrition. Its symptoms suggest an excessive, and judging by the South East, unnecessary toll of suffering and ill-health. They must entail a vast amount of anaemia, colds, influenza, impetigo, septic sores and rashes, slow

healing of wounds, eye inflammation, catarrhal troubles, deafness, chronic laryngitis and premature ageing. Xerophthalmia (conjunctivitis), definitely associated with vitamin A deficiency, often leads to blindness.

Medical experience shows that gastro-intestinal disorders are very widespread, including as they do such complaints as peptic ulcer, enteritis, colitis and gastric dilatation. A recently published report on a Swedish investigation covering a sample population of over 17,000 in Västerbotten and Norrbotten concludes that the composition of the diet is the decisive factor in causing such disorders. An analysis of the death rates in this country from peptic ulcer and digestive complaints reveals a higher incidence in the North and Wales than in other regions where the economic conditions are more favourable.

Sir Francis Freemantle, M.P., has stated that ill-health costs the nation no less than £300,000,000 every year. It would appear that a sum far in excess of £100,000,000 applies to the North and Wales. Sir John Bray, President of the Institute of Municipal Treasurers and Accountants, in his presidential address in 1931 said that in the national accounts and in those of local authorities a sum in the region of £113,000,000 per annum could be traced which was spent every year directly in cold cash on ambulance work arising from disease.

The Report on Health Services, published in December, 1937, by Political and Economic Plan-

ning, analysed the present national health bill as follows:

	£ *Millions*
1. Value of work lost through sickness . .	100
2. Treatment and maintenance of sick persons .	183
3. Public expenditure on prevention of ill-health	13
4. Public environmental services which largely contribute to good health . . .	104
	400

If it were feasible to allocate this expenditure to the regions in question in proportion to the known mortality ratios at all ages, the results would, *inter alia*, conflict with the known expenditure in the South East under Items 2–4 inclusive. This is to say, expenditure under these heads—particularly Item 4—in the South East would be found to be far in excess of the proportion allotted judged on mortality experience. Obversely, and here probably lies the explanation, the North and Wales are not receiving their proportionate share of public health services. It would only seem possible to negative this and other implied conclusions in this book by suggesting that the vital statistics applied regionally and in association with other social indices are irrelevant and without value.

The range and extent of health services must always be affected by the local incidence of different causes of death, and an analysis of adult mortality, therefore, involves not only the specific diseases discussed under separate heads but the incidence of diseases of the heart. The following table deserves attention as it reveals phenomenally high excess

percentages of mortality in the early-middle-aged groups.

TABLE 14

EXCESS DEATHS FROM HEART DISEASES

(Percentage of "Actual" Deaths exceeding "Expected" Deaths, *i.e.* the Deaths from Heart Diseases that would have occurred had the "Standard" Rates obtained)

	Age Group 35–44	Age Group 45–54
	%	%
North . . .	74	57
North I . . .	96	41
Wales . . .	86	71
Wales I . . .	108	92

It should also be observed that the extent of the percentages is again in the *expected direction*, *i.e.* in accord with the known incidence of such factors as unemployment, poor relief and overcrowding.

Space does not allow of an exhaustive analysis of the regional incidence of all causes of death, but, from the statistics of the several chief "killing" diseases, one factor emerges which appears to be of considerable importance. This factor applies, however, only to the age groups 45 and upwards.

It would seem that cancer, not hitherto recognised as a "poverty" disease, can be used as a "control" disease of death to measure the excess or deficiency of regional mortality from other causes of death. In comparing two large areas where there is little divergence in a particular age group in the death rate for cancer, it follows therefore that, given similar causative conditions, or broadly speaking the same level of health, the

death rate from, say, tuberculosis should reveal approximately the same slight deviation.

The use, therefore, of cancer as a "control" for age groups over 45 provides supplementary corroborative evidence in drawing conclusions from the other methods used for analysing regional mortality. This question is enlarged upon in the chapter "Cancer".

(2) DISTRIBUTION OF CHIEF "KILLING" DISEASES

According to the Registrar-General's figures the main killing diseases in the age groups above 15 are :

TABLE 15

DISTRIBUTION OF CHIEF "KILLING" DISEASES

15–24	England and Wales	Tuberculosis	Violence and suicide (over 1000 deaths above the next cause)
	"Standard" . .	,,	Violence and suicide
	North . . .	,,	,,
	North I . .	,,	,,
	Wales . . .	,,	,,
	Wales I . .	,,	,,
25–34	England and Wales	,,	,,
	"Standard" . .	,,	,,
	North . . .	,,	,,
	North I . .	,,	,,
	Wales . . .	,,	,,
	Wales I . .	,,	Heart disease
35–44	England and Wales	,,	,,
	"Standard" . .	,,	Cancer (normal rate)
	North . . .	,,	Heart disease
	North I . .	,,	,,
	Wales . . .	,,	,,
	Wales I . .	,,	,,
45–54	England and Wales	Cancer	,,
	"Standard" . .	,,	,,
	North . . .	Heart disease	Cancer
	North I . .	Cancer	Heart disease
	Wales . . .	Heart disease	Cancer
	Wales I . .	,,	,,

TABLE 15—*contd.*

55–64	England and Wales	Heart disease	Cancer
	"Standard" . .	,,	,,
	North . . .	,,	,,
	North I . .	,,	,,
	Wales . . .	,,	,,
	Wales I . .	,,	,,
65–74	England and Wales	,,	,,
	"Standard" . .	,,	,,
	North . . .	,,	,,
	North I . .	,,	,,
	Wales . . .	,,	,,
	Wales I . .	,,	,,
75 Up	England and Wales	,,	Cancer, pneumonia, bronchitis and other respiratory diseases and circulatory diseases roughly equal
	"Standard" . .	,,	Cancer
	North . . .	,,	Aneurysm and other circulatory diseases
	North I . .	,,	,, ,,
	Wales . . .	,,	Bronchitis, pneumonia and other respiratory diseases
	Wales I . .	,,	,, ,,

Senility has been excluded from the last age group.

It is expressive that in one case where cancer is the chief "killing" agent for "Standard" (and incidentally the whole of England and Wales) it is superseded by heart disease in the North and Wales. In another significant instance heart disease takes the place of cancer as the second cause of death in the North and Wales, whilst cancer remains in the second position in the "Standard" area. Both these changes take effect, it should be noted, in the early age groups 35–44 and 45–54. They are not caused by enhanced mortality from cancer in the "Standard" area or by any decline

in the incidence of that disease in the North. On the contrary, there is a slightly higher death rate in the North. In view of previous references to the influence of death by violence on the total mortality rate, the fact that in Wales I, for the age group 25–34, heart disease takes the place of violence should be observed.

(3) COMPARISONS WITH 1935

To provide a check on the results accruing from the statistical treatment of the mortality and fertility figures used in this book, a similar analysis has been carried out on the vital statistics of previous years. The results of these investigations for years prior to 1936 confirm the trends revealed in the 1936 tables (the latest available statistics before publication).

In comparing 1936 with 1935, the one dominant factor that emerges is the growing influence of the increasing average age of the population on death rates. This is discernible throughout the whole of England and Wales. As a consequence, therefore, of the extension of this effect, for, as pointed out in an earlier chapter, the population will continue to age for a considerable number of years, a steady rise in the death rate may be expected until the pressure of this factor is no longer operative. The crude death rate for England and Wales for 1935 was 11·7 per thousand living—0·3 above the lowest ever recorded. The changing age composition is,

no doubt, reflected in the rise in the rate to 12·1 for 1936. But for the fact that this change in age structure has been in process for some years, the crude death rate might have been lower. Only a dramatic reduction in mortality over the whole of the country or over large areas, such as the North and Wales, is now likely to influence any fall in the rate.

The respective standardised death rates for the two years were 9·0 and 9·2 per thousand living. These standardised rates are those which would have been recorded if the sex and age constitution of the population had been the same as in 1901. The rates for males and females are standardised for differences of age constitution in each sex, and also between the two sexes. Apart from the fairly general rise in death rates for many age groups over the whole of the country, there are a number of indicative tendencies — particularly among the younger age groups—emerging from a comparison of 1935–6 which should be noted and related to the general conclusions to be drawn from this and succeeding chapters.

Infant Mortality

Stillbirths rate (per 1000 live births legitimate and illegitimate) fell in England and Wales from 42 to 41, and in " Standard " from 37 to 36. In North I it rose from 44 to 45.

5–14

North.—Diphtheria death rate rose from 0·45 to 0·46. Percentage excess from 72 to 208. 251 additional surplus deaths. Rate fell—" Standard ", 0·26 to 0·15; England and Wales, 0·31 to 0·28.

North I.—Diphtheria death rate fell from 0·50 to 0·49 as against falls as above. Percentage excess rose from 94 to 227. 36 additional surplus deaths.

Wales.—Diphtheria death rate fell from 0·30 to 0·23 as against falls as above. Percentage excess rose from 13 to 51. 18 additional surplus deaths.

15–24

North.—Tuberculosis death rate fell from 1·03 to 0·96. Percentage excess rose from 62 to 63. Rate fell—"Standard", 0·64 to 0·59; England and Wales, 0·91 to 0·86.

North I.—Tuberculosis death rate fell from 1·48 to 1.33 as against falls as above. Percentage excess fell from 130 to 125.

Wales.—Tuberculosis death rate fell from 1·50 to 1·34 as against falls as above. Percentage excess fell from 135 to 128.

25–34

North.—Percentage of excess deaths unchanged.

Wales.—Death rate fell from 3·8 to 3·7 as against falls—"Standard", 2·7 to 2·5; England and Wales, 3·0 to 2·8. Percentage of excess deaths rose from 39 to 49. 68 additional surplus deaths. Tuberculosis death rate fell from 1·33 to 1·31 as against falls—"Standard", 0·88 to 0·80; England and Wales, 0·96 to 0·88. Percentage of excess deaths rose from 51 to 63. 22 additional surplus deaths.

35–44

North I.—Death rate rose from 5·2 to 5·5 as against a stationary rate for "Standard" of 3·8 and a fall for England and Wales from 4·5 to 4·3. Percentage of excess deaths rose from 27 to 44. 85 additional surplus deaths. Tuberculosis death rate fell from 1·08 to 1·06 as against falls—"Standard", 0·81 to 0·76; England and Wales, 0·86 to 0·81. Percentage of excess deaths rose from 33 to 40. 10 additional surplus deaths.

Above the age of 45 the comparisons between the two years do, broadly speaking, react unfavourably against the North and Wales, and as the instances increase considerably they are summarised below :

TABLE 16

COMPARISON OF EXCESS MORTALITY WITH 1935

	North	North I	Wales
45–54			
Death rate. Excess percentage	Unchanged (31)	Reduction (32-28)	Increase (33-35)
Cancer rate. Excess percentage	Reduction (22-17)	Reduction (25-17)	Reduction (26-16)
Heart disease rate. Excess percentage	Increase (51-57)	Increase (40-41)	Increase (58-71)
55–64			
Death rate. Excess percentage	Increase (38-39)	Reduction (37-36)	Unchanged (38)
Heart disease rate. Excess percentage	Increase (47-52)	Increase (43-47)	Increase (46-53)
Cancer rate. Excess percentage	Reduction (20-15)	Reduction (18-12)	Reduction (18-14)
65–74			
Death rate. Excess percentage	Unchanged (42)	Increase (36-40)	Increase (37-40)
Heart disease rate. Excess percentage	Increase (42-45)	Increase (29-38)	Reduction (45-44)
Cancer rate. Excess percentage	Reduction (18-13)	Reduction (13-12)	Reduction (13-7)
75 Up			
Death rate. Excess percentage	Reduction (30-29)	Reduction (28-26)	Increase (23-24)
Heart disease rate. Excess percentage	Increase (25-28)	Unchanged (16)	Increase (15-19)
Bronchitis, pneumonia and respiratory diseases. Death rate. Excess percentage	Reduction (42-30)	Reduction (30-29)	Reduction (40-33)

Generally speaking, Wales I inclines in the same direction as the whole of Wales except for the fact

that the divergencies tend to be more intensified. As previously inferred, the death rates from all causes and for the diseases cited are, in the majority of cases, higher, but nevertheless this factor has not contributed in the main to a reduction in the disparity between the North and Wales and "Standard". On the contrary, in many instances the excess percentage has tended to rise. The remarkable steadiness of the excess percentages over all three regions should be carefully noted.

The subjoined table illustrates clearly the distribution in 1936 of surplus mortality in the North and Wales from certain of the chief "killing" diseases (exclusive of cancer and deaths by violence).

TABLE 17

EXCESS MORTALITY FROM CHIEF "KILLING" DISEASES

(Percentage of Excess Deaths from Certain Causes according to Age Group that would not have occurred had the "Standard" Rates obtained in each region)

Region	Infant Mortality A	0–4 A	5–14 B	15–24 B	25–34 B	35–44 C	45–54 C	55–64 C	65–74 C	75 Up A
North .	84	85	65	63	77	74	57	52	45	30
North I.	105	96	112	125	36	96	41	47	38	29
Wales .	40	33	48	128	63	86	71	53	44	33
Wales I.	44	39	55	136	66	108	92	65	59	38

A = bronchitis, pneumonia and other respiratory diseases.
B = tuberculosis.
C = heart disease.

(4) ARMY AND AIR FORCE REJECTIONS

It will be observed from the Tabulated Statistics that the percentage excess above the rejection

rate for the Home Counties is for Wales roughly the same as the mortality excess occurring in the 15–24 age-group table, but for the North about twice as high. The Army figures are, of course, merely an index of ill-health and could, on that account, be higher than the mortality excess.

It is significant that approximately 70 per cent of the total applicants were in employment, and further that roughly half the total were between the ages of 18 and 20. The fact that the majority were not drawn from the ranks of the unemployed —although their health may have been impaired by past unemployment—realised in conjunction with their age and the high percentage of rejections, is, to say the least, disquieting.

It is not improbable to suggest, from the accumulated data, that those rejected from the Army will survive for some years in a state of ill-health, but that they will eventually die prematurely.

A considerable amount of propaganda has had to be, and still is, used by the War Office to encourage young men to join the Army. On that account, therefore, it is all the more interesting to note that if the rejection rate of 32 per cent for the Home Counties during 1936 had obtained in Northumbrian, West Riding and Lancashire (War Office Regional Grouping for the North) there would have been 3050 more recruits approved. Similarly, assuming the application of the Home Counties rate to Wales, 418 additional recruits would have been passed. Further, had the rate

obtained throughout the whole of England and Wales, 5993 more recruits would have joined the Army in 1936.

The rate of rejection for 1936 for the whole of England and Wales was 48·2 per cent. This indicates how, in dealing with national statistics of ill-health, mortality and other factors, the rate for the whole of the country can conceal widely divergent regional rates.

The rejection rate declined in 1937, which, according to the Annual Report on the British Army, " may be attributed to the introduction of graded medical standards, introduced in November, 1936 ".

The Air Ministry carried out during 1936 medical examinations on 19,031 candidates for enlistment. Of this number, 35·7 per cent were found unfit for general service. The standard of " fitness " for the Army and the Air Force probably varies; similarly, the two Services attract in all likelihood different types and classes of recruits drawn from varying districts and distinctive social grades. It is not possible to state the regional rates of rejection for the Air Force.

The one important conclusion that can, however, be inferred from these figures, is that anything from one-third to over one-half of the young men who present themselves for service in the Army and the Air Force are palpably unfit, and, further, there is a definite resemblance between the Army rejection rates for the North and Wales and the mortality data for those areas.

Mr. Hore-Belisha, Secretary for War, speaking at Devonport on 10th December, 1937, said: "Any difficulty in filling the Army lies not in any shortage of applicants, but in the high standard they have to attain. In 1936 we rejected 18,000." He then went on to say: "My predecessor started a depôt for training a limited number of men who were below standard, and as a result of the food and training given them, 576 of the 600 who joined the depôt have reached the full standard of fitness".

Introducing the Army Estimates in the House of Commons on 10th March, 1938, Mr. Hore-Belisha remarked that "The proportion of rejections is very high, and it would seem to be a form of national service for us to enlarge the system whereby recruits below the normal physical standards can be engaged and brought up to a better state of health". After discussing the success of his Physical Development Depôt, he announced that all recruits "who, in the opinion of the Medical Officer, need special nourishment will have an extra issue of half a pint of milk a day". Mr. Hore-Belisha may succeed in getting these unhealthy recruits to increase their intake of milk, but six to twelve years have elapsed since the time when it would certainly have been more beneficial to them. It is indeed a sad reflection on our muddled standards of social responsibility when this allowance of milk and all the other comforts with which the Army recruit is being surrounded are compared,

for instance, with the ascertained consumption of milk among large families discussed in this book under " Insufficient Purchasing Power " and " Poor Quality of Foodstuffs Available ".

From another standpoint it seems pertinent to enquire why the standard of health and well-being of workers engaged in other forms of national service —in mines, transport and armament factories, and in fact in all forms of industrial activity which are fundamentally as important to the life of the nation as the Defence Forces—should not be any whit inferior to the measurement of entry into the Army and Air Force.

(5) EXCESS MORTALITY (NORTH AND WALES)

The defects in these men rejected from the Army and Air Force must exist in varying degrees in millions of men, women and children in the country. While it is difficult to estimate an approximate figure, there appears to be little doubt that, based on all available evidence from innumerable sources, varying from Sir John Orr to the unemployment statistics, it is over 10,000,000, or a quarter of our living population. How else can one account for over 500,000 surplus and preventable deaths in the North and Wales alone during a period of only ten years ? What countervailing factors are there to suggest that a high rate of sickness, ill-health, malnutrition and inefficiency does not accompany this high mortality ?

An explanation as regards the use of column 2 is necessary. Mortality comparisons yielded by the crude death rates alone are vitiated by reason of the fact that the areal populations on which they are based may be of widely differing age constitutions. With a view to eliminating this element

TABLE 18

TOTAL MORTALITY FOR THE NORTH AND WALES

Region	Percentage Difference in Ratio of Regional adjusted Death Rate to "Standard" Ratio	Actual Deaths	Deaths if based on "Standard" Age Group Rates	Surplus Deaths	%
1936					
North .	(Excess) 34	169,691	124,101	45,590	37
North I .	,, 33	27,429	19,765	7,664	39
Wales .	,, 31	32,693	24,332	8,361	34
Wales I .	,, 34	22,791	16,310	6,481	40
		Total North and Wales		53,951	
1935					
North .	,, 36	166,646	120,057	46,589	39
North I .	,, 36	27,423	19,257	8,166	42
Wales .	,, 33	32,238	23,665	8,573	36
		Total North and Wales		55,162	

of variation, an areal comparability factor is provided by the Registrar-General for each area, and this, when multiplied by the crude death rate of the area, produces an adjusted death rate which may be regarded as comparable from a mortality point of view with the contemporaneous adjusted rate for any other area, or with the crude death rate for England and Wales as a whole (where the comparability factor is unity). A guide to the

relative incidence of mortality in different areas is thereby provided which expresses each regional adjusted rate as a ratio of the contemporaneous national rate. Column 2 of the foregoing table therefore shows the difference between the North and Wales and the " Standard " ratios. It is provided to indicate the close resemblance between the excess percentages arrived at by this method and the results of the 1935–6 analysis of mortality by age groups.

Comparing the 1936 with the 1935 totals, a saving of approximately 1600 lives is shown. This hardly constitutes an appreciable gain in a year of considerable improvement in trade and unemployment figures. Assuming the continuance, however, of the same rate, it will take another thirty-four years to eradicate the excess mortality, by which time, unless existing tendencies are checked, we shall be well on the way to committing population suicide.

CHAPTER VII

MATERNAL MORTALITY

CHAPTER VII

MATERNAL MORTALITY

Of the many serious problems in relation to public health, the question of safer motherhood is possibly first in national importance. There is little necessity for emphasis to be laid here on its moment. That it is fundamental to the livelihood of the nation is recognised among every stratum of our society. The Prime Minister, already quoted in the chapter "Infant Mortality", said, in the same speech at Edinburgh: "There is another rate in which I have always been very much interested—the maternal mortality rate. Last year [1936] was the lowest mortality rate since 1922."

Despite this improvement there is a general impression in the mind of the public that maternal mortality has not improved at the same rate or to the same degree as, for instance, infant mortality and deaths from certain causes and in certain age groups. This is, to some extent, borne out by the White Paper published by the Ministry of Health in April, 1937, containing the Report of a Special Investigation into Maternal Mortality in England, which had been made by medical officers of the Ministry (with the assistance, in a consultative capacity, of Sir Comyns Berkeley) during the

previous two years in the areas of 45 Authorities where maternal mortality had been more than 5 per 1000 live births, in 12 other areas above the national average of 4, and also in 12 areas where it had been below this average. The Chief Medical Officer in his Annual Report for 1936, commented: "The investigators stated that though the total number of deaths due to child-bearing is relatively small (less than 8 per cent of the total deaths from all causes of women between the ages of 15 and 45) and motherhood in this country has reached a comparatively high level of safety, the rate is nevertheless capable of further reduction, for many of the deaths are preventable and the mortality rate is higher than it should be. One hundred years ago the rate is believed to have been 10 per 1000 live births; for a number of years it has remained in the neighbourhood of 4 per 1000 live births despite the great expansions in the maternity services and the remarkable improvement in the general health of the community. The figures, however, for 1936 show a further decline, the rate for that year being 3·65 per 1000 total births and the lowest since 1922; it represents 155 maternal lives saved as compared with 1935."

Is the rate "capable of further reduction" throughout the whole of England and Wales or only in certain areas? What does "capable of further reduction" mean expressed in terms of maternal lives?

Comparing 1936 with 1935, the rate declined over the whole of England and Wales with the

exception of the North (containing one-third of the population), where it increased from 4·34 to 4·36 per 1000 live and still births. In North I (Durham and Northumberland) the increase was more pronounced. The rate rose from 4·68 to 4·78 per 1000 live and still births. On the other hand, reductions took place in Greater London of 24 per cent, in the South East of 19 per cent, in the "Standard" area of 14 per cent and in England and Wales, as a whole, of 7 per cent. In Wales the extent of the decline was smaller; namely, Wales 12 per cent, Wales I 13 per cent.

The general trade-recovery that has been witnessed since 1931 and any consequent accompanying betterment in public health is commonly believed to apply to the whole of the country, and particularly to those areas which suffered most from the economic depression. The statistics of maternal mortality do not bear out this belief. The Pilgrim Trust Unemployment Inquiry Report—Interim Paper No. IV—referred to in the chapter "The Impact of Unemployment on Mortality", analyses the changes between 1928 and 1934 in the distribution of maternal mortality in relation to variations in unemployment. On dividing 77 English and Welsh boroughs into two groups the Report states: "in the 38 Boroughs with less than 9·3 per cent depression unemployment (38 Boroughs had more than that figure), we find that, in 22 Boroughs the maternal death rate has taken a more favourable development than in the average for all County

Boroughs together, and only in 16 Boroughs was the development less favourable. In the second group, with heavy incidence of depression unemployment, only 12 Boroughs show a better-than-usual development in their maternal death rate, whereas 25 show a worse-than-usual development. (In one case there was a change exactly corresponding to the average change.) Thus we find that in the case of 47 Boroughs a mild (heavy) incidence of unemployment is associated with a favourable (unfavourable) change in maternal death rate, and only in 28 Boroughs did the opposite association hold good.

" Of the 8 County Boroughs with 5 per cent and less depression unemployment, 6 show a more favourable development and only 2 a less favourable development compared with the total of all County Boroughs, whereas of the 10 county Boroughs with 15 per cent or more, only 4 show an improvement, but 6 a worsening."

The Report in summarising the findings states : " It can be seen that the actual number of maternal deaths was no less than 865, or 19·8 per cent higher than that obtained on the basis of places where there was little increase in unemployment. This difference is too striking to be explained away, and may reasonably be assumed to be an effect of depression unemployment. It can thus be shown that unemployment during the last depression has raised maternal mortality rates by something like 20 per cent. If this percentage, obtained for the

77 County Boroughs, can in any way be considered as representative, we may estimate the number of human victims of depression unemployment among mothers dying of puerperal disease as 3200."

The conclusion that it is the mother who is the chief sufferer during unemployment confirms the personal observations of social workers. A sub-committee of the Industrial Christian Fellowship similarly reported that, where there are several children in the family of a poorly paid or unemployed worker, the mother is practically bound to starve herself of the essentials of a proper diet.[1]

Taking the years 1934 to 1936 inclusive, an analysis of the regional trend of maternal mortality during this period reveals that, whilst there has been a decline in the rate when comparing 1936 with 1934, the reduction is not so marked in the North and Wales (especially the former) as it is in the South.

TABLE 19

PERCENTAGE DECLINE IN MATERNAL MORTALITY (PER 1000 LIVE AND STILL BIRTHS)

	Per Cent
Greater London	30
South East	29
"Standard"	28
Wales	22
Wales I	22
England and Wales	17
North	12
North I	3

[1] *News Chronicle*, 18th January, 1937.

The following are the 1936 rates for the areas under consideration :—

TABLE 20

MATERNAL MORTALITY RATES

	Per 1000 live and still births	Excess % on Greater London
Wales I	5·29	145
Wales	5·17	138
North I	4·78	120
North	4·36	101
England and Wales	3·65	69
South East	2·57	19
Greater London	2·16	..

By taking the analysis a step further one sees that even the comparatively low rate for Greater London is " capable of further reduction ".

Bermondsey	5·04	per	1000	live and still births
Paddington	5·02	,,	,,	,,
Westminster	1·81	,,	,,	,,
Kensington	0·86	,,	,,	,,

Even for the whole county of Middlesex, whose population at mid-1936 stood at 1,940,400, the maternal mortality rate had been reduced to 0·89, according to the Annual Report by Dr. J. Tate, Medical Officer of Health, issued in January, 1938. This can be compared with, for instance, the 1936 rates for Durham of 5·60 and Glamorgan of 5·34.

To avoid any possibility of misinterpretation or exaggeration, it should be noted that, as the infant mortality rate is considerably higher in Wales and the North, the maternal mortality rate has been based on live and still births, which, to quote the Registrar-General, " provides a closer

approximation to the number of women exposed to the risk of dying from puerperal conditions than do live births alone ".

The Tabulated Statistics reveal that if the maternal mortality rate for Greater London had obtained in the North and Wales, the lives of 584 mothers would have been saved, or nearly four times as many as the number quoted by the Chief Medical Officer as representing the 1936 national gain over 1935. If the " Standard " death rate from all causes for women in the age group 15–44 had similarly prevailed, nearly 3200 lives would have been saved in one year, or, put in another way, we should have had over 30,000 more potential mothers (taking the " Standard " rates as operative in the North and Wales) in a period of ten years. Whilst allowance should be made for the fact that it may not always be possible to extend to rural areas the maternity and general health services that can be provided in urban communities, it is, however, exceedingly doubtful whether this factor has any appreciable effect in contributing to the surplus deaths amounting to nearly 3200 during 1936, especially when it is borne in mind that the great majority of the women in the North and Wales live in urban areas. For both the North and Wales it should be noted that the maternal mortality rate is higher in the more densely populated areas (South Wales, Durham, etc.) than in the sparsely populated districts (North and Central Wales and rural areas in the North).

The inestimable importance of safe motherhood should be remembered by those who do not underrate the seriousness of the population problem. Sir Henry Brackenbury, chairman of the Council of the British Medical Association, writing in *Human Affairs*, a chapter, "Medical Progress and Society", comments: "Maternity is becoming of more and more importance and value. Even to maintain the present population, and taking into account the proportion of inevitably sterile marriages, the average family should contain at least four children, and safety lies in these being born at an earlier period of married life. No organised effort has yet been made to get the nation to realise these facts. On the contrary, all organised effort has been directed towards a campaign which is almost bound to result in a less number of children being born, and to a postponement of their birth till a later maternal age. The State has taken some piecemeal measures intended to promote the giving of ante-natal advice, and the local authorities of certain towns have made increased provision for the hospital treatment of maternity cases, yet, during the period that such opportunities as these have been increasingly taken advantage of, the rate of maternal mortality in this country has risen. It is evident that it is not on these lines that the safety of motherhood is to be secured. The causes of maternal mortality, which is still too high, may certainly be biological, sociological, nutritional or psychological, as well as purely clinical. No adequate organised

enquiry has yet been made into these causes, and the time is overdue for society to establish such enquiry, and for the State to provide a fully equipped maternity service on national lines which will make available for every mother all those medical and ancillary requirements necessary for her during the whole period of maternity, based upon the skilled and careful attention of general medical practitioners and midwives in normal cases."

The chapter "The Problem of Population" discusses fertility trends and points out that the approximate deficit in the number of children for adequate total replacement is 19 per cent. To summarise the statistics it may be stated that to effect replacement of our present population 100 women must produce not 200, but 236 children to compensate for mortality losses. A considerable proportion of women do not, however, marry, or are sterile, and this factor must, therefore, be given due weight. The sex ratio at birth has also to be taken into account. After all these considerations have been allowed for, it is estimated that 100 women must have at least 272 children to maintain our present numbers.

At the present time 100 women are producing only 219. Here again recourse should be made to the chapter just cited which illustrates that Durham and Monmouthshire have the highest fertility rates of all counties in England and Wales. That being so, and conscious, as we should be, of the enhanced value of the children born in such areas, surely it

follows that the most energetic measures should be directed where they are most needed to cope with the procatarctic factors contributing to high maternal and infant mortality.

The relevant statistics do expose the importance, as Sir Henry Brackenbury emphasises, of strengthening and safeguarding the lives of mothers and potential mothers from the clinical aspects of child-bearing and general health and environment. For if one assumes that of the 3200 surplus deaths among women of 15–44 every 100 would have had 150 children (of the women aged 15–44 in England and Wales who died during 1936—28,966—it is estimated that 42 per cent were unmarried and 42 per cent were under the age of 30), the effect on the population would have been some 4800 more children in 1936, and, on the same basis, nearly 50,000 more in the last ten years.

An examination of the regional relationship between maternal mortality and total mortality referred to by the Chief Medical Officer, brings to light further contributory evidence and throws into relief the wide disparity that exists between the North and Wales and the South.

The figures do not, however, provide a true picture of the actual position on account of the heavier mortality from all causes in the North and Wales. This has the effect of reducing the percentage of deaths due to child-bearing in relation to total mortality. To eradicate this weighting and thereby to ascertain the correct relationship,

it is necessary to assume that the rate for total mortality (excluding maternal mortality) is the same in the North and Wales as in the area with which it is required to make comparisons—in this case Greater London.

TABLE 21

PERCENTAGE OF MATERNAL MORTALITY TO TOTAL MORTALITY: AGE GROUP 15–44

Region	1935	1936	Increase or Decrease
			%
North	8·3	8·9	Increase 7
North I	9·3	9·9	,, 6
Wales	10·6	9·2	Decrease 13
Wales I	10·4	9·2	,, 12
Greater London	6·0	4·8	,, 20
South East	7·1	5·9	,, 17
England and Wales	8·1	7·9	,, 2

Assuming therefore the prevalence of the same death rate during 1936 for all causes (excluding maternal mortality), the percentage of maternal mortality to total mortality rises as follows:

EXCESS DEATHS FROM CHILD-BEARING AND PREGNANCY

	%
North, 8·9 to 11·9, as against 4·8 for Greater London	148
North I, 9·9 to 15·0, as against 4·8 for Greater London	213
Wales, 9·2 to 15·0, as against 4·8 for Greater London	213
Wales I, 9·2 to 15·5, as against 4·8 for Greater London	223

This adjustment reveals that in over one-third of England and Wales (comprising a population

exceeding 15½ millions) the percentage of excess deaths from child-bearing and pregnancy on the foregoing basis (Greater London) varied between 148 and 223.

Surely the rather complacent outlook of the special investigators, quoted earlier in this chapter and summed up in the phrases, that although the rate is " capable of further reduction " " motherhood has reached a comparatively high level of safety ", cannot apply to the North and Wales ?

Apart, however, from these seriously alarming divergencies, has there been any improvement, as compared with past years, in the risks of motherhood over the whole of the country, as is implied by the responsible authorities, or is the reduction only relevant to certain areas ?

For the years 1911, 1912 and 1913 the maternal mortality rate for the whole of England and Wales was 3·87, 3·98 and 3·96 respectively. Whilst an improvement is discernible in the South, these figures do not—that is, assuming they prevailed in the North and Wales—indicate that child-bearing is any safer now in those regions than it was twenty-five years ago. On the contrary, they point to the fact that the risk is roughly anything from 15 to 35 per cent greater.

If these comparisons are carried further, it is found that the maternal mortality rate (per 1000 live births) for every year from 1911 to 1936 inclusive for England and Wales has never exceeded, and has generally been well below, the 1936 rate

for the North. The rate for the county of London for the period 1891–5, 4·37 (1896–1900 being 3·44), was almost the same as the 1936 rate for the North (4·36). Prior to 1911, and on the basis of the classification in use after 1911, one has to go back to before 1896 to find a rate for maternal mortality for England and Wales that exceeds the 1936 rate for Durham and Northumberland and the whole of Wales. According to the Text of the Registrar-General's Review for 1934, no year or group of consecutive years, as far as the statistics go back to 1891, produces a higher maternal mortality rate than that for South Wales for 1936.

Faced with this data, there does not appear to be much ground for complacency over maternal mortality in the North and Wales. It is only necessary to compare some of the results of the analysis with the rates prevalent in other countries to appreciate that, so far as the North and Wales is concerned, the rate is certainly " capable of further reduction ", and, as *The Times* (16th November, 1937) states, " there is still opportunity and necessity for improvement ".

For maternal mortality, again we still do not know what constitutes the " irreducible minimum ", but it is of interest to recognise that in one place in the world where the diet would appear to be adequate, this standard has undoubtedly been reached. Sir Edward Mellanby, writing in *The Times* of 30th October, 1937, in an article, " The Right Food ", states that " In Tristan da Cunha,

where the main articles of diet are milk, mutton, fish, eggs and potatoes, there is no rheumatism or arthritis, there has never been a death in childbirth, and the teeth are relatively free from caries and incomparably better than in Great Britain ".

Whilst in the far-distant future we may aim at this standard, for the present we may well content ourselves with an attempt to reduce maternal mortality over the whole of the country to the level reached in the South East.

Investigations into maternal and infantile death rates by the Joint Council of Midwifery (described in *Nature*, 28th March, 1936) led to the discovery that a hitherto unsuspected correlation between the two rates exists if they are charted in successive years instead of in the same year, the infantile rates being shown for the year preceding the maternal. This correlation, marked in depressed areas, is lessened and even reversed in prosperous districts. The average level of both rates is also much higher in districts in which unemployment is severe than in other areas. The maternal death rate of the five principal coal-mining counties, for example, for the years 1928–34 is 41·05 per cent higher than that prevailing in Middlesex and Essex, and for the years 1927–33 the infantile death rate is 50·98 per cent above. That nutritional rather than environmental factors underlie these figures is suggested by the fact that the correlation between the two rates appears in successive, and not in the

same years. This conclusion is undoubtedly in accord with the findings in this book.

The Medical Officer is also of the opinion that the cause of high maternal mortality is associated with nutritional factors. In their issue of 29th May, 1937, commenting upon the statement that " . . . the investigations made in the course of the enquiry have furnished grounds for the belief that there has been an increase of sickness and ill-health amongst the mothers in the industrial areas of South Wales " (from Report on Maternal Mortality in Wales, Ministry of Health, April 1937), they say, " We are left convinced that in this sentence will be found the explanation of the exceptional maternal mortality in Wales and that the reduction is more likely to be achieved by a herd of cows than by a herd of specialists ". There appears no reason to think that this conclusion does not apply equally well to the North.

In connection with the apparent correlation between excessive maternal mortality and malnutrition, it is interesting to note some of the results of the extraordinarily useful work recently carried out by the National Birthday Trust Fund. Under an experimental nutrition scheme during 1935–7, 10,384 mothers received special foods, the maternal death rate being 1·63 per 1000 births. Only one death from sepsis occurred in the whole series of cases. The number of mothers in the same areas not included in the distribution was 18,854. The maternal death rate in this group was 6·15

per 1000 births, and the number of deaths from sepsis 46. The infant death rate (including still-births) during the 1935–6 period is not available, but for the 3064 cases fed during the first six months of 1937 it was 57 per 1000, and for the 4781 cases not fed, 102 per 1000. The cost of this experiment worked out at 13s. 4d. for each mother. These results speak for themselves.

Rickets also are the cause of many deaths in childbirth, and this defect is generally associated with poverty and consequently dietetic deficiency. The Parliamentary Secretary to the Ministry of Health stated in the House of Commons that rickets was a disease " especially associated with malnutrition ".

The shape of the pelvic bone can be altered during childhood in a girl through insufficient nutrition and the absence of certain essential elements in diet. Even a small degree of ricketisation may cause some narrowing of the pelvis resulting in difficult labours and consequently some maternal mortality, infant mortality and still-births. The vital importance of sound nutrition during infancy and early girlhood in achieving a reduction in maternal mortality can thus readily be appreciated. Not only rickets but many other diseases and defects arise from inadequate prenatal nutrition. For instance, dental caries (and in turn all their complications) are undoubtedly the result of vitamin, calcium and phosphorus deficiency before birth. Good teeth are the result of a

balanced and satisfactory diet before and after birth.

Sir George Newman, Chief Medical Officer of Health, stated in his Report for 1932 when dealing with maternal mortality: "After all, sound nutrition in a pregnant woman is obviously the only way of sustaining her health and strength and that of her forthcoming child. She should become accustomed to a diet which includes ample milk—two pints a day—cheese, butter, eggs, fish, liver, fruit and fresh vegetables, which will supply her body with the essential elements, salts and vitamins." The purchase of milk per week at this rate would take about 4s. out of the 4s. 11d. minimum prescribed by the British Medical Association for all foods. It is not easy to ascertain how, for a period of seven days, three balanced meals per day, composed of the essential elements, can be bought and paid for with the odd elevenpence.

Included in this chapter are some of the basic facts revealed by a close analysis of the vital statistics supplied by the Registrar-General. Enough, however, have been quoted to show the wide, and apparently growing, disparity between the North and Wales and the South. The conclusions to be derived from a study of the facts imply the existence of a serious problem of national and even imperial importance. As Sir Kingsley Wood remarked, in moving the second reading of the Midwives Bill:[1] "Few matters to-day exceeded in importance that of the necessity

[1] House of Commons, 30th April, 1936.

of providing for safe and healthy motherhood, especially in view of the large amount of suffering, incapacity and ill-health, as well as death, which occurred as a result of complications arising from childbirth ".

As the Minister of Health indicates, the respective forces of the major mortalities are determined by the *stamina vitae* of women in childhood, and these forces are undoubtedly conditioned by the circumstances attending the birth of the children, both male and female.

Yet if these factors which go to produce malnutrition are allowed by the State to continue to operate over large areas of the country, surprise should not be expressed if it is found that the risk of bringing a child into the world is anything from 15 to 35 per cent greater in the North and Wales to-day than it was twenty-five years ago. For, to quote the Minister of Health once more, " When you are looking for a place in the family where malnutrition will show itself, and where the bad effects will show themselves, look at the mother. . . . It is impossible and beyond the power of any man to prevent a mother depriving herself for the sake of her children." [1]

[1] House of Commons, 7th July, 1933.

CHAPTER VIII

CANCER

CHAPTER VIII

CANCER

THE recorded deaths from cancer have risen from 867 in 1901–5 to 1625 in 1936 per 1,000,000 persons living. In 1936 this disease caused the deaths of over 66,000 persons.

It is the second principal certified cause of death at all ages and at ages 15–65. Reference should be made to the details relating to the distribution of the disease at different age levels included in the Tabulated Statistics. It should also be noted that, in recent decades, the death rate has been rising steadily. How far the increasing age of the population and the capacity for diagnosis has influenced the rate it is difficult to say, but there appears to be little doubt that mortality from malignant cancer shows a slight—but steady—increase. The Chief Medical Officer of Health, commenting on mortality statistics of the disease in his Annual Report for 1936, states: "The increases from year to year in the total number of deaths which occur are comparatively small; this applies to the whole population, and, therefore, with greater force to that of an administrative area. The variation is even less when a single organ or group of organs is under consideration. Further,

the proportion of deaths which each organ contributes to the total also remains remarkably steady, with a few exceptions where there is a gradual upward or downward trend. The constancy of the figures for deaths in these respects is such that the numbers of deaths by organs can be predicted, with fair reliability, for populations as small as 100,000 or so. It is comparatively easy, therefore, to anticipate the total number of cancer deaths, as well as their distribution by organs, which will occur in a given administrative area within one or two future years."

Throughout the age groups from 45 upwards, cancer appears to act as a measuring-rod, as although we know little about this dreaded disease, it appears to hit the rich and poor alike. There does not, on the available evidence, appear to be any correlation between poverty, malnutrition, overcrowding, and cancer. Aetiological research into the causation of cancer has yielded an estimate of approximately three years as the "natural duration" of the disease before death for a main group of "accessible organs". If one assumes, on the weight of the evidence produced by the mortality statistics for all causes of death, that victims in the North and Wales are likely to have less attention, particularly in the early stages of the disease, and that poverty, malnutrition and unemployment with all their attendant worries would play their part, then we can conclude that the "natural duration" of the disease would be less than three

years. Hence probably the following relatively small excess percentages :

TABLE 22

EXCESS DEATHS FROM CANCER

Region	Percentage of "Actual" Deaths exceeding "Expected" Deaths, *i.e.* the Deaths that would have occurred had the "Standard" Rate obtained		
	Age Groups		
	45–54	55–64	65–74
	%	%	%
North .	17	15	13
North I .	17	12	12
Wales .	16	14	7
Wales I .	19	12	5

Cancer is not, it would appear, an infectious disease, as is the case with other primary crowd-diseases. This, of course, partially explains the lack of correspondence with social indices such as overcrowding.

Dr. Stevenson pointed out in an analysis of cancer mortality and social class that the death rate (all sites) in the worst-placed class was higher than in any other class.[1] Whilst we lack knowledge of the genesis of the disease, statistical observations on the death rates can only be inconclusive. Cancer mortality may be related to unsatisfactory environmental conditions but the vital statistics do not proclaim that it is. The Annual Report (30th November, 1937) of the British Empire Cancer Campaign states that the Central Propaganda

[1] Registrar-General's Decennial Supplement, 1921, Occupational Mortality.

Committee are working to convince people that "cancer in its early stages is curable". Faulty diagnosis, inadequate attention in the initial and ensuing stages, ignorance and a lowered standard of resistance are factors which would seem to constitute a probable explanation of the higher mortality among the poor. Therefore it is reasonable to suppose that, for the purpose of obtaining confirmatory evidence, cancer can be treated as a "control" disease for measuring mortality from a poverty disease like tuberculosis.

Nevertheless, the fact that there is an excess percentage of deaths (though slight compared with tuberculosis) among the less prosperous indicates that a proportion of cancer mortality could be prevented. The following table shows the steadiness of the death rates:

TABLE 23

CANCER DEATH RATES

	Death Rate per 1000 Living	
	1934	1936
AGE GROUP 45–54—	%	%
"Standard"	1·74	1·66
North	1·93	1·95
Wales	1·90	1·93
England and Wales	1·88	1·86
AGE GROUP 55–64—		
"Standard"	4·03	3·99
North	4·73	4·61
Wales	4·39	4·54
England and Wales	4·41	4·34
AGE GROUP 65–74—		
"Standard"	8·1	8·3
North	9·4	9·4
Wales	8·9	8·9
England and Wales	8·8	8·7

Another relevant passage from the Annual Report of the British Empire Cancer Campaign states: "The enquiry into the distribution in England and Wales of cancer in different sites has been continued. It appears to show that whereas the total incidence of cancer for all sites is approximately the same for similar urban areas, there is considerable difference in the site incidence. Thus, while London and Lancashire have both a total incidence of 107, the probability that cancer when it develops will appear in the skin is twice as great in the Lancashire towns as in London for men of the same age, whereas the probability that cancer will appear in the bladder or prostate is more than half as great in London as in Lancashire. This supports the hypothesis that certain intrinsic factors operating through a man's ordinary environment may be of great importance in determining in what part cancer will appear. Whether or not this difference in site incidence has any relation to occupation remains to be determined. New data of the mortality of cancer in different occupations will shortly be available in considerable detail." The fact that this site incidence varies does not appear to affect the total distribution except in so far as the excess percentages for the North and Wales imply the operation of other factors.

CHAPTER IX

TUBERCULOSIS

CHAPTER IX

TUBERCULOSIS

TUBERCULOSIS is still one of the most feared diseases. It is the second cause of death (apart from diseases of the heart) for persons aged 15–65. In England and Wales in 1936 it accounted for nearly 30,000 deaths.

It is the chief killing agent (England and Wales, " Standard ", North and Wales) in the age groups 15–24, 25–34 and 35–44 and the second cause of death for children 5–14 in the North and Wales. It is, however, third on the list in this age group for " Standard ", being well below deaths by violence.

The influence of tuberculosis on the nation's life can best be described in the words of the Chief Medical Officer of Health in his Annual Report for 1936 : " A striking feature of the modern outlook on tuberculosis is the public recognition of the social and economic effects which follow in its train. Tuberculosis is no longer solely a disease of medical significance and relegated entirely to the physician and the surgeon. Its social and economic implications are far reaching. Farr, Newsholme, Hoffman, Biggs and others have repeatedly shown tuberculosis to be a source of financial loss to the com-

munity in wage-earning power and efficiency, which too often brings its victim to poverty and destitution. For these reasons Mr. Lloyd George made sanatorium treatment a prominent feature in the National Insurance Act, 1911, a measure which led on to the tuberculosis schemes of Local Authorities with their machinery of prevention and treatment available for the whole community. The triumphs of preventive work in tuberculosis are well known. An improved standard of living and hygiene, better wages, better nutrition and public health measures, together with the segregation of infectious cases of pulmonary tuberculosis in poor-law hospitals and the cessation of indiscriminate expectoration, exerted their influence on the decline of tuberculosis in England and Wales before special attention was devoted to the problem by the State."

It is a disease directly associated with and influenced by economic conditions. To use the words of the Parliamentary Secretary to the Ministry of Health, it is " especially associated with malnutrition ". As *The Times* remarks: " A close relationship is known to exist between the incidence of tubercle and the size of 'real' wages ".[1] It is therefore of considerable importance to note that this disease produces some of the highest excess percentages in the age groups 5–14, 15–24, 25–34 and 35–44, the trend being, as with deaths from all causes, in the *expected direction*, *i.e.* in accord with the known incidence of such unfavour-

[1] 30th June 1938.

able factors as unemployment, poor relief and overcrowding, namely:

TABLE 24

EXCESS DEATHS FROM TUBERCULOSIS

Region	Percentage of "Actual" Deaths exceeding "Expected" Deaths, *i.e.* the Deaths that would have occurred had the "Standard" Rate obtained			
	Age Group			
	5–14	15–24	25–34	35–44
	%	%	%	%
North . . .	65	63	7	11
North I . . .	112	125	36	40
Wales . . .	48	128	63	19
Wales I . . .	55	136	66	21

In view of the enormous expenditure incurred during the past twenty years in domiciliary and dispensary prevention, sanatorium treatment and research, it is surely highly indicative of economic conditions during 1936 to find, over large areas of the country, particularly among young people of 5–24, such an abnormally excessive number of surplus deaths.

An analysis for the preceding five-year period (1931–5) according to age and sex, provides, if indeed it is necessary, an even clearer indication of the association of tuberculosis with unfavourable economic conditions. This disease, of all those studied, appears to be the most sensitive to variations in such indices of poverty as unemployment allowances, poor relief and a sustained experience of depression in a given area (irrespective of whether it is situated in the North, Wales,

Midlands or South). Almost always such indices are faithfully reflected in a rise in tuberculosis mortality and morbidity, especially in the responsive age groups (15–35) for both men and women.

The following table relates to female deaths from respiratory tuberculosis in Greater London and in certain rural and urban districts, and cities :

TABLE 25

FEMALE DEATHS FROM TUBERCULOSIS

(Mean for period 1931–5. Mortality expressed in terms of that in England and Wales = 100)

	Age Groups	
	15–35	35 Up
Greater London . . .	90	97
Surrey U.D.s . . .	68	71
Surrey R.D.s . . .	58	79
Hertfordshire U.D.s . .	73	78
Hertfordshire R.D.s . .	60	73
Newcastle	139	127
Durham U.D.s . . .	136	122
Durham R.D.s . . .	117	105
Northumberland U.D.s .	127	106
Northumberland R.D.s .	81	127
Cardiff	136	133
Glamorgan U.D.s . .	177	130
Glamorgan R.D.s . .	143	94
Monmouthshire U.D.s . .	163	104
Monmouthshire R.D.s . .	112	83

These statistics of female mortality have been particularly selected on account of their importance in affecting the number of potential mothers, and thereby the future total population of the country.

For men aged 15–35 a similar analysis (respiratory tuberculosis) shows the trend to be broadly

in the same direction as indicated by the results of the 1936 investigation (obtained by a different statistical approach).

For this age group (men) the three English counties (aggregates of urban districts, excluding the county boroughs) with the highest mortality (1931–5) are, in descending order :

Cumberland
Durham
Lindsey Division of Lincs.

For women (15–35), similarly :

Cumberland
Durham
Northumberland

For deaths from non-respiratory tuberculosis for persons of all ages during 1931–5 the three English counties with the highest mortality, again in descending order, are :

Cumberland
Northumberland
Durham

The English and Welsh boroughs with the highest mortality from respiratory tuberculosis (similar period) :

	Women 15–35		*Men* 15–35
Highest in South East :			
West Ham . .	131	West Ham .	153
Southampton . .	129	Southampton .	138
Highest in North I :			
Gateshead . .	210	South Shields .	280
South Shields . .	206	Sunderland .	192

Highest in Wales I :	*Women* 15–35		*Men* 15–35
Merthyr Tydfil	240	Cardiff	197
Newport	180	Merthyr Tydfil	160[1]

The statement—backed with all the authority of the Ministry of Health—" that tuberculosis is especially associated with malnutrition " must surely, in face of this statistical evidence, imply the existence of a deep and widespread incidence of malnutrition over one-third of the population of England and Wales among children from 5 to 14 and among men and women from 15 to 35 and over.

For every one that succumbs to the disease many more must continue to live in an impaired state of health. Social workers and doctors in those areas with a high incidence of tuberculosis cannot fail to be aware of the deterioration that is taking place before their eyes. There is, in consequence, a growing volume of evidence from first-hand personal observations.

At the Annual Meeting in 1933 of the Durham County Society for the Prevention and Cure of Consumption, Dr. O'Hara said, according to the press : " Most of our children are suffering not so much from tuberculosis as from starvation. 75 per cent of the cases admitted to the society's sanatorium were traceable to under-nourishment." The Medical Officer for Durham, Dr. K. Falconer, said

[1] The foregoing data are for the period 1931–5, mortality being expressed in terms of that in England and Wales = 100.

in his Report for 1932 : " One is forced to the conclusion that want and impoverishment, following in the train of long-continued unemployment and low wages, are amongst the chief exhaustive factors of such an unduly high phthisis rate ".

In his investigation of the Tyneside areas of Jarrow and Blaydon, F. C. S. Bradbury found that overcrowding and tuberculosis mortality were statistically related, and adduced evidence to show that the connection was probably one of contributory cause and effect. This conclusion is in accord with previous work on the same problem. F. E. Wynne showed that the incidence of tuberculosis in Sheffield in households with more than two persons per room was more than twice that in households with less than one person per room. Sir A. S. MacNalty gives similar striking figures for 1929 in a large town where there was considerable overcrowding. The incidence rate was 4·43 per 1000 among persons whose households occupied one room, as compared with 1·32 per 1000 among those whose households occupied more than four rooms. It should not be overlooked that Durham and Northumberland (North I) which have, as previously cited, such a seriously excessive incidence of tuberculosis, are the two most overcrowded counties in England and Wales despite their enormous total of unemployed (see also sub-chapter " Bad Environment ").

F. C. S. Bradbury in his study of the Tyneside areas—previously quoted—demonstrates statistic-

ally the influence of poverty as a whole in promoting the development of tuberculous disease. He examined the association of various environmental factors with tuberculosis, as judged by case incidence (morbidity). When a series of 1300 families in Jarrow was divided into those who had an average income of less than ten shillings a head a week and those who had this or a larger income, a tuberculous individual was found to be present in 55 per cent of the former as against 35 per cent of the latter. In Blaydon the corresponding figures were 34 per cent. and 18 per cent. Bradbury considers this association of poverty with tuberculosis to be statistically significant, and adduces evidence to show that the chief element of this association is that poverty causes tuberculosis rather than that tuberculosis leads to poverty. A special investigation carried out in 1921–3 by the Registrar-General disclosed that mortality from tuberculosis was approximately three times as great among the poorer sections of the population as among the upper and middle classes. Dr. T. H. C. Stevenson's paper, "The Incidence of Mortality upon the Rich and Poor",[1] illustrates in a conclusive manner that a principal determinant of mortality from tuberculosis is nutrition.

As long as we continue merely to alleviate or minimise the disabilities arising from the disease and fail to concentrate upon eradicating those social and economic evils which tend to illness and

[1] *Journal Royal Statistical Society*, vol. lxxxiv, 1921.

death, so long will tuberculosis continue to inflict suffering and death on thousands of our children and young people. If the lives of these young people are of any value to the nation, why do we allow over 1600 of them between the ages of 5 and 34 to die every year in the North and Wales from this disease, when the experience of the South has proved that this excess mortality can be and is prevented ? Healed tubercle infection was found some years ago in about 90 per cent of autopsies at the London Hospital. As *The Times*[1] remarks: " What keeps it in check is probably good food ". But not apparently in the North and Wales.

[1] 17th February, 1938.

CHAPTER X

BRONCHITIS, PNEUMONIA AND OTHER RESPIRATORY DISEASES

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BRONCHITIS, PNEUMONIA AND OTHER RESPIRATORY DISEASES

THESE diseases were responsible for over 50,000 deaths in England and Wales in 1936. According to *Housing Conditions and Respiratory Disease*, issued by the Medical Research Council, " Modern preventive medicine pays more regard every year to pneumonia because in this country it is responsible for more deaths than any other acute infection ". It has been estimated that diseases of the respiratory system account for approximately 39 per cent of all sickness claims.

In addition to the inclusion of details in certain of the Tabulated Statistics relative to mortality from these diseases, it is instructive to note the following disparities :

TABLE 26

DEATHS FROM INFLUENZA AND OTHER DISEASES
(Deaths per 1,000,000 Living, all Ages)

Area	Influenza *		Encephalitis Lethargica		Cerebrospinal Fever	
	1934	1935	1934	1935	1934	1935
England and Wales .	139	182	19	18	18	15
Greater London .	119	110	10	10	15	13
" Standard " . .	134	149	16	15	10	8
North . . .	138	233	27	26	27	22
North I . . .	167	216	34	33	40	24
Wales . . .	166	242	18	13	14	12
Wales I . . .	162	203	9	11	12	14

* Neither 1934 nor 1935 were epidemic years for influenza.

Major Greenwood inclines to the view that encephalitis lethargica, cerebrospinal fever and also acute poliomyelitis are clinically related to the influenza group. See *Epidemics and Crowd-Diseases* in which he discusses epidemic diseases of the nervous system. Refer also *Epidemic Diseases of the Central Nervous System* (A. S. MacNalty).

Minor respiratory diseases are, it has been suggested, epidemiologically related to pneumonia.

Discussing catarrh and sore throat, S. F. Dudley [1] remarks that " it may well be that the multitude of these mild infectious cases may function as a reservoir or incubator for more serious complaints and act as a breeding ground for epidemics ". The importance of minor respiratory disorders as the greatest single cause of temporary disablement has been frequently pointed out by medical authorities.

The occurrence of such high excess percentages of deaths among children aged 0–4 from bronchitis, pneumonia and other respiratory diseases during 1936, ranging from 33 in Wales to 96 in North I, seems indicative of the widespread distribution in those areas of minor respiratory disorders of a disabling character. It will be seen from the Tabulated Statistics that over 2000 excess deaths occurred during 1936 amongst children aged 0–4 in the North and Wales from bronchitis, pneumonia and other respiratory diseases. Further, if Table 17 is referred to it will be noticed that the percentages

[1] Sp. Rep. Ser. Med. Res. Council No. 111 (1926).

of excess deaths incline in the direction one would expect; that is, in accord with a heavier incidence of unemployment, poor relief and other economic indices.

As to the causal factors of excessive mortality from respiratory diseases, Sir Edward Mellanby [1] suggests the responsible agents to be of a nutritional order, deficiency in vitamins, especially Vitamin A, and carbohydrate excess. On the other hand, Sir Leonard Hill [2] attaches importance to environmental factors, overcrowding and lack of light and ventilation. It would seem that all these determinants play their part in varying degrees in contributing to the serious excess mortality in the North and Wales.

[1] *British Medical Journal*, 1926.
[2] Sp. Rep. Ser. Med. Res. Comm. No. 32 (1919).

CHAPTER XI

THE DYNAMICS OF PREMATURE DEATH

(1) The Factors.
(2) Regional Distribution of Unemployment.
(3) Duration of Regional Unemployment.
(4) Long Unemployment.
(5) Unemployment, 1938.
(6) Analysis of Unemployment Payments.
(7) Poor Relief.
(8) Prolonged Sickness or Physical Disability.
(9) Bad Environment.
(10) Insufficient Purchasing Power.
(11) Poor Quality of Foodstuffs Available.
(12) Irreducible Element of Human Incapacity and Carelessness.

CHAPTER XI

THE DYNAMICS OF PREMATURE DEATH

(1) THE FACTORS

THE people of England and Wales have been statistically examined at both extremes; that is, their entry into the world and their exit from life.

Apart from questions of heredity and pre-natal nutrition, there are a variety of quotidian factors interacting one upon the other, all of which play their part in determining health, happiness and exit from life. Some of these influences, such as unemployment, housing and income, will be investigated in the following pages. Other factors, for instance occupational (hours and conditions of work), availability of healthy leisure facilities such as playing-fields, gymnasia, swimming-baths and opportunities for obtaining a maximum of sun and air, cannot, for reasons of space, be dealt with here. There can be no doubt, however, that these questions, whilst involving many other aspects, determine to a large extent whether the mass of the people receive an adequate amount of benefit from some of the essentials for healthy life and development. These essentials are, in the main, food, drink, shelter, clothing, sun, air, and rest and quiet.

The question of occupational disease and industrial morbidity and mortality will always be an important determining factor of length of life. It is sufficient to study the Reports from Inspectors of Factories, Workshops and Mines to appreciate the incidence of accidents and mortality arising from employment, more particularly when it is realised that over 25,000 people were killed at their work during the decennium 1926–36. Of these, 24,877 were attributable to four occupations: mines, factories, ships and railways. Less than 1000 were killed in all other industrial occupations. There is adequate evidence to suggest that if working conditions were more thoroughly related to the scientific, technological and administrative advances that have been made in the past twenty years or so the great majority of these 25,000 working people need not have died. In the mining industry in Great Britain, for instance, there were, during 1925–34, 117 explosions and 753 deaths. Compare this with the experience of France in the same period where there were 11 explosions and 58 deaths. The reason may be sought in the Report of Major H. M. Hudspeth, Deputy Chief Inspector of Mines, who, following a visit to the French coalfields in May, 1937, stated: "It would appear that the comparative freedom from explosions in France is not unconnected with the high statutory standards of ventilation".

Beyond, however, the references already made, it is not intended to enter here upon a detailed

consideration of the great range and variety of the problems surrounding occupational morbidity and mortality. For a fuller study of these questions reference should be made to such books as *Accidents and their Prevention*, by H. M. Vernon, *The Health of the Industrial Worker*, by M. Greenwood and E. L. Collis, and to the relevant publications of the International Labour Office.

Preceding chapters have shown all too clearly the high and sustained incidence of surplus and avoidable mortality in the North and Wales and have associated this mortality with dietary deficiencies and unhealthy environment. Investigators attempting, however, to establish the fundamental cause or causes are always faced with an array of connascent factors all co-existing at varying degrees of intensity, all operating under different economic, social, biological and geographical conditions with some concurrently providing *prima facie* evidence of divergent tendencies. To use Meyerson's phrase, therefore, this diversity must be reduced to identity; identity in this case being the basic explanation of the annual occurrence of tens of thousands of premature deaths in the North and Wales.

Of the determining factors, occupational morbidity, factory accidents and the provision and scope of public health services have already been mentioned. These are not only influences in affecting expectation of life, but it appears that they can be equated with some of the principal factors like income and housing. They are related to, and

coactive with, other primal factors, and the sum total of determinants, past and present, includes, it must be remembered, the problem of heredity. It is, however, impossible to assess what part heredity plays in these premature deaths, beyond stating that its forces of cause and effect are ceaselessly at work. Poverty leads through malnutrition to diseases and defects which are reproduced in the children of parents whose income fails to provide a balanced and nutritive diet. The effects of this vicious circle on the future of the nation can best be appreciated when they are related to the regional distribution of our children and similarly the incidence of poverty. Satisfactory diet allows valuable hereditary qualities to assert themselves and leaves the door open for environment to play its part.

After, therefore, every possible type and degree of factor determining the expectation of life has been surveyed, there remains one primordial consideration from which practically all other factors originate. That, in short, is the availability of food and drink for adequate nutrition. The presence of these necessities of life depends upon adequate income. If there is insufficient income, then eventually malnutrition will make its appearance, the end results of which are in all probability premature ageing and death. It follows, therefore, that an analysis of the regional indices of inadequate income is necessary.

During a debate in the House of Commons in November, 1937, on questions of economic con-

ditions and malnutrition, Sir Arnold Wilson, M.P., listed six, which he described as " real causes of malnutrition ", namely :

Long-continued unemployment ;
Prolonged sickness or physical disability ;
Bad environment ;
Insufficient purchasing power ;
Poor quality of foodstuffs available ;
Irreducible element of human incapacity and carelessness, which is found equally in all classes in the country.

It is intended, therefore, in the following pages to examine the regional incidence of these causes in the order named by Sir Arnold. For the sake of clarity, some of the subjects are subdivided under different heads.

(2) REGIONAL DISTRIBUTION OF UNEMPLOYMENT

Below are the figures of unemployment by areas as at July, 1936 :

TABLE 27

UNEMPLOYMENT, JULY, 1936

Ministry of Labour Division	Numbers Unemployed (in Thousands)	Per Cent Unemployed	Per Cent of Men only aged 25–45 of Total Unemployed in Areas
London	156	6·5	40·7
South Eastern . . .	61	5·6	41·6
South Western . . .	76	7·8	42·5
North Eastern . . .	362	16·6	45·9
North Western . . .	359	16·2	45·9
Wales	188	28·5	46·4
Great Britain and Northern Ireland	1717	12·7	45·0

Broadly speaking, the whole of the South of England has a population of approximately 16,000,000. The aggregate for the North and Wales is about the same. In July, 1936, there were 293,000 unemployed in the South and 909,000 in the North and Wales, or three times as many.

Apart from the enormous divergence between the South and Wales, it will be noted that the percentage of unemployed in the North exceeded that in the South East by nearly 200. Further, that a higher proportion of the unemployed in the North were in the age group 25–45, which normally comprises mainly married men with families to support. At July, 1936, the total registered unemployed, including some of the non-insured trades, were distributed as follows :

London . .	156,000
Rest of South .	137,000
Midlands . .	181,000
North . .	721,000
Wales . .	188,000
Scotland . .	268,000
Northern Ireland .	65,000

Even such high percentages of the insured population in the North and Wales as 16 and 28 per cent, respectively, obscured the existence of relatively large areas suffering from even more intense and prolonged unemployment. This is shown by the following table, giving the percentage of all the counties in the areas under review :

TABLE 28

UNEMPLOYMENT BY COUNTIES, MAY 1936

(Per Cent of Insured Populations Unemployed 25th May, 1936)

	Per Cent
NORTH I—	
Durham	27·7
Northumberland	20·2
REMAINDER OF NORTH—	
Cumberland	27·1
Yorkshire (N. Riding)	19·6
Lancashire	17·6
Yorkshire (E. Riding)	16·0
Cheshire	14·5
Yorkshire (W. Riding)	14·0
Westmorland	6·9
WALES I—	
Brecknockshire	48·0
Glamorganshire	36·3
Monmouthshire	35·4
Carmarthenshire	22·8
REMAINDER OF WALES—	
Pembrokeshire	31·9
Montgomeryshire	24·6
Cardiganshire	23·0
REMAINDER OF WALES (*contd.*)—	
Denbighshire	22·7
Merionethshire	16·3
Radnorshire	16·0
Carnarvonshire	15·2
Flintshire	12·9
"STANDARD"—	
Hampshire	8·6
Essex	7·6
Kent	7·0
Berkshire	6·8
Buckinghamshire	5·2
Hertfordshire	5·0
Sussex	4·7
Surrey	4·7
Oxfordshire	4·6
Middlesex	4·3
Bedfordshire	3·0
ENGLAND AND WALES	12·3
GREATER LONDON	6·8

The percentages of unemployment given above must not be considered as representing the accurate actual incidence of unemployment.

(1) The estimated resident insured population, as a percentage of which the actual employment figures are expressed, is that of July, 1935 (when employment books were last exchanged), while the actual unemployment figures are those of 25th May, 1936.

(2) The figures of unemployed include all unemployed juveniles (14–17 years), while the estimate of the resident insured population excludes juveniles below 16.

(3) In some cases the unemployed juveniles have been registered at places other than their places of residence.

(4) In a few cases the figures of unemployed persons include, besides resident unemployed, participants of Government Instructional or Occupational Centres.

These factors (applying generally to unemployment statistics for any given year), though they may tend to influence to a limited extent the actual percentages, do not make invalid comparisons of differential regional or county unemployment.

The total insured population of the eleven counties in England and Wales with a percentage above twenty was 1,257,712, equal to approximately half the total population of Wales. It should be noted that all the eleven are in the North and Wales, and, further, that the four counties comprising Wales I are included. In other words, in these eleven counties with a total population of 4,650,000 (greatly exceeding the populations of such countries as Denmark and Switzerland and being two-thirds of the total population of Australia and nearly half that of Canada), with an insured population of 1,257,712, from 2 to 5 out of every 10 were unemployed in a year of relative prosperity.

The level of unemployment in those areas receiving particular State attention was, as might be expected, abnormally high. In the South Wales Special Area, as defined in the Special Areas Act,

1934 (comprising in January, 1937, a population of approximately 950,000), there were on 25th January, 1937, 125,175 persons, or 30 per cent of all insured workers unemployed. These figures of unemployment, covering over one-third of the total population of Wales, and not, as many people are sometimes led to believe, merely a relatively small derelict community, reveal clearly the extent of social degradation and deterioration that must ensue from the continued existence of unsatisfactory economic conditions. This figure of 30 per cent for all insured workers exceeded that of the South Eastern Division of England by over 400 per cent. The Minister of Labour stated on 9th March, 1937, that 32 of the 38 Special Area districts in South Wales had over 30 per cent unemployment during the period January to December, 1936. Five districts experienced between 20 and 30 per cent, and one less than 20 per cent. A Ministry of Labour analysis on 20th July, 1936, revealed that, of the 98,999 wholly unemployed men, one-eighth had been continuously out of work for over five years, two-fifths for over two years and more than one-half for over one year. A fifth had been unemployed for less than three months.

The extent of unemployment among young men in the Special Areas of South Wales and Durham and Tyneside was considerable, despite the very large numbers transferred under official schemes. A total of 38,398 between the ages of 18 and 24 were unemployed in May, 1936, whilst on

the 21st September, 1936, 12,578 juveniles in South Wales alone under 18 years of age were registered as wholly unemployed, although, during the first eight months of 1936, 3529 boys and girls were transferred from this area to other parts of England and Wales.

In the Durham and Tyneside Special Area there were on 25th January, 1937, 129,071 persons, or nearly 25 per cent of all insured workers, unemployed. On 9th March, 1937, the Minister of Labour stated that 16 of the 41 Special Area districts in Durham and Tyneside had over 30 per cent unemployment during the period January to December, 1936, 15 had between 20 and 30 per cent and 10 had less than 20 per cent. The Ministry of Labour analysis for July, 1936, showed that nearly a ninth of the unemployed men had been continuously out of work for over five years, more than a fourth for over three years, and more than a half for over one year. Only two out of nine had been unemployed for less than three months. The third Report (1936) of the Commissioner for the Special Areas revealed that the percentage of young men between the ages of 18 and 20 unemployed for over one year was 34·9 ; and for 21 to 24, 57·0.

To take the analysis a step further, the following table indicates the full extent of the socially pathological conditions that existed in some constituent districts of the counties already named :

TABLE 29

ABNORMAL LOCAL UNEMPLOYMENT, MAY, 1936

Places	Counties	Per Cent of Insured Population Unemployed
Brynmawr	Brecknockshire	77·6
Ferndale	Glamorganshire	71·9
Blaina	Monmouthshire	70·6
Tonypandy	Glamorganshire	59·3
Pontlottyn	,,	53·8
Pontypridd	,,	52·6
Merthyr Tydfil	,,	51·9
Maryport	Cumberland	51·6
Bishop Auckland	Durham	48·5
Whitehaven	Cumberland	48·3
Pembroke Docks	Pembrokeshire	47·2
Willington Quay	Northumberland	45·9
Cleator Moor	Cumberland	45·0
Shildon	Durham	43·0
North Shields	Northumberland	36·9

These fifteen districts contained a total insured population of 111,580, or nearly 10 per cent of the aggregate insured population of the previously cited eleven counties. It is difficult, in the face of such tragic figures of unemployment in these communities embracing over 400,000 human beings, not to associate this economic phenomena with the infant, maternal and general mortality statistics. The mass of the working people, constituting a major proportion of the total population, must locally, regionally and nationally condition the trend of vital statistics. And unemployment with its concomitant, a lowered standard of living, must be reflected in the health of those out of work and their families according to the period of

unemployment, even if other factors favourable or unfavourable are isolated. In contrasting the North and Wales with the South, the preceding tables give some indication of the incidence (but not the character) of unemployment at mid-1936.

Before, however, analysing the variations in the different types of public aid received by the unemployed, the problem must first be considered as to whether the pronounced disparity in the regional incidence of unemployment is of long standing and persistent duration, or only of a temporary nature, and whether this disparity remains, subsides or rises with variations in the national total of unemployed.

(3) DURATION OF REGIONAL UNEMPLOYMENT

It is probably true to say that a wide dispersion of a given total of unemployment is more favourable to the general health and well-being of the people—apart from its less harmful effects on economic and social standards—than concentrated and long-term unemployment in certain areas.

Prolonged and severe unemployment in certain areas must have objectionable and injurious effects on, for instance, the quality and range of services supplied by local authorities such as housing, sanitation, roads, health and other services, and consequently local taxation, ratable values, the extent of poor relief and many other related factors, quite apart from the problems (discussed later) of

transference, migration and the age structure of the constituent populations.

Unemployment of a temporary and diffused character is less likely to find reflection in mortality statistics than long-term unemployment. Even, however, with the latter, though health may be impaired, it may be some time before vital statistics are affected to any appreciable extent. Thus it is important, when examining death rates for 1935–6, to ascertain the duration and severity of regional unemployment if it is to be considered as a causal factor of premature death. With a general fall in unemployment, as has been witnessed since the height of the depression, does the dissimilitude between regional rates of unemployment tend to decrease? The following table (see next page) illustrates the position.

This table shows indisputably that, with one insignificant exception (Westmorland), all the counties in the North and Wales were above, whilst all the counties constituting the " Standard " region were below, the general rate before, during and after the depression. Also that Durham, Northumberland, Cumberland, Yorkshire (North Riding), Lancashire, and the whole of Wales, with the exception of Flintshire, had higher percentages of unemployment after the depression than before, whilst all the " Standard " counties (except Buckinghamshire) had lower ones. Further, the table displays the fact even more clearly that in 1936 the Northern and Welsh counties just instanced had a considerably

TABLE 30

CHANGES IN UNEMPLOYMENT BY COUNTIES

(Differences in Per Cent of Insured Populations Unemployed)

1	Difference between General Rate and County Rate			
County or Region	2 General 12·4 (13/1/30: Pre-depression) *	3 General 22·4 (23/1/33: approx. Peak of Depression)	4 General 12·3 (25/5/36: Post-depression)	5 Difference between Columns 2 and 4 (*i.e.* Increase or Decrease in Extent of Deviation above or below Average Incidence)
NORTH I—				
Durham	5·4	18·8	15·4	9·9
Northumberland	4·8	9·3	7·9	3·0
REMAINDER OF NORTH—				
Cumberland	6·8	14·0	14·8	7·9
Yorkshire (N. Riding)	2·7	20·2	7·3	4·5
Lancashire	3·5	2·8	5·3	1·7
Yorkshire (E. Riding)	4·6	1·9	3·7	− 1·0
Cheshire	4·1	5·0	2·2	− 2·0
Yorkshire (W. Riding)	2·9	2·6	1·7	− 1·3
Westmorland	− 4·0	− 9·5	− 5·4	− 1·5
WALES I—				
Brecknockshire	26·7	33·1	35·7	8·9
Glamorganshire	7·6	17·6	24·0	16·3
Monmouthshire	9·3	20·6	23·1	13·7
Carmarthenshire	6·1	1·5	10·5	4·3
REMAINDER OF WALES—				
Pembrokeshire	12·5	12·1	19·6	7·0
Montgomeryshire	3·0	14·5	12·3	9·2
Cardiganshire	9·9	12·1	10·7	0·7
Denbighshire	2·9	7·5	10·4	7·4
Merionethshire	0·9	7·2	4·0	3·0
Radnorshire	− 0·1	8·0	3·7	3·7
Carnarvonshire	0·7	6·1	2·9	2·1
Flintshire	11·0	9·4	0·6	−10·5
"STANDARD"—				
Hampshire	− 3·3	− 3·4	− 3·7	− 0·5
Essex	− 0·9	− 5·4	− 4·7	− 3·9
Kent	− 2·7	− 5·1	− 5·3	− 2·7
Berkshire	− 3·7	− 5·8	− 5·5	− 1·9
Buckinghamshire	− 7·3	− 8·0	− 7·1	0·1
Hertfordshire	− 6·5	− 9·3	− 7·3	− 0·9
Sussex	− 6·4	− 9·0	− 7·6	− 1·3
Surrey	− 7·2	− 9·8	− 7·6	− 0·5
Oxfordshire	− 5·3	− 8·8	− 7·7	− 2·5
Middlesex	− 5·8	− 8·1	− 8·0	− 2·3
Bedfordshire	− 6·9	− 9·4	− 9·3	− 2·5

* Reflecting 1929 so-called "boom" conditions.

greater deviation above the "normal" (*e.g.* relatively worse off), whilst all the "Standard" counties had a similar deviation below (*e.g.* relatively better off).

It must be borne in mind that the general level of unemployment was approximately the same in January, 1930, and May, 1936. The year 1931 witnessed an acute rise (with a high rate of velocity), then a slower increase to 1933 and a subsequent steady fall to 1936.

TABLE 31

CHANGES IN NATIONAL UNEMPLOYMENT

(Per Cent of Insured Populations Unemployed)

	27th January, 1930	23rd January, 1933	25th May, 1936
Greater London	7·4	14·8	6·8
Great Britain and Northern Ireland	12·4	23·0	12·8
England and Wales	12·4	22·4	12·3
Total number of unemployed persons aged 14 years and over, insured and uninsured, on the registers of employment exchanges in England and Wales	1,309,974	2,495,781	1,432,274

The inequality between the depressed and prosperous areas thus became, after the rise and fall in unemployment, greater and more acute: the depressed more depressed, the prosperous more prosperous. The North and Wales have not had, as they ought to have had, an adequate share in the recovery from 1932.

The preceding statistics provide adequate evidence to allow of correct conclusions being drawn,

but, if space permitted and if the additional information was necessary, the data could be included of all counties in England and Wales (barring a few small Welsh counties) for every year from 1929 to 1936 inclusive, and for all districts, prosperous and depressed, within the county boundaries. For, judged from the viewpoint of unemployment distribution, the lines of demarcation are but arbitrary geographical distinctions unrelated to the spread of local or regional economic conditions.

When all this additional material is sifted and analysed, the results that emerge point in the same direction as Table 30, the only difference being that the inequalities are shown to be widening more acutely, thus :

TABLE 32

INCREASE IN UNEMPLOYMENT, 1930–36

County	Percentage increase in May, 1936, over January, 1930, based on Per Cent of Insured Populations Unemployed
Glamorganshire	81
Monmouthshire	63
Montgomeryshire	60
Durham	56
Denbighshire	48
Cumberland	41
Radnorshire	30
Yorkshire (N. Riding)	30
Pembrokeshire	28
Brecknockshire	23
Carmarthenshire	23
Merionethshire	23
Northumberland	17
Carnarvonshire	16
Lancashire	11
Cardiganshire	3

The answers, therefore, to the questions raised prior to the analysis are too evident to admit of dispute. Firstly, those counties with seriously abnormal unemployment in 1929 were, generally speaking, more depressed after the cycle than before, whilst the "Standard" counties received an unduly large share of recovery and in 1936 were more prosperous than in 1929, the latter year being generally regarded as a "boom" year. Secondly, the severe incidence of unemployment in the North and Wales in existence in 1936 was not a temporary phenomenon but had persisted at a generally high level for at least seven years. Thirdly, that a comparatively steady rate of national recovery tends to make severe local and regional unemployment accumulate, rather than to level out. Fourthly, that when disparities in unemployment incidence exist they tend to present a continuous problem, and that when there is any local or regional variation from the general level that variation is likely to persist. Fifthly, that severe and long-term unemployment results in the first place in a general deterioration in the standard of health, and in the second place in a growing cumulative number of premature deaths.

(4) LONG UNEMPLOYMENT

The previous section has dealt with the regional duration of unemployment as it affects certain areas, but what of the extent of continuous un-

employment among men and women themselves? At mid-1936 there were approximately 300,000 persons who had been without work for over one year. This figure excludes an, at that time, unknown number of able-bodied workers who had lost their claim to help except through the Public Assistance Committees.

Unemployment of this character reflects far more clearly the incidence of poverty and unfavourable economic conditions than the numbers of those temporarily stopped.

TABLE 33

INCIDENCE OF LONG UNEMPLOYMENT, 1936

Region	Temporarily Unemployed	Long Unemployed (Used in this Book to denote those Out of Work for Over One Year)
	(Per 1000 insured population, mid-1936)	
London . . .	46	6
South Eastern .	36	4
South Western .	52	11
North Eastern .	107	57
North Western .	85	46
Wales . . .	134	123

The regional divergencies among those temporarily unemployed is sufficiently serious, but for those out of work for over one year it is nothing short of tragic. Yet, if the situation in some of the communities within the depressed North and Wales is investigated, the results show that in many cases one in four of the insured population had been without work for over a year.

Of the long-unemployed at mid-1936, 16 per

cent had been without work for over five years and 43 per cent for over three years. Comparing mid-1936 with mid-1935, there was a decline in the number of long-unemployed by about 12 per cent (over 40,000), but an increase in those out of work for over five years by 77 per cent (23,000). Of the total long-unemployed in England and Wales at mid-1936 over 80 per cent were in the North and Wales, and of those 68 per cent were married. In 1929, 5 to 6 per cent of all those out of work were long unemployed, but after the depression and with the return of prosperity 27 out of every 100 had been without work for over one year.

An analysis of long unemployment according to age groups reveals something of the moral and physical decay that must ensue especially in the cases of young and middle-aged (mainly with dependants) unemployed. Nearly half the long-unemployed were in the age group 18–44. There was practically no long unemployment in the South among workers in the age groups 18–24 (1 per 1000 workers) and 25–34 (2 per 1000 workers). In Wales, however, the rates were 53 and 43 times as high. For the older groups the Welsh rates were 21, 16 and 6 times as high. In the North the rates followed the same trends but the differences were not so pronounced.

After the intensive emigration from Wales among young workers for many years, and the effect of excess mortality in reducing their numbers, it is idle to suppose that any attempt has been made by the State on any significant scale to even

alleviate the problem in face of the fact that in a year of comparative prosperity the rate of long unemployment in the age group 18–24 for Wales was over 50 per cent higher than that among the old (55–64) in the South (the group with by far the heaviest incidence of long unemployment in the South).

Despite the publicity given to the Special Areas Acts, all the available statistical data points to the absence of any material effect. When the economic, moral, psychological and physical impact of long unemployment on the dependants is considered, it is even more surprising that no determined efforts have been attempted in recent years to reduce the problem, particularly if one bears in mind the concern evinced by the Prime Minister, the Minister of Health and other Authorities over the declining birth rate. No one can suggest that the rearing of over 300,000 children under 14 years of age in homes where unemployment is permanent and a normal state of existence and where the fathers are in most cases never likely to work again, can produce supremely healthy, intelligent and co-operative citizens equipped to tackle the problems surrounding a falling population.

It is clear from a regional study that the duration of long unemployment increases according to its extent, and also that the problem is not merely one of the workless alone, but, as someone has described it, of " the shadows behind the queues " involving a total of approximately 750,000 men, women and children.

(5) UNEMPLOYMENT, 1938

These notes have been added on account of the increasing references in many quarters to the fact that unemployment decreased considerably in depressed areas during 1936–7. On 17th January, 1938, the national figures were :

TABLE 34

NATIONAL UNEMPLOYMENT, JANUARY, 1938

Region	Per Cent of Insured Populations Unemployed
Greater London	8·6
Great Britain and Northern Ireland .	13·3
England and Wales	12·5
Total number of unemployed persons aged 14 years and over, insured and uninsured, on the registers of employment exchanges in England and Wales, 1,557,608	

The incidence of unemployment was higher in January, 1938, in Durham, Cumberland, Yorkshire (North Riding), Lancashire and the whole of Wales (again with the insignificant exception of Flintshire) than it was in 1930. In some large counties the increases in percentages were considerable. Glamorganshire (22 per cent), Yorkshire (North Riding) (11 per cent), Lancashire (10 per cent) and Durham (9 per cent), for example, were so much worse off. The deterioration in many of the smaller Welsh counties was much more marked. Northumberland, Yorkshire, (East and West Ridings), Cheshire, Westmorland and Flintshire were in slightly better positions.

In the South East, even with such relatively low percentages in 1930 (shown in preceding tables) the figures for January, 1938, revealed an even smaller incidence of unemployment in some counties. Reductions took place in the percentages for Essex, Kent and Berkshire, the other counties showing relatively small increases.

It cannot be too strongly emphasised that a reduction in the number of unemployed in a particular county or area must not be regarded as a reliable index of improvement. Such an intensive migration among the "industrial" age groups from depressed areas (see later chapters) does not necessarily make for improvement in those areas, as is shown by the foregoing comparisons of the incidence of unemployment.

In January, 1938, the whole of the counties in the North and Wales (except Westmorland) were above the national rate (12·5 per cent), whilst all the counties in the South East were below. The rates for the latter varied between 4·4 and 9·6 per cent, Middlesex being 7·3 per cent. The rates for the following large counties exceeded this latter rate by—

	Per Cent
Glamorganshire	234
Monmouthshire	200
Durham	166
Lancashire	140
Yorkshire (N. Riding)	129
Northumberland	112
Yorkshire (E. Riding)	103
Yorkshire (W. Riding)	86

By the 16th May, 1938, unemployment in England and Wales had risen to 1,632,463. For the whole of Great Britain and Northern Ireland it stood at 1,868,760. For the first five months of the year (from December 1937) the numbers unemployed in the North and Wales had increased by 99,000, but by only 1400 in the whole of the South.

(6) ANALYSIS OF UNEMPLOYMENT PAYMENTS

In June, 1936, an analysis was made by the Ministry of Labour into the different forms of public aid—benefit and allowances—received by the unemployed in the pay-week ended 26th of that month. The return does not, of course, include the out-of-works receiving public assistance out of local funds. In January, 1936, the number in receipt of outdoor relief on account of unemployment was 330,000 (exclusive of those receiving institutional, or indoor, relief). The statistics in this respect are included later under " Poor Relief ".

TABLE 35

UNEMPLOYMENT PAYMENTS, JUNE 1936

Region	Numbers of Payments made (in Thousands) Insurance Benefit	Percentage of All Payments	Unemployment Allowances (Means Test) (in Thousands)	Percentage of All Payments
South Eastern (including London)	121	75	39	25
South Western .	38	65	20	35
Midlands . .	122	69	56	31
Wales . .	61	38	100	62
North Eastern .	138	48	153	52
North Western .	151	53	134	47

Broadly speaking, the numbers receiving insurance benefit indicate the extent of temporary, as contrasted with persistent, unemployment, and the numbers receiving unemployment assistance show the prevalence of prolonged, or even chronic, unemployment.

These figures are in accord with expectations and concur with previous findings. Here again the wide disparity between the North and Wales and the South is in evidence. Generally speaking, the more intense the depression the higher is the percentage of unemployment allowances. In the North West however, these figures do not faithfully reflect the extent of the difference, on account of the prevalence of organised short time in this area, thus causing the number of payments of benefit to exceed those under the Means Test despite the chronic character of under-employment in the cotton trades.

(7) POOR RELIEF

An analysis of poor relief by counties reveals a far greater divergence between the North and Wales and the South than is shown by the incidence of unemployment. This does not, however, invalidate the unemployment analysis: on the contrary it substantiates it.

The unemployment figures do not include the dependants of a man or woman who is without work, therefore the statement that 100 men and/or women are unemployed does not show the total

number of men, women and children directly affected by loss of employment. Poor relief does, however, go further in the direction of indicating the total number of persons assisted on account of poverty caused by unemployment, old age, sickness, etc. For instance, approximately 33 per cent of the total persons in receipt of domiciliary relief in England and Wales during 1936 were children. Therefore it is only to be expected, in face of the disparities in the regional incidence of unemployment, that poor-relief statistics should show much wider divergencies.

On the 1st January, 1937, 1,287,616 men, women and children in England and Wales were in receipt of some form of poor relief. This total comprised 394,937 men, 493,714 women and 398,965 children under 16 years of age. Only 41,148 were relieved in counties or county boroughs other than those to which they were chargeable. The total of 1,287,616 represented an increase over 31st March, 1930, of 230,976. The increase for those in receipt of domiciliary relief was 295,957 (1,116,887 in 1937, 364,247 being children). The increase over 1930 in the number of children receiving domiciliary relief was 49,407.

In contrasting the county incidence of poor relief, a comparison of domiciliary relief only represents a more reliable index as it excludes casuals, who generally tend to migrate South, and the effect of age composition. Institutional relief generally applies to old people, and therefore counties

with a large proportion of persons over, say, 65, would show a higher incidence of poor relief which would not necessarily indicate a more widespread incidence of poverty. For instance, institutional relief per 10,000 of the population in the Isle of Wight (which cannot be regarded as depressed in the modern sense of the word) exceeded the rate for Durham in 1936 by nearly 50 per cent.

Table 36 illustrates in a graphic manner the extent of the variations between the North and Wales and the South.

The average number in receipt of domiciliary relief per 10,000 of the total population for all the listed South Eastern counties is exactly 100. It can be readily seen therefore that, expressed in terms of this average, the incidence of domiciliary relief in Durham, for instance, was nearly 600 per cent higher. As the authors of *The Home Market* remark, in analysing the regional incidence of prosperity and poverty, " Judged by the incidence of Poor Relief there are enormous local variations in the distribution of chronic poverty ". After quoting the figures for 1st January, 1934, and 1st January, 1935, they comment, " These figures vividly illustrate the unevenness of prolonged poverty ".

Poverty is often a misused word, but when it is of this character it is best understood in terms of men, women and children—not just units in a table—lined against the background of existing wealth and potential wealth in this country.

TABLE 36

POOR RELIEF, JANUARY 1937

(Persons in Receipt of Poor Relief, excluding Rate-aided Patients in Mental Hospitals, per 10,000 of Population *)

County	Total, including Casuals	Domiciliary Relief only
Durham	722	694
Northumberland	284	262
Cumberland	375	346
Yorkshire (N. Riding)	227	199
Lancashire	252	216
Yorkshire (E. Riding)	192	155
Cheshire	177	148
Yorkshire (W. Riding)	377	348
Westmorland	122	87
Brecknockshire	432	396
Glamorganshire	680	650
Monmouthshire	563	539
Carmarthenshire	341	316
Pembrokeshire	314	284
Montgomeryshire	308	261
Cardiganshire	252	226
Denbighshire	324	286
Merionethshire	235	191
Radnorshire	253	200
Carnarvonshire	365	322
Flintshire	279	247
Anglesey	409	379
Hampshire (Southampton)	131	86
Essex	198	159
Kent	205	153
Berkshire	195	146
Buckinghamshire	130	93
Hertfordshire	152	95
Sussex—East	126	72
,, West	110	70
Surrey	114	81
Oxfordshire	227	168
Middlesex	156	136
Bedfordshire	107	66
Isle of Wight	155	115

* The population as estimated by the Registrar-General, mid-1936.

In comparing the county rates it will be seen that the more depressed the county the higher the

incidence of poor relief. The association should also be noted between the divergencies in this table and the unemployment percentages, the infant and maternal mortality rates and the death rates at all ages and from certain causes. It should also be borne in mind that an excess incidence such as that for Durham of nearly 600 per cent comprises children to the extent of at least 33 per cent: probably more if one takes into account the higher fertility. But although efforts have been made to obtain county percentages for children, the figures are unfortunately not forthcoming from the Ministry of Health.

In assessing the cost of this heavy burden of relief, the following examples will suffice to illustrate the position:

TABLE 37

POOR RELIEF EXPENDITURE, MARCH, 1936

(Year ended 31st March, 1936: Net Expenditure on Revenue Account not met out of Specific Income)

	Equivalent in Terms of a Rate in the Pound	Average Amount per Head of Estimated Population (Mid-year 1935)
	s. d.	s. d.
Durham . . .	7 11·5	26 10·2
Glamorganshire . .	8 7·8	27 8·9
Monmouthshire . .	7 4·6	21 10·4
Surrey . . .	1 3·3	12 10·0
Middlesex . . .	1 11·5	18 0·2
Kent . . .	1 11·7	14 5·7

If one goes deeper into this disparity between poverty (in many localities with a high proportion

of children) and relative prosperity (generally with a low proportion of children), it is evident that there were many towns and areas in the North and Wales where, in January, 1937, 1 in 10 of the total population was on poor relief—quite apart from the numbers unemployed.

Only indifference can suppose that these conditions are conducive to what Sir George Newman, the Chief Medical Officer, describes as the essentials for " full healthy life and development of the civilised child ", namely : " The air must be fresh and moving : the food and water must be wholesome : the rest must be in quiet and prolonged sleep : and in addition, light, warmth, cleanliness, exercise, play, work and happiness are all essential ".[1]

(8) PROLONGED SICKNESS OR PHYSICAL DISABILITY

This, the second causal factor of malnutrition cited by Sir Arnold Wilson, is dealt with in Chapters III to X inclusive. The excess mortality that has occurred and is occurring in the North and Wales is but the actual realisation of preceding illnesses. It follows, therefore, that there must be in these regions a far greater and more widespread incidence of morbidity; that is, ill-health, sickness and physical disability, than is established by the mortality statistics. An enormous proportion of people whose lives are not terminated by these illnesses must continue to

[1] *Health Education.* Board of Education, 1934.

carry the marks of disability and defect. Many, of course, are potential premature deaths and a great majority must exhibit symptoms of malnutrition such as anaemia, rickets, septic sores and rashes, eye and ear trouble, catarrhal defects, laryngitis and varying degrees of rheumatic diseases. Reference to this has already been made in " Adult Mortality ", which also quotes estimates of the national health bill.

The effects of unemployment on health include, in addition to the results of malnutrition, many indications of mental and physical ill-health which, however, cannot be statistically assessed until —as in many cases invariably happens—they result in definite illnesses and premature death. Prolonged unemployment results in most cases in an insidious undermining of the constitution. The absence of interests and physical stimuli, lack of mental and physical exertion, and the emergence of abnormal psychological conditions such as invalidism, undue fears and anxieties, all contribute in the end to premature ageing and death.

The Report of the Pilgrim Trust on long unemployment embodied in *Men Without Work*, estimates that 48 per cent of a total number of men unemployed in England and Wales for over one year of 250,000 (1936) were out of condition, unfit or with obvious physical defects. Of young men aged 18–24, 45 per cent were in these classes. 43 per cent of the total of 250,000 the Report states, were either of doubtful physique or sub-

marginal physique. To realise the seriousness of these estimates (it is only necessary to read the Report to appreciate their authoritative quality) and their probable influence on future mortality statistics, it must be borne in mind that over 80 per cent of this long unemployment is concentrated in the North and Wales. It is not illogical to suppose that if these conditions have been in existence in the North and Wales for the past fifteen years, then the mortality rates for these areas are already being influenced.

On the subject of physical deterioration it is not irrelevant to cite here the two sample studies of Physical Health of the Unemployed on the register made by the Ministry of Labour in February, 1931, and October, 1934. These studies show :

TABLE 38

PHYSICAL HEALTH OF THE UNEMPLOYED

	Men	
	1931	1934
	%	%
Physique good . .	73·5	66·0
„ fair . . .	23·3	29·2
„ poor . . .	3·2	4·8

This evidence of marked deterioration should be compared with reports from other Government sources on the health of the unemployed, notably the apparently optimistic report from Sir George Gillett, the Commissioner for the Special Areas. In these studies made by the Ministry of Labour it

was found that, in 1934, whilst 75·5 per cent of men on insurance were classed " Physique Good ", only 59·9 per cent (on transitional payments) and 46·5 per cent (non-claimants) came under this heading. In realising the economic difference in these forms of unemployment payments, the disparities are, to say the least, significant.

This problem of the effect of unemployment on health is further discussed in " The Impact of Unemployment on Mortality ".

Apart, however, from these citations and the chapters dealing with specified causes of death, any review of national ill-health and sickness cannot but give consideration to the incidence of rheumatism. In 1922 the Ministry of Health closely investigated a " sample " of 90,000 persons coming within the purview of the National (Health) Insurance Act. The insured population at the date numbered about 13,500,000, so the sample represented less than 7 per cent. The survey was over a period of one year only ; and it was faced with the familiar difficulty of the lack of a perfected classification in this group of diseases. Yet the survey was able to arrive at a statistical result which can be accepted as approximating to correctness, especially as it coincides with the results of somewhat similar investigations in other countries. The conclusions were that rheumatic disease was probably responsible for 16 per cent of the total of industrial morbidity in England and Wales, and that during the course of a year about 372,600 insured persons

sought medical advice because of some form of rheumatic disease. In addition to this estimate of 372,600 must be added the number of sufferers outside the insured class. Although there are no statistics available, medical experience shows that it is considerable. The economic loss due to rheumatic disease sustained by England and Wales every year, even for only the classes coming under the National Health Insurance Act, amounts to £17,000,000

A further Ministry of Health Report for 1924 stated that " organic disease of the heart is for the most part rheumatic in origin . . . organic heart disease is the cause of over one-third of all deaths in England and Wales ".

Sir Arthur MacNalty, in his Report for 1934, indicates that there was a marked rise in the deaths of those under 15 from rheumatic fever and heart disease over the figures for 1933, and acute rheumatic infection was responsible for 16 per cent of all deaths between the ages of 10 and 15 years.

By turning to the statistics of excess mortality in the North and Wales from heart diseases included in the main tables and in Table 14 in " Adult Mortality ", some idea is gained as to the existence of an excessively high incidence of rheumatic diseases in these two regions, especially among young and middle-aged people. Heart disease is the second principal cause of death in the age group 25–34 for Wales I and in the age group 35–44 for the whole of the North and Wales. It is not so

for the " Standard " area. If, as the Ministry of Health states, heart disease is mainly rheumatic in origin, one can only suppose that with an excess mortality of 108 per cent for Wales I in the age group 35–44, for instance, there must exist a far-reaching and disastrous incidence of rheumatic disease among the young people in South Wales. Yet these figures do not reveal the human suffering behind them—one can only echo Lord Horder's words: " We do not need to be doctors to have acquaintance with rheumatic suffering, and the pain with its weariness, its demoralisation and helpless crippling ".

The established association between, on the one hand, premature and unnecessary deaths, and, on the other, poverty, is again strengthened by the relationship between (*a*) organic heart diseases and rheumatism, and (*b*) rheumatism and dietetic deficiencies. In an article, " Vitamins and Rheumatic Diseases ", by J. Race, it is suggested that malnutrition may so weaken the defensive forces as to enable the aetological factor to initiate the disease process.[1] All the well-known vitamins, A, B, C and D are implicated.

Thus are dietetic deficiencies resolved into an annual economic loss of millions of pounds and a high incidence of surplus deaths from heart diseases, particularly in the early age groups 25–34 and 35–44.

[1] Report of the British Committee on Chronic Rheumatic Diseases, 1937.

(9) BAD ENVIRONMENT

Among the many diverse factors predisposing towards high mortality it is difficult to dissociate and separately assess the individual effect of the differing influences. This obstacle applies in the case of overcrowding. The massing together of large numbers of persons of varying age and sex implies the presence of all the attendant evils of overcrowding such as higher risks of infection, unhealthy atmosphere, insanitary conditions, lack of sunlight and proper ventilation, increased chances of pollution of food and drink, and, by no means an insignificant factor, the tendency towards unsatisfactory home conditions brought about by the crowding together of large families in few rooms. The collective force of these factors must in the long run be detrimental to health. The fundamental cause of overcrowding in urban areas is, in the main, poverty.

By the sheer drive of economic necessity, families cannot pay higher rents if they are to retain sufficient of their income to maintain subsistence, or else they are forced to live near their work because they cannot afford to meet additional costs for travelling. There is no doubt that, given sufficient margin in weekly family budgets, and assuming the provision of adequate housing facilities, sub-letting would decrease and overcrowding would virtually disappear.

It has been proved in investigation after in-

vestigation that the results of transferring unemployed or low-paid working-class families to better houses is to reduce food expenditure to below the minimum necessary to maintain even a low standard of life. Consequently, the people who have been moved and find themselves in these conditions naturally tend to drift back to the slum areas.

The investigations described in McGonigle's book, *Poverty and Public Health*, of the effect on death rates following the transference of 710 individuals from a slum area to a new housing estate in Stockton-on-Tees, provide some valuable data. After removal the standardised death rate rose by 46 per cent (mean 1928–32, 33·55 per thousand) over the mean for the same families in the previous quinquennium (1923–7, 22·91 per thousand). Remember that these people dwelt in the first quinquennium under slum conditions, and during the second in the best possible environmental circumstances. The " expected " mean death rate (that is, the national death rate according to age distribution) for the period 1928–32 would have been 8·12 per thousand, so the excess mortality in the new housing estate was approximately 300 per cent.

Overcrowding is naturally dependent on the definitions and standards adopted. The overcrowding survey of 1936 [1] lays down the following standards which even on a superficial examination

[1] Report on Overcrowding in England and Wales.

cannot be described as high. The "permitted number" of persons is two to a single room, three to two rooms, five to three rooms, seven and a half to four rooms, ten to five rooms and thereafter two persons to each additional room. Children under 10 years of age count as only half an adult (it is difficult to understand why the age limit is so high when one appreciates the depopulation and declining birth rate in one-third of the country). There is also some differentiation of rooms by size.

On this basis the survey was made, and the following table illustrates the remarkable disparities in the regional distribution of overcrowding:

TABLE 39

OVERCROWDING, 1936

(Percentage of Overcrowded Families)

	Highest %		Lowest %
COUNTY AREAS (including County Boroughs)—		COUNTY AREAS (including County Boroughs)—	
Durham \ North	12·0	Isle of Wight	0·7
Northumberland / I	11·2	West Sussex	1·0
Anglesey	9·5	Cambridgeshire	1·1
London	7·0	Surrey	1·2
Carnarvonshire	6·2	Soke of Peterborough	1·3
Denbighshire	5·9	Kent	1·3
COUNTY BOROUGHS—		COUNTY BOROUGHS—	
Sunderland	20·6	Bournemouth	0·3
Gateshead	15·2	Northampton	0·8
South Shields	13·1	Grimsby	0·9
Tynemouth	13·0	Croydon	0·9
West Hartlepool	10·9	Oxford	1·0
Newcastle-on-Tyne	10·7	Doncaster	1·0

Similar striking examples can be cited for urban areas. Every county, for instance, lying south of a line drawn from London to Bristol has less than 2 per cent of overcrowded families. This despite the fact that the population of the South has been growing heavily whilst the populations of the North and Wales are declining.

The distinct relationship between these percentages of overcrowding and mortality rates (infant, maternal, and at all ages) should be observed. It is also illuminating—from the opposite view-point—to compare these percentages with the " nutrition assessment " reports from school medical officers.

Sunderland, it will be noted, has one-fifth of its families living in overcrowded conditions. By far the two most overcrowded counties in England and Wales are Durham and Northumberland. Significantly, these two counties have :

A. The highest infant mortality of any region in England and Wales.
B. Similarly the highest death rate for children 0–4 with excess deaths from bronchitis, pneumonia and other respiratory diseases of nearly 100 per cent.
C. Similarly for children 5–14 with excess deaths from diphtheria and tuberculosis of over 200 and 100 per cent respectively.
D. Except for South Wales, the same results obtain from an analysis of all other age groups.

No figures are yet available for 1935–6, but the Text of the Registrar-General's Review for 1934 included some interesting tables for administrative counties of the Standardised Mortality in 1931–4, related to social classification and housing density. The classifications used were those employed in the Decennial Supplement for 1921, Part II, the occupations being classified into five social groups denoted by:

I. Upper and middle class.
II. Intermediate.
III. Skilled workers.
IV. Semi-skilled workers.
V. Unskilled workers.

Extracts from these tables show:

TABLE 40

STANDARDISED MORTALITY, SOCIAL CLASSIFICATION AND HOUSING DENSITY, 1931–4

County	Persons per Room, 1931	No. of Occupied Males aged 14 Up, 1931	Proportion of these (per Mille) in Social Classes					Mean Local Adjusted Rate % of National Rate, 1931/4
			I	II	III	IV	V	
Surrey . .	0·71	300,178	56	161	536	105	143	81
Middlesex . .	0·80	545,465	38	157	562	93	149	88
Durham . .	1·15	306,517	10	70	459	313	148	116
Northumberland.	1·03	136,029	21	114	451	305	109	105
Glamorganshire .	0·85	262,622	15	84	534	257	110	119

It must be pointed out that no account was taken of the degree of unemployment at the time, the classification being based upon the usual occupations of the male population. Northumberland and Durham are, according to the tables, the only

counties in England and Wales with a housing density of more than one person per room.

Further evidence that there is a distinct correlation between housing density and mortality is drawn from an examination by the Registrar-General of infant mortality from congenital and other causes, in groups of areas of certain densities of persons per room in 1934 and 1935.

TABLE 41

INFANT MORTALITY AND HOUSING DENSITY, 1934–5

CONGENITAL CAUSES	1934	1935
	(Rates per 1000 Live Births)	
1. 14 county boroughs[1] with 1 or more persons per room	36·6	36·3
2. All county boroughs with less than 1 person per room	33·8	33·3
3. 6 county aggregates of urban districts[2] with 0·85 person or more per room	35·8	35·0
4. 14 county aggregates of rural districts[3] with less than 0·7 person per room	29·8	27·9
5. London administrative county (0·98 person per room)	26·8	25·7
6. England and Wales (average density of 0·83 person per room)	31·7	31·1

In the case of "other causes" it is shown that the increase in the death rate for infants born in families with one person or more per room as

[1] Dewsbury, Dudley, Gateshead, Middlesborough, Newcastle, St. Helens, South Shields, Stoke, Sunderland, Tynemouth, West Ham, West Hartlepool, West Bromwich, Wigan.

[2] Durham, Northumberland, Staffordshire, Yorkshire West Riding, Glamorganshire, Monmouthshire.

[3] Buckinghamshire, Cambridgeshire, Cornwall, Devon, Huntingdonshire, Middlesex, Norfolk, Rutlandshire, Somersetshire, Surrey, Sussex, Isle of Wight, Carnarvonshire, Cardiganshire.

against less than one per room (County Boroughs) is nearly 50 per cent. The high rate for London (40·6) was exceptional for 1934, the previous year being 32·4. It would appear to be caused by the incidence of infectious diseases operating in such a large and congested area (1934 affected by biennial periodicity of measles.)

A comparison of urban districts (0·85 or more) with rural districts (less than 0·70) shows increases for congenital causes of over 25 per cent, and for other causes of over 100 per cent (1935). Taking into account the absence of certain influential factors and the lack of more detailed statistics, it certainly emerges from what material exists that the adequacy or otherwise of the houses of the people influences to a not inconsiderable degree mortality rates, especially for infants. It is a matter for regret that we have no data for regional areas and certain special areas. An indication of the importance of satisfactory environment in relation to health is provided by the Letchworth statistics. This town had in 1938 a population of 17,000 with 10,000 insured workers. The density of dwellings nowhere exceeded 12 to the acre, the average being much lower. The vital statistics revealed a state of health with which that of the country as a whole—and the South East—compared badly. No deaths in child-birth have occurred during the past five years. If this result can be obtained in the South where unemployment is low is there any justification for not planning similar

centres in the North and Wales where there is an abundant supply of skilled labour ?

In relation to a special investigation carried out by Dr. J. C. Spence, into the incidence of malnutrition, sickness and poverty in Newcastle, he states in the Annual Report of the Medical Officer of Health for Newcastle (1933): ". . . at least 36 per cent of the children from the poor districts of the city, which I have examined, were unhealthy or physically unfit, and as a result of this they appeared mal-nourished". Further: ". . . this examination of the housing conditions shows that there is a direct relationship between overcrowding and ill-health or nutrition. If serious illness and improper diet be accepted as the prime cause of these, the overcrowding in bad housing conditions must be looked upon as an important contributory factor, fostering as it does the chance of mass infection, and impairing the efficiency of the parents in their task of providing a proper and adequate diet for their children." Dr. Spence significantly remarks: "That, since the high incidence of apparent malnutrition is not found in the children of better-class families, it is due to preventable causes". Sufficient evidence has surely been cited to support the comment in a *Times*[1] editorial that "Bad housing may also well be responsible for the disquieting vital statistics".

[1] 8th February, 1938, in discussing high mortality in Scotland.

(10) INSUFFICIENT PURCHASING POWER

The whole question of food budgets and adequate nutrition is deeply bound up with many factors such as the level of wage rates and unemployment, the varying costs of a minimum diet in terms of money, the availability and cost of the national food supplies, and the varying weight of other family overheads (such as rent) in the composition of food budgets. The influence of these factors not only varies in different parts of the country but involves many other subsidiary, but nevertheless important, elements. To determine the adequacy or otherwise of a single family budget may be a simple matter, but that it is not so when a large group of budgets are considered is obvious.

The vital question as to whether the mass of the people of the country are in a position to purchase food and drink to maintain a reasonable standard of life requires far more detailed study than can be accorded here. In this chapter it is only intended to touch upon some of the more general aspects of insufficient purchasing power and to indicate the relationship in the North and Wales between the existence of high and excessive morbidity and mortality and the prevalence and character of some of the major indices of inadequate income.

The problem of poverty, defined in terms of insufficient purchasing power, is not merely one of unemployment and part-time working, but of low wages. This aspect of the problem, for instance, the

relationship of wage rates to unemployment pay, is discussed later.

The vital importance of adequate nutrition for the health and well-being of the people has now world-wide recognition, and the League of Nations has devoted considerable attention to the subject. Investigations which have been made under the aegis of the League are recorded in four volumes [1] which provide a valuable and comprehensive study of the problem. In a survey of the economic aspect of the whole question based on the report of the International Labour Office, Workers' Nutrition and Social Policy, 1936, it is pointed out that the consumption of the protective foods, which are those of greatest importance for health, rises with income. The high cost of these foods is attributed to restrictions on international trade and to costs of production, and more particularly of distribution and service.

During the last few years there has become available a mass of new material bearing on the relationship between purchasing power and nutrition. It is only intended here to draw upon a few of the facts that have come to light as a result of social research.

To assess the regional incidence of insufficient purchasing power it is not proposed to adopt any one minimum food budget but to attempt a syn-

[1] I. *Interim Report of the Mixed Committee.* II. *Report of the Technical Commission on Physiological Bases of Nutrition.* III. *Nutrition in Various Countries.* IV. *Statistics of Food Production, Consumption and Prices.*

thesis of certain definite signs of inadequate income, and thus to draw a general picture of the disparities existing between the North and Wales, and the South. As Sir John Boyd Orr, Director of the Rowett Institute, in delivering the Chadwick Lecture, 1934, remarked: " We do not know what proportion of the community is so poor that it is unable to purchase a diet which will maintain them in health ".

Later, in his book *Food, Health and Income*, Sir John classified the population into six groups, namely :

TABLE 42

WEEKLY FOOD EXPENDITURE OF THE POPULATION

Group	
I.	4,500,000 persons spending an average of 4s. a week on food
II.	9,000,000 ,, ,, ,, 6s. ,, ,,
III.	9,000,000 ,, ,, ,, 8s. ,, ,,
IV.	9,000,000 ,, ,, ,, 10s. ,, ,,
V.	9,000,000 ,, ,, ,, 12s. ,, ,,
VI.	4,500,000 ,, ,, ,, over 14s. ,, ,,

Group I.—Families living at about the economic level of unemployment pay or of the lowest-paid wage-earners, and Sir John states that the diet is inadequate in all respects.

Group II.—May be receiving adequate diet in total proteins and fats, but not in first-class proteins or fats.

Group III.—Diet adequate in energy value, proteins, and fats of all sorts, but below standard in vitamins and minerals.

Groups IV, V and VI.—Complete adequacy of diet.

If these conclusions are correct, only 50 per cent of the population are receiving a diet completely adequate for health and physical well-being. Moreover, Sir John states that it is the lower income groups which contain the greater number of children. He estimates that the 10 per cent of the population with the lowest food expenditure per head are largely children under 14, and that 20 to 25 per cent of the children of the country belong to this category. As the Rt. Hon. L. Amery, M.P., stated, in arguing (from Sir John's figures) that a very large proportion of our children are to-day underfed, "the problem of poverty is one which affects most disastrously a large proportion of the children of the country ".[1]

Thus a study of the incidence of poor relief and unemployment, its duration and the different amounts paid to the recipients, provides in broad terms a measurement of the regional incidence of inadequate nutrition.

Incidentally, it is well to remember that Mr. Seebohm Rowntree has shown that—even if a minimum wage were established to cover the needs of families with three children—still 42 per cent of our child population would be inadequately provided for, and 34 per cent would be in this condition for at least five years of their childhood.[2]

[1] House of Commons, 24th June, 1938.

[2] From "Family Allowances", Eva M. Hubback, *Sociological Review*, July 1937.

By adopting Sir John's estimate that 20 to 25 per cent of our children are receiving a diet inadequate in all respects, it would appear that the percentage in the North and Wales must rise, on even a cautious assessment, to over 50 if the ascertained disparities in the regional incidence of mortality, unemployment, poor relief, wage-rates and overcrowding have any value whatsoever. It means to say, therefore, that *a population (equal to one-third of our total numbers) upon whose procreative powers we are mainly indebted to for delaying the coming decline and maintaining even our present low rate of replacement, is only able to provide an adequate diet for less than half its children.* Considerably less than half, be it noted, as Sir John estimates that only about 28 per cent of our child population is in groups IV, V and VI. As this applies to the whole country the percentage must certainly be less in the North and Wales.

Apart from Sir John Orr's estimates it is not possible to discuss here, for instance, Bowley's Standard Family Budget, Rowntree's " Human Needs " Budget, the Budget drawn up by the Engineer's Study Group (1936), the American " Health and Decency " Budget (1920), the " Detroit " Budget (1929) or the British Medical Association's Budget for Health and Working Capacity at Minimum Cost (" Diet 14 " based on their Nutrition Report, 1933). Nor is it possible to detail the results of many valuable " poverty line " surveys,

including Stockton-on-Tees and New London, beyond quoting that:

TABLE 43

POVERTY LINE SURVEYS[1]

Survey	Per Cent below Poverty Line	
	Families	Children
Miles Platting (1933)	9·0	28·0
Sheffield (1933)	17·1	26·9
Bristol (1937)	11·9	21·4
Southampton (1931)	21·0	30·0
Merseyside (1929–31)	17·3	24·5

All these enquiries and surveys were based on "sample" families, and although they are not comprehensive, they are to some extent representative of working-class populations. They all indicate that the percentage of children below the "poverty line" is much higher than that for adults.

This, of course, is not to be wondered at as wage rates in this country bear no relation to the size of the family. The larger the family the deeper the poverty, appears to be the general rule. The children suffer from the poverty that they themselves help to create. This is borne out by the results of a comprehensive enquiry sponsored by the Pilgrim Trust and published in *Men Without Work*, covering one of the most valuable social surveys ever carried out.

The enquiry comprised a study of long unemployment and its attendant problems and adopted

[1] See also *Diets in Poor Law Children's Homes*. Ministry of Health Advisory Committee, 1932.

R. F. George's standard [1] based on the British Medical Association's minimum standards for food requirements and on the standards used by various local social surveys in respect of clothing, cleaning materials, light and fuel. In this standard no provision was made for the replacement of household equipment, insurances, doctors' fees, medicines, tobacco, newspapers and recreation.

In their sample investigation of the economic level of long-unemployed men they found that:

TABLE 44

POVERTY AMONG LONG-UNEMPLOYED [2]

	In Deep Poverty	In Poverty
	%	%
Age 25–34 . .	27	15
„ 35–44 . .	30	20
„ 45–54 . .	14	7

The Report comments: "One other thing which the figures bring out must be emphasised, that the incidence of poverty is progressively greater according to the number of children under working age in the family concerned. The age group where most large families are found is 35–44. Table B4 shows that 50 per cent of the cases in this age group were living below the George 'poverty line', and these include the vast majority of men with families of two or more children. The high percentage 'in poverty' in the 25–34 age group is, of course, also explained by the family men within

[1] *Journal of the Royal Statistical Society*, 1937, Part I.

[2] Extract from Table B4, *Men Without Work*.

it. This appears at first sight to be a peculiarly desperate situation, and it is indeed bad enough, but there are reasons for it. We have seen already that the unemployed man with a large family is living at something near the level at which the labourer in steady employment is living. The latter, as the former, may well be below our ' poverty line '. Poverty of this kind, then, is not particularly associated with unemployment, and to cure it will need something more than to get back the men concerned to work."

Of all the families investigated, 30 per cent were below the George " poverty line ", 17 per cent being in deep poverty. In some cases the family income fell 20–30 per cent below the bare minimum standard adopted. This standard allows expenditure per week on food of 6s. 9d. (men 14–70), 5s. 9d. (women 14–70), 5s. 5d. (children 6–14) and 3s. 10d. (children under 6). If the advice of the Minister of Health and other responsible authorities on the necessity among children and adults of an adequate intake of milk was followed, it is not easy to see, remembering the present cost of milk, how all their remaining food requirements would be paid for.

Families living on or below this " poverty line " standard must be greatly affected by even slight changes in the cost of living. The cost of a loaf of bread rising by $\frac{1}{2}$d. could mean very little to a man with an income of £5 per week let alone the £1000 a year man, but it probably means to

those on or below the George standard a day's ration per week.

Those who read these pages may find it difficult to fully assess the tragic environment that must result from living under such conditions. That these conditions are not restricted to a small section of the population is shown by Sir John Orr, who estimated that 4,500,000 people spend an average of 4s. per week on food. It is regrettable that in those regions where poverty is more widespread and intense, thus necessitating the provision of school meals, free milk and other forms of public help, the ability (even if the desire is there) of the local authority to grant assistance is restricted by the presence of such poverty. A penny rate levied in Jarrow, for instance, produces only 1s. 3d. for each elementary school child as against 14s. 6d. in towns like Bournemouth.

Although the nation has accepted responsibility for the old to the extent of 10s. a week and mental defectives at the rate of 30s. a week, it has not yet faced the problem of poverty as it affects the children who surely represent a more profitable investment.

This question of insufficient purchasing power can be viewed from another standpoint: the regional distribution of incomes at differing levels. *The Home Market* includes a valuable analysis of the social structure of Great Britain carried out by the Statistical Department of the London Press Exchange Limited. Recognising that the family is

the basic unit of social organisation, and that the social standards of all members of a family are normally fixed by the social standing of the chief income-earner, they proceed to divide families into three social grades :

Grade A.—Chief income-earner receives £10 per week or more.
Grade B.—Chief income-earner receives £4–£10 per week.
Grade C.—Chief income-earner receives below £4 per week.

Listed in order of increasing C grade percentages, some of the regional ratios are :

TABLE 45

REGIONAL ANALYSIS OF FAMILY INCOMES

Region	A	B	C	
	%	%	%	%
London and the South East	6·4	25·4	68·2	100
Great Britain	5·3	21·3	73·4	100
Northern Rural Belt (Part of North)	6·3	17·8	75·9	100
Lancashire and Cheshire (Part of North)	5·0	18·8	76·2	100
West Riding (Part of North)	3·5	19·4	77·1	100
Durham and Northumberland (North I)	2·9	18·3	78·8	100
South Wales (Wales I)	4·8	15·3	79·9	100

In regard to these estimates it is of interest to note that the Registrar-General (Decennial Supplement to Annual Report, Part II, 1927) divided the male population into the following social classes :

Class 1. 3 per cent (large employers, professions, " retired gentlemen ").
Class 2. 20 per cent (small employers, small independent workers, and salaried workers).
Class 3. 77 per cent (wage-earners).

TABLE 46

COUNTY ANALYSIS OF FAMILY INCOMES

(County Variations)

	A	B	C	
	%	%	%	%
London	4·5	30·0	65·5	100
Middlesex	7·5	26·0	66·5	100
Surrey	10·0	23·0	67·0	100
Northumberland . . .	4·5	19·0	76·5	100
Lancashire	4·5	18·0	77·5	100
Durham	2·0	18·0	80·0	100

It is not irrelevant to interpose at this stage other conclusions from *The Home Market* based in part on the 77th Report of the Commissioners of Inland Revenue and in part from estimates made by the Statistical Department of the London Press Exchange Limited :

THE DISTRIBUTION OF INCOMES AND WEALTH, 1934

Broadly, two-thirds of all incomes are below £3 per week and amount to only one-third of the national income. On the other hand, 3·4 per cent of all income-receivers (those above £500 per annum) enjoy one quarter of the national income.[1]

Wealth.—The distribution of wealth is notoriously more concentrated than that of incomes. . . . The majority of people who die leave no assessable estates at all. . . . Even if these be disregarded it will be found that of the 134,100 estates that were liable to duty in 1933–4, 2·9 per cent accounted for over half the wealth left, and 88 per cent accounted for merely 23 per cent of the wealth. . . . Another expression of this inequality is that while the average estate was £3900, at least 75 per cent of all estates were worth less than this sum.

Incomes.—0·4 per cent of persons having incomes receive

[1] Clark estimates that 1·5 per cent of the population take 23 per cent of the whole total of personal incomes (*National Income and Outlay*).

11·5 per cent of the national income, or an average of £5000 each.

99·6 per cent of persons having incomes receive 88·5 per cent of the national income, or an average of £150 each.

Wealth.—2·2 per cent of persons leaving taxable estates possessed 50 per cent of the net capital value of all estates left, or an average of £89,000 each.

97·8 per cent of persons leaving taxable estates possessed 50 per cent of the net capital value of all estates left, or an average of £2000 each.

It will be seen from Table 45 that, as with other relevant factors, there appears to be a distinct relationship between the variations in the regional percentages and the corresponding variations in the areal mortality rates. The figures given represent an analysis of families and not persons. The authors state that " the population in families is 95 per cent of the total population ". (The census regards a family as comprising any group of persons, including servants and lodgers, who form a private domestic household.) The size of the families varies in different parts of the country according to the following estimates :

TABLE 47

REGIONAL SIZE OF FAMILIES

Region	Persons per Family	% of Population not in Families
	%	%
London and South Eastern Counties	3·51	6·1
West Riding (Part of North)	3·63	3·9
Lancashire and Cheshire (Part of North)	3·70	4·4
Northern Rural Belt (Part of North)	3·78	5·4
Durham and Northumberland (North I)	3·92	2·9
South Wales (Wales I)	3·92	2·8
North and Central Wales (Wales II)	3·68	4·1
Great Britain	3·68	4·6

So much stress has been laid on the value of the family as the basis of the nation's well-being, and in particular its fundamental importance in relation to the problems raised by a declining birth rate, that it is interesting to note the undoubted relationship between the average size of the family in certain areas and the existence of varying degrees of poverty, brought to light by an examination of relevant indices. As the size increases so we find a rise in ill-health and malnutrition judged by general mortality statistics and a wider and deeper spread of poverty. Both North I and Wales I have the highest average size of family of all regions in England and Wales. The similarity between the figures for these two areas should be observed. To recognise fully the correlation between size of family and poverty, recourse should be made to the chapters on the distribution and incidence of unemployment and poor relief.

The Times, although it does not attempt to carry its observations on under-nourishment to their logical conclusion, cautiously admits in its editorial on the Annual Report for 1936 of the Chief Medical Officer of the Board of Education that " Under-nourishment, in other words, seems to bear a constant relationship to the size of family incomes and so to the prosperity or lack of prosperity of definite areas of the country ".

The significant regional divergencies in the size of family incomes, disclosed by the estimates drawn up by the authors of *The Home Market*, imply

far-reaching differences in the regional incidence of undernourishment and malnutrition. That this implication is well founded is borne out by the results of the mortality analysis included in the Tabulated Statistics.

In any review of the adequacy of family incomes the relationship of wage rates to unemployment payments has eventually to be studied. In August, 1937, the Ministry of Labour carried out a sample investigation of the rates of wages earned by applicants for benefit in their last employment.[1] The result shows, according to *The Times*[2] that "benefit rates are a long way below wage rates taken as a whole". The Report continues: "The average weekly benefit, including dependants' benefit paid to adult men, is 24s. 6d. a week. The median wage rate is 55s. 6d., that is to say, nearly $2\frac{1}{2}$ times as much. For women the average weekly benefit, including dependants' benefit, paid to adult women is 15s. 2d. a week; the median wage rate for adult women is 30s., or not quite twice as much. The range of wage rates is remarkable, from less than 14s. to more than 100s. (actually in one case £13) a week for men, and from less than 12s. to more than 60s. a week for women." The Ministry's Report later discusses the position of men with large family responsibilities. This problem has not, it should be remembered, inconsiderable importance in any study of a declining birth rate. *The Times*

[1] See Report of Unemployment Insurance Statutory Committee.
[2] 4th March, 1938.

goes on to say that, according to the Report, " for men of large family responsibilities, unemployment benefit in many cases is less than the allowance which such men can obtain from the Unemployment Assistance Board if they have no other means ; that is to say, unemployment benefit is in those cases less than the standard which, according to public judgment, is required for full subsistence. At the same time, for a substantial proportion of large families it is more than the wages earned. Unless (quoting from the Report) the standards of subsistence adopted by the Unemployment Assistance Board are too high, a considerable number of large families must be appreciably below the standard, even when the father is in work, and could not be brought up to it by any raising of wages generally that is at all likely to occur. This raises an issue travelling beyond the special topic of unemployment insurance which is our immediate concern. . . . As was urged by the Family Endowment Society, and is obvious from the figures cited above, the problem of dependency needs to be considered as a whole. To consider it only in relation to persons who are unemployed leads to an impasse in one direction or another." Here, as *The Times* aptly sums up, is " a statement of reasons for an examination of a new angle of family subsistence ".

The Report of the Pilgrim Trust, *Men Without Work*, discussing this problem, estimates that about a fifth of those on unemployment assistance are as well off, or better off than they would be working.

The Report quotes some striking figures which indicate that the economic position of many employed workers in the depressed areas of County Durham is little better than that of the unemployed. The Report states : " The problem then is that many men with families find themselves as well off, or in some instances better off, ' on the dole ' than they would be if they were working. The surprising thing is that, in spite of this, many of them should actually prefer to work." Later : " There seems to be no doubt whatever, therefore, that the level of wages and earnings over a considerable section of industry is low enough for there to be little financial inducement for the man with a fair-sized family to work, if he is eligible for unemployment assistance. Yet the conclusion reached in an earlier part of this Report was that, among this same section of those in receipt of assistance, their economic situation, measured by a poverty standard, deteriorates progressively with increasing size of the family, and that where there are more than one or two children there is almost always evidence of hardship. These two facts, taken together, point irresistibly to the necessity for some system of family allowances to those who are working. If earning families are living at something like the same level as that of the unemployed families we visited, they will be suffering comparable hardships, and (if the problem is regarded from another point of view) there is no possibility of getting back into employment a substantial proportion of the

long-unemployed until some such a system is established."

To sum up the position it is necessary to revert to the figures published by the Unemployment Assistance Board. Their Report for 1937 [1] shows that the average number of applicants during the year was 590,000. In December there were 581,437 applicants with 585,310 dependent children. The number of persons in the households of applicants were 1,950,000. 65·9 per cent of the applicants were married, 27 per cent single and 7·1 per cent widowed. These figures, therefore, give an average family-size of 3·35 comparable to the estimates in Table 47.

The number of *different* applicants during the year was 1,250,000. It can therefore be stated that, quite apart from those on public assistance, 4,187,500 men, women and children—or one-tenth of the total population of the country—were, during one of the most prosperous post-war years subject to the Board's Means Test and Regulations.

At mid-1936 it has been seen that there were 5·6 per cent unemployed in the South East but over five times as many (28·5 per cent) in Wales. Of all payments in the South East only 25 per cent were allowances as against 62 per cent in Wales. In well over half of all households with children under 14 years of age there were absolutely no resources whatever. For every 1 long-unemployed in the South there were 70 in the depressed North and Wales.

It can therefore be seen without further analysis

[1] Published in June 1938 (covering Great Britain).

that the great mass of the 4 to 5 million men, women and children coming under the Board during the year were in the North and Wales. Of the Board's applicants in 1937 (England and Wales), 74 per cent were in the North and Wales against 12 per cent in the South East.

By applying the Pilgrim Trust estimates, about one-fifth of the 4,187,500 (over 800,000) were as well off or better off on unemployment assistance than they would be had the income earners been working. Put in another way, if the income earners had been in employment, over 800,000 people would have been receiving less than the standard, which, as *The Times* comments, "according to public judgment, is required for full subsistence".

This raises, in an acute form, the question: how many men and women are at work on this standard which falls below the Board's allowances and how many children are affected by such conditions? Mr. H. Macmillan, M.P., discussing this problem in the House of Commons, pointed out that the Board's figures of reported normal wages corresponded to Colin Clark's estimates that 23 per cent of the total male workers of this country receive wages of 45s. or less, and 47 per cent receive 55s. or less. He then went on to say that these figures bore out Sir John Orr's calculations (previously cited).

Although unavoidably brief, this outline of poverty among the employed and unemployed does identify and explain the mass of the high and

surplus morbidity and mortality revealed in earlier chapters.

(11) POOR QUALITY OF FOODSTUFFS AVAILABLE

In the opinion of the Chief Medical Officer in his Report, *Health of the School Child* (1928), the debilitated child may lack fresh air, exercise and rest, but a principal cause is " insufficient, irregular, unsuitable or unappetising food ". In his Report for 1931 he wrote that " A diet may be very defective and yet, if sufficient in amount, may satisfy children's appetites, leaving no craving behind, and may maintain apparently normal vigour for a considerable time. The inevitable results of such a dietary, however, are ultimately to be seen in its failure to promote a full measure of growth, in lessened immunity to disease and possibly in the presence of some form of ' deficiency ' disease." And, it should be added, a higher rate of mortality, as disclosed by the ascertained statistics.

In 1932 two memoranda prepared by the former Advisory Committee on Nutrition, entitled *Diets in Poor Law Children's Homes* and *Criticism and Improvement of Diets,* were published by the Ministry of Health and circulated to local authorities. The advice included in these memoranda mentioned amongst other things : " *Milk.*—Half a pint of milk per head per day as suggested in the memorandum on *The Nutritive Value of Milk,* should be taken as standard for adults, and for

children a pint a day should be regarded as the minimum ".

The First Report of the Advisory Committee on Nutrition appointed by the Ministry of Health, published in 1937, recommended : " The desirable amount of milk for children is from one to two pints per day ; for expectant or nursing mothers about two pints per day, and for other adult members of the community half a pint daily ".

Quite apart from the Milk in Schools Scheme, —which, incidentally, often takes the place of milk purchased at home, thus resulting in the same intake per child—there is plenty of evidence available to show that the consumption of milk by children and adults falls far below the minima suggested in thousands of working-class homes. One example of this evidence was furnished by the enquiry made by Mrs. C. M. Burns into the milk consumption of poor families attending infant welfare centres in Durham.[1] This investigation revealed that the average quantity per head of fresh milk purchased every week was as low as 0·7 pint in families of three persons, and fell to 0·4 pint in families of five persons. This intake of milk, which has been described by medical opinion as the perfect nutritive food, compares unfavourably with the consumption in Poor Law Institutions.

It is only necessary to measure the concentration of poverty, indicated by the incidence of unemploy-

[1] " Study of milk consumption in County Durham ", *Journal of State Medicine*, vol. xli. No. 7.

ment, poor relief and low wages in the North and Wales, to realise that the consumption of our most valuable—and be it noted one of our most expensive—foods must fall immeasurably below the desiderata laid down by the Ministry of Health. The Report of the Food Council for 1937 indicated that the average retail price of milk was higher in that year than in any year since 1922. By adopting Sir John Orr's estimates and assuming that the men, women and children drink the quantity of milk advised by the Ministry of Health, it is obvious that something like 22,000,000 people would not have sufficient money left to purchase other essential foods such as fresh vegetables, fresh fruit, eggs, cheese, butter, fish and lean meat, all the best sources of the essential vitamins A to G. It is beyond contradiction that the majority of these households, gifted with even Machiavellian ingenuity, cannot afford to purchase milk on the scale thought desirable by the Government's Committee.

Beyond a certain point, propaganda for milk consumption (whether the milk is pasteurised or not) is useless. No amount of publicity, however well conceived, will effect any radical increase in consumption while the level of incomes (this of course applies with particular emphasis to the North and Wales) remains where it is and bears, as at present, no relation to the size of the family. In the matter of balanced meals, specimen budgets, the physiological utilisation of food and an adequate intake

of the right quality and quantity of food, the reader is referred to some of the sounder books on nutrition issued during the last few years.

There is no space to deal here with the question at all adequately, but even if there were, it seems apparent that the conclusions could be summed up in Lord Horder's words: "Look after the accessibility of food, and nutrition will look after itself".[1]

(12) IRREDUCIBLE ELEMENT OF HUMAN INCAPACITY AND CARELESSNESS

In this connection Sir Arnold Wilson went on to say, in the House of Commons, that, "Indeed, as far as cooking is concerned, I am inclined to think incapacity is less common among the poor than it is among those who are comparatively well-to-do, and who are more inclined to be unduly affected by advertisements of patent and preserved foods". This opinion is borne out by the Report of the Committee on Nutrition of the British Medical Association, who state: "The average housewife with no expert knowledge of calories, proteins, etc., does, in fact, purchase by rule-of-thumb methods foodstuffs which broadly approximate to dietaries considered by physiologists to be satisfactory". This, however, is subject to "her purchasing power proving adequate to the needs of the family".

From this necessarily brief review of a vast

[1] House of Lords, 14th November, 1936.

amount of relevant material the fact emerges that the main cause of sub-optimal and inadequate nutrition is poverty, which precludes the purchase of a diet sufficient and properly balanced to promote growth and to maintain health.

Preventable malnutrition and infection acting singly or in conjunction are, it must be remembered, the cause of the vast proportion of all ailments and defects. The application of the regional disparities in the various indices that have been examined to the problems of under-nourishment provides, therefore, some idea of the extent of ill-health, poverty and misery at work in the North and Wales.

CHAPTER XII

THE IMPACT OF UNEMPLOYMENT ON MORTALITY

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SINCE the conclusion of the war unemployment has constituted one of the major economic problems which modern society has had to face. For long, governments attempted to regard it as merely a temporary or ephemeral phenomenon to be solved by palliatives and short-term measures. But after twenty years this country still counts nearly 2,000,000 without work, and there is every indication that heavy unemployment is now a permanent feature of our civilisation. No true recognition of this fact is yet apparent, for how can one otherwise account for the complete absence of any adequate official investigation into the effects of unemployment on the health and expectation of life of those thrown out of employment. It is indeed a matter for regret that so few attempts—official or unofficial—have been made to correlate mortality rates with the incidence of unfavourable economic conditions.

The U.S.A. appear to have more statistical and scientific information than this country, though admittedly they have at present insufficient research in progress. Space forbids an adequate consideration of some of the conclusions that have

emerged from American research, but it is of interest to quote a recent statement by the Hon. Josephine Roche, Under-Secretary of the United States Treasury in charge of Public Health. According to the *Lancet*, she stated that the death rate from pulmonary tuberculosis in America is seven times as great among unskilled workers as among professional workers. Further, that the pneumonia death-rate is three and a half times greater and the death rate from all causes is more than twice as high for the unskilled worker as it is for the professional worker. In a recent survey, instituted to ascertain the degree of morbidity in a sample of the American population (740,000 families comprising approximately 3,500,000 individuals), it was revealed that disabling illness among persons on relief was 68 per cent higher than among those belonging to families with an annual income of £750 or over. This survey also showed that one in every twenty heads of families on relief was unemployed because of disability, while only one in 250 heads of families in the higher-income groups was unemployed for that reason. It is unavoidable that much of the material which has been included in the preceding chapter is relevant to, and indeed forms the substance of, a consideration of the effects of unemployment on mortality rates. (Viewed in terms of insufficient purchasing power, conclusions from the aspect of unemployment are also applicable to that large section of the population underpaid and subject to unsatisfactory occupational con-

ditions.) Therefore the following pages are intended to indicate that the conditions and effects of unemployment disclosed by certain studies must similarly apply to those areas suffering from severe and sustained unemployment examined and analysed in the preceding chapter, for how otherwise can the excess mortality revealed by the Tabulated Statistics be accounted for than by correlating it to poverty ?

In this country there have been two recent investigations into the subject the results of which are of considerable importance, *e.g.* the Survey of Stockton-on-Tees by G. C. M. M'Gonigle, Medical Officer of Health for that area, and J. Kirby, and the Pilgrim Trust Unemployment Enquiry. The author is indebted to those who carried out these valuable investigations for permission to quote some of the results of their work. Here it should be noted that, in considering the references in these quotations to infant and maternal mortality and general and specific death rates, recourse for comparisons should be made to preceding chapters, particularly those dealing with the chief " killing " diseases, and the Tabulated Statistics.

In the Survey of Stockton-on-Tees, consideration was given to the effect of unemployment on local death rates. The records of two groups of families were analysed. One group consisted of 369 unemployed families containing 1572 persons ; the other group consisted of 408 employed families containing 1564 persons. It will be noted that

numerically the personnel of the two groups was almost identical. The total population under review amounted to 3136.

Of the unemployed group 8 had been out of work for from 6 to 8 months. The period of unemployment of the remainder varied from 1 to 14 years.

The weekly income of each of the 777 families was known, and calculations showed that—

(1) The mean income of the 369 unemployed families was 29s. 2½d. per week ;
(2) The mean income of the 408 employed families was 51s. 6d. per week.

The standardised death-rates for the two groups are shown below. The excess percentages have been added to the statistics quoted.

TABLE 48

SAMPLE OF STOCKTON-ON-TEES DEATH RATES

		Standardised Death Rates per 1,000 Population		
		Actual	Expected	Excess
				%
1931–4	Unemployed .	29·29	8·75	235
„	Employed .	21·01	8·53	146

In both cases the rates represent the mean of the four years. As the age and sex distribution of the individuals comprising each group was known, it was therefore possible to calculate the "expected death-rate", *i.e.* the death rate in proportion to the death rate for the whole country.

The authors then summarise their findings as follows :

107 more unemployed persons died during four years than, by the normal expected rate, should have died.

59 more employed persons died during the four years than, by the normal expected rate, should have died.

Epidemic incidence and death rate were, during the four-year period, insignificant, and cannot be assigned as a relevant factor in the death rate of either group. External environmental factors in each group appeared to be identical. By a process of exclusion it would appear that income, as expressed by purchasing power, is the only variant which correlates with the variant death rates.

The following table will suffice to emphasise how excessively high mortality rates can be veiled :

TABLE 49

EXAMPLE OF DISGUISED EXCESS MORTALITY, 1935

	Crude Death Rate per 1000 Population	Comparability Factor	Ratio of Local Adjusted Death Rate to National Rate *
England and Wales . .	11·7	1·00	1·00
Standard . . .	11·4	0·88	0·86
North	12·7	1·08	1·17
Stockton-on-Tees M.B. .	12·2	1·11	1·16

* For explanation see Table 18, " Adult Mortality ".

There is certainly nothing in these figures to indicate the existence of such alarmingly high death rates as revealed by the analysis of the two groups in Stockton-on-Tees. In fact, the adjusted death rate for Stockton-on-Tees is lower than that for the whole of the North.

It does not appear to be illogical, therefore, to

suppose that there exist in the North and Wales extensive areas with similar, and even higher, mortality rates than those prevailing in that part of Stockton-on-Tees investigated by the authors of *Poverty and Public Health.*

The findings of the investigation by the Pilgrim Trust Unemployment Enquiry were reported in October, 1937 (Interim Paper No. IV, by Dr. H. W. Singer). This investigation did not adopt the method of individual observation but covered a general statistical analysis of available statistical data. The vital statistics of 77 English and Welsh boroughs were analysed. The percentage of insured population unemployed during 1927–8 in each county borough (average of eight quarterly figures) was considered as the equilibrium pre-depression level of unemployment. The percentage of unemployed population during the five years 1930–34 (average of twenty quarterly figures) was considered as the depression level of unemployment. The difference between the two figures was then taken as measuring the force with which the depression hit the county borough in the shape of unemployment. The ascertained average difference between depression level and pre-depression level for all county boroughs was 10 per cent of the insured population additionally put out of work.

The Report states: " The principle has been observed to correlate with this variation in unemployment from pre-depression equilibrium to depression average variations in the incidence of certain vital

phenomena, such as birth rates, death rates and disease rates. It must be noted that by this procedure, correlating not absolute unemployment levels and rates, but *variations* in absolute levels and rates from pre-depression to depression years, we may hope to eliminate the effects of differences existing among the County Boroughs at the beginning of the depression regarding climatic conditions, social housing conditions, quality of social services and medical institutions, and age composition of population. Incidentally, by basing our analysis on variations in unemployment instead of absolute levels, we may hope to have removed objections to the trustworthiness of our basic series, for the computation of which the local Unemployment Index has been used ; and this principal source gives a picture of variations in local unemployment figures with which any individual figure taken in isolation is pretty nearly meaningless. In so far as in this comparison of variations, the problem of standardisation comes in, *i.e.* in so far as there have been changes in the relative age composition of hard-hit and less hard-hit boroughs influencing the relative variations in the incidence of certain diseases of phenomena, care has been taken to make our comparison of pre-depression and post-depression medical data for two dates as near together as practicable. If it is further taken into account that between 1930 and 1933 transference was nearly at a standstill, and that, therefore, changes in the age composition of the County Boroughs relative to

each other cannot have been very considerable, it appears that the problem of standardisation, where it arises at all, does not seriously jeopardise the significance of any results that may be arrived at.

" A word may be added about the interpretation of the results obtained in this way. Strictly speaking, wherever a correlation between unemployment and certain physical phenomena is shown to exist, it would be rash to conclude that a certain effect of unemployment has been demonstrated. All we have shown is that both unemployment, and, say, an increase in the incidence of tuberculosis are trade-cycle phenomena. It is, of course, possible that in a depression infantile mortality is swollen by increased mortality among children of business people reduced from £2000 to £1000 a year. In fact, however, we may safely consider this investigation as an investigation not into the social consequences of the trade cycle, but into the effects of unemployment (suicide may be a possible exception)."

Infant Mortality—The Report first investigates infant mortality, and after discussing and analysing in detail the available statistics, states: " The following table shows for all County Boroughs the number of infantile deaths (under one year) in the four depression years 1931–1934, contrasting the actual and expected number. The expected number is based on the number of births and infantile deaths in eight County Boroughs with 5 per cent and less depression (*additional*) unemployment. It represents the number of infantile deaths

that would have occurred had the infantile death rate taken the same course since 1928, as in the eight Boroughs (*i.e.* the infantile death rate being 100 for 1928, the expected number of infantile deaths is based on the index number of the infantile death rate applied to the number of live births in all County Boroughs) :

TABLE 50

INFANT MORTALITY (COUNTY BOROUGHS), 1931–4

Year	Expected Number	Actual Number
1931	13,897	16,149
1932	14,121	15,094
1933	13,000	14,307
1934	13,260	12,970
	54,278	58,520

Thus, the actual number of infantile deaths is by 4242, or 8 per cent, higher compared with what it would have been had the development in the eight least affected Boroughs been general."

Maternal Mortality.—Here again the Report describes at length the analytical methods adopted, illustrating this section with tabulated statistics, and concludes : " The actual number of maternal deaths was no less than 865, or 19·8 per cent higher than that obtained on the basis of places where there was little increase in unemployment. This difference is too striking to be explained away and may reasonably be assumed to be an effect of depression unemployment. It can thus be shown that unemployment during the last depression has raised

maternal mortality rates by something like 20 per cent. If this percentage, obtained for the 77 County Boroughs, can in any way be considered as representative, we may estimate the number of human victims of depression unemployment among mothers dying of puerperal disease as 3200."

Tuberculosis.—The change in unemployment and change in the rate of deaths from tuberculosis of the respiratory system is examined in detail. The Report states: "The result . . . points again in the direction of a positive association; an abnormally high degree of depression unemployment tends to be associated with a comparatively unfavourable development in the death rate from tuberculosis of the respiratory system".

Diphtheria.—On this disease the Report expressed the opinion that "When our method was applied to an examination of diphtheria mortality regarding their association with unemployment, a much clearer connexion could be established than in the case of either tuberculosis or infantile mortality in general. Comparing our index of depression unemployment with differences in the development of death rate from diphtheria between 1929 and 1933, we obtained a positive coefficient of correlation of plus 0·2194, which is clearly indicative of an association of a (relative) increase in unemployment with a (relative) increase in mortality from diphtheria—only slightly less indicative than in the case of maternal child-birth mortality. The figure is, in view of the number of data on which it

is based, well above the lowest level of significance (according to R.A. Fisher's *Statistical Methods for Research Workers*).

. . . . . .

"The statistical expectation of the change in the diphtheria death-rate associated with a change in unemployment, as calculated from these figures, is that of a rise in the number of yearly deaths from diphtheria by 4·7 per million associated with a rise of unemployment by 1 per cent of the insured population. The number of additional deaths from diphtheria due to rise in unemployment by 10 per cent (sustained for 5 years) during the last depression may, therefore, be estimated at 8400 (1680 a year)."

The Report also states that "Traces of a correlation between changes in unemployment and changes in mortality have also been found in the case of diarrhoea and enteritis under two years, mortality being expressed as a rate per 1000 live births".

While, undoubtedly, there are many causal factors at work—with varying degrees of intensity —to account for the high excess mortality revealed by the Tabulated Statistics in this book, in the Reports of the Pilgrim Trust Unemployment Enquiry and from a study of all the other corroborative evidence, there emerges, however, but one major factor which completely dominates all other possible influences, and that, in short, is poverty on a scale hitherto unrecognised. What other con-

clusions can be deduced ? What is true of Stockton-on-Tees, may, as previously indicated, hold good for other depressed localities and regions. The following table, taken from *Poverty and Public Health*, analyses mortality according to income. It is based on the survey of 777 families in Stockton-on-Tees.

TABLE 51

MORTALITY AND INCOME

(Death Rates in Groups arranged according to Income Level)

Income per Week in Shillings	Population	Crude Death Rate per 1000	Expected Death Rate per 1000	Standardised Death Rate per 1000
25-35	1187	30·96	12·03	25·96
35-45	712	18·60	9·65	19·34
45-55	690	17·02	8·90	19·23
55-65	275	12·72	8·47	15·13
65-75	132	13·25	9·87	13·51
75 up	140	9·00	7·89	11·52

As the authors state : " If the apparent significance of the rates in this table is subsequently shown to be even approximately valid, the social and economic implications will demand profound consideration. It is because of the magnitude of the issues involved that caution is necessary ; but the striking nature of the findings in the present social study precludes the possibility of their being entirely ignored."

Lives are not terminated prematurely without cause ; in 1936 nearly 54,000 men, women and children in the North and Wales did not die before their time without good reason.

Yet Sir George Gillett, Commissioner for the Special Areas, in presenting his Annual Report for

the year ended 30th September, 1937, remarked that, while there appeared to be one or two places in which the standard of health was definitely below the normal, in certain respects it was satisfactory and surprising that the general level of health in the areas had not suffered more during the long period of depression and unemployment. Much, of course, depends, as is stated elsewhere in these chapters, on the standard of "normality" adopted. Apart, however, from this controversial aspect, the Commissioner implies the existence of a relationship between the effects of unemployment and premature death. Whilst there is undoubted evidence for stating that the health of the unemployed, and, what is often overlooked, the well-being of those dependent upon their earnings, must suffer through loss of work, how far and to what extent does this fall in the level of health affect mortality figures among the unemployed, whilst registered as such, and their dependants over the whole country every year? Or, on the other hand, to what degree are the rates of mortality influenced by the resumption of work by a considerable number of men and women who have been unemployed for long periods?

This aspect of the unemployment problem, namely the summation of adverse factors, some psychological, some physiological, in producing a definitely lower plane of germ resistance, not perhaps immediately recognisable as an obvious defect, is often forgotten.

The bodies of those who are unemployed undergo a process of change, or adaptation, in an attempt to meet the altered conditions, to accommodate perhaps some abnormal functioning or deficiency in diet. Reserves of stamina are eaten up, but while there is no actual starvation there is no immediate collapse. So long as there is available food, drink and housing of a kind, the human machine can and will adapt itself to a considerable degree of privation without for a time there being any evident indications of abnormality. It will continue to function but at a reduced level of health, probably while the routine of unemployment with all its attendant evils of monotony and disinterestedness remains unbroken. During this period there may not be the same exposure to risk, the same calls upon stamina and endurance, as during full-time employment. In other words, there is—for a time—a reduced daily expenditure of energy.

The phenomena of long-term and large-scale unemployment thus faces modern society with problems which are not solved merely by providing work. From the viewpoint of health, the past and its effect on those thrown out of work cannot be summarily dismissed.

A shifting unemployed population of approximately 2,000,000 must, in one year, affect directly and indirectly the lives of many millions more.

When and to what extent will this factor reflect itself in mortality statistics? That it is already doing so in the North and Wales is an unavoid-

able conclusion, but whether the impact is still in an incipient stage of development it is not possible to say. There is, at present, no evidence to suggest that there is no room for improvement in the death rates from various causes throughout the whole of England and Wales. These rates might therefore be lower but for the interaction of unemployment, poverty and other factors on something like one-quarter of the total population.

Will, therefore, a large proportion of unstable registered employment, and, consequently, a continually changing unemployed population, affect extensively the trend in death rates, particularly if there is, for a period of, say, five to ten years, a considerable reduction in the total number of unemployed through their being reabsorbed into industry ? For there are grounds for believing that re-employment after unemployment does influence death rates. At the Eighteenth Conference of the National Association for the Prevention of Tuberculosis, Dr. Bardiwell attributed the " increased incidence " of that disease among young women to the " strain and stress of competitive wage-earning at a time when physically they are unfitted for it ".

This last sentence might well account in part for the unduly wide disparity between death rates from various causes in the North and Wales and the South, where unemployment has not since the war been so severe or widespread.

In their Report in July 1936 the Unemployment Assistance Board referred to another aspect

of the same problem : the effect on the health of the women whose husbands are unemployed. The Board's Officer for the Durham Area comments upon the courage and resourcefulness of the typical Durham housewife. She has acquired, they stated, a technique in household management which enables her to do wonders on a small income, but many " show signs of the stress and strain of this continual fight against odds ". A Report in the same sense comes from the Officer in Charge of the Newport Area, and evidence of a like character can be elicited from innumerable similar reliable sources, commenting upon the adverse effect on health during unemployment and during a period of work following upon unemployment.

In *Men Without Work*, cited elsewhere in this book, the following illuminating passage occurs : " A feature that was noticeable in almost every household was the refusal to economise on the food or clothing for the children, though the parents would go short. Even in Liverpool this was the rule, and the cases where the children were in rags, while the parents were better dressed, were rare and almost always went with very low general standards. In several instances great efforts were being made to keep the children at school till 16, ' even if we have to starve for it. Education is the only thing that matters now '."

A study of the relationship between the death rate and unemployment in England from 1896 to 1935 yields some disquieting results :

TABLE 52

DEATH RATE AND UNEMPLOYMENT IN ENGLAND, 1896–1935

Year	15–19	20–24	25–34	35–44	45–54	55–64	Unemployment
	%	%	%	%	%	%	%
1896	1·9	2·8	2·8	4·7	9·8	20·2	3·3
1897	2·1	2·9	3·1	5·1	10·4	21·8	3·3
1898	2·0	2·9	3·1	5·1	10·5	22·4	2·8
1899	2·2	3·2	3 6	6·2	12·3	25·0	2·0
1900	2·3	3·3	3·6	6·4	12·2	26·9	2·5
1901	2·1	3·0	3·2	5·5	11·5	23·6	3·3
1902	2·0	2·9	3·3	5·4	11·5	23·7	4·0
1903	1·7	2·6	3·0	4·6	10·5	22·3	4·7
1904	1·9	2·7	3·0	4·7	10·6	23·3	6·0
1905	1·9	2·7	3·0	4·5	10·4	22·8	5·0
1906	2·0	2·6	3·0	4·7	10·6	24·0	3·6
1907	1·9	2·6	3·1	4·8	10·8	24·2	3·7
1908	1·8	2·6	3·0	4·5	10·3	23·6	7·8
1909	2·0	2·6	3·0	4·6	10·7	23·6	7·7
1910	1·7	2·4	2·5	4·1	9·8	22·2	4·7
1911	2·1	2·6	2·9	4·5	10·4	22·7	3·0
1912	2·0	2·4	2·8	4·4	10·4	23·0	3·2
1913	1·9	2·5	2·9	4·6	10·6	23·6	2·1
1920	2·3	3·1	3·4	4·7	9·4	20·3	2·4
1921	2·2	2·9	3·0	4·4	8·9	20·5	14·8
1922	2·2	3·0	3·3	4·9	9·7	22·4	15·2
1923	2·1	2·8	3·0	4·5	9·1	20·8	11·6
1924	2·1	2·8	3·0	4·8	9·6	21·9	10·2
1925	2·2	2·8	3·1	4·8	9·9	21·8	11·0
1926	2·2	2·6	3·0	4·7	9·6	20·9	12·3
1927	2·2	2·9	3·2	5·4	10·6	22·4	9·6
1928	2·3	2 7	3·2	4·9	10·1	21·5	10·7
1929	2·5	3·1	3·5	5·9	12·0	24·4	10·3
1930	2·3	2·8	3·2	4·9	10·5	21·8	15·8
1931	2·4	3·1	3·2	5·2	11·1	23·0	21·1
1932	2·4	3·0	3·1	4·8	10·5	22·8	21·9
1933	2·5	3·2	3·4	5·4	11·6	23·4	19·8
1934	2·4	3·0	3·2	4·9	10·9	23·3	16·6
1935	2·1	2·9	3·1	5·0	10·8	23·2	15·3

These figures are taken from *New Fashions in Wage Theory*, by Jürgen Kuczynski, who discusses the problem and states that "Since the

death rate during the years under review had the tendency to decline anyway, whatever other factors may have been effective in making for an increase of the death rate, we have eliminated this downward trend. The unemployment figures which we give refer to both male and female workers, separate figures for male workers being available only for post-war years and not differing appreciably from those for all workers taken together. There is another and more serious flaw in the comparability of the death rate and the unemployment figures caused by the fact that the death rate figures pertain to the total male population while the unemployment figures refer to workers only. Yet all these differences in the character of the two sets of statistics are not serious enough to invalidate the possible positive or negative results of a comparison." It will be seen therefore that :

Years of Exceptionally High or Comparatively High Trade Activity and Low Unemployment	*Change in Death Rate*
1899	Marked increase
1907	Very slight increase
1924	Marked increase
1927	,,
1929	,,
Years of First Rapid Increase of Unemployment during Depression	*Change in Death Rate*
1901	Marked decline
1908	Slight decline
1921	Marked decline
1930	,,

Kuczynski concludes by remarking that " great trade activity with severe intensity of work and great absorption of workers affects the health of the worker adversely and leads to an increase in the death rate, especially among the middle age groups between 35 and 54, while a sudden increase in unemployment, following upon a period of great trade activity, leads to a decline in the death rate ". One conclusion which cannot be avoided is that, assuming the operation of adequate wage rates and unemployment payments, these changes would not by any means have been so marked. A study, therefore, of these two sources of income and mortality rates would appear to be more likely to yield faithful results.

There is, further, one factor of major importance that may conceivably upset the balance of Kuczynski's conclusion. Never before has there been unemployment on so vast a scale or of, apparently, such a permanent character. How far death rates will be conditioned thereby it is not possible to estimate. The only reliable conclusion that can be made in face of approximately 54,000 foreshortened lives in the North and Wales during 1936 is that unemployment must, in the long run, affect the expectation of life of those who are rejected and forgotten by our industrial system.

What then, in terms of human suffering, do these early and unnecessary deaths entail ? What does this human wastage mean to the families, the relatives and the friends of the victims ? Something

like 500,000 people must suffer incalculable pain unnecessarily every year in the North and Wales on the assumption that each death involves ten relatives and close friends. *The Times* relates something of the suffering that exists in these areas to-day. Their experienced Special Correspondent, who carried out for the paper several surveys of the Special Areas in England and Wales, contributed a number of articles early in November, 1937. On the 3rd of that month he wrote: "Encroaching distress of mind, if not of body, is inseparable from long-continued worklessness. Overstatement cannot intensify, any more than complacency can mask, the human seriousness of that terrible fact. By darkening the truth in order to evoke sympathy it is all too easy to do the Areas the disservice of scaring new industry away. At the same time, if anyone feels satisfied that everything is well in Britain, let him visit Dowlais, or lose his way in Page Bank, or stand beside Maryport's almost silent harbour."

Commenting on these Reports, the editorial states: "Our Special Correspondent asks whether the manifest improvement can be regarded as permanent. His finding is that it is still too narrowly based. Indeed he hints at the possibility that distressed areas of the future may be now in process of creation by reliance on single industries. Some places are visibly decaying and industry is threatening to leave them."

The editorial on the following day states:

" South-West Durham remains a derelict area. In Cumberland there are several places . . . Maryport with 10,000 inhabitants being one and Cleator Moor another . . . which are rapidly lapsing into the same helplessness and well-nigh hopelessness ; and in South Wales ' all along the heads of the valleys stand towns that have outlived their industries '. It is tragedy when fate remorselessly drives the innocent to destruction ; but here is no work of the fates but of men ; and what man has done badly man can mend. So then, while there is marked improvement in the distressed areas, it is sporadic. There are still areas of distress forsaken by industry and economically derelict. The problem of the areas can also be stated in terms of men as well as in terms of localities. In the derelict spots whole communities are overwhelmed ; but throughout the areas, and even where industry has returned and is active, there are middle-aged and older men who were marooned when the industrial tide receded, perhaps a decade or more ago, and the returning tide does not reach them. Standing idle with them, but on a different moral plane, are young men in their twenties who grew to working age when there was no vacant job in sight and who have never worked. Scores of thousands of men, and not a few places in the areas, remain untouched by the industrial revival which has almost halved the unemployment in the areas as a whole. They are as they were."

" Many a woman," their Correspondent writes,

" with children still at school lives day after day with the knowledge that, although her husband has it in him to return to full working life, he fears he may remain a drag on the family for the rest of his days because it would need an act of faith on the part of an employer to give him work again." The editorial concludes : " Something of the pity and pathos of it all is in that sentence. The areas are not merely tracts of country where industry has decayed ; they are the dwelling-places of thousands of men and women whose lives have been made a burden by unceasing care and poverty and the hopelessness of existence on ' the dole '. The human suffering calls loudly for succour ; and the healing instrument must be work."

CHAPTER XIII

INTER-REGIONAL MIGRATION

(1) The Causes.
(2) The Facts of Population Movements.
(3) Inter-regional Migration and its Consequences.
(4) Effect on Birth, Marriage and Death Rates.
(5) Economic Consequences :
    (*a*) The North and Wales.
    (*b*) The South East.

CHAPTER XIII

INTER-REGIONAL MIGRATION

(1) THE CAUSES

PRECEDING chapters have, to an extent, epitomised the emergence of two nations—two nations within one ; dissimilar to Disraeli's by geographical definitions but nevertheless having points of comparison. On one hand the North and Wales with surplus mortality, excessive illness and inefficiency, malnourished children, deteriorating communities, high unemployment and human distress ; and on the other the South, relatively prosperous, relatively healthy but withal unplanned, congested and suburban with a deteriorating cultural background. In contrasting the one with the other it must not be forgotten that unemployment, ill-health and poverty exist in considerable degree in the South—to which the slums of London and elsewhere bear witness—but despite the unequal distribution of wealth in the South the difference sinks to the lowest level of insignificance judged by a contrast between the average economic standard in the South and that in the North and Wales.

There is every indication that the factors influencing the growth of this disparity will continue

to operate with undiminished energy unless their tendencies be deliberately reversed by the State. On the one hand a successful and expanding market; on the other a depressed and contracting one. The attraction of the one for the other grows accumulatively. Each new industry in the South requires a host of smaller satellite industries, and each new immigrant from the North or Wales represents increased purchasing power, and so the process gathers momentum. The result: an ill-balanced and unsound distribution of human and material wealth which, if allowed to grow beyond a certain degree of social and economic insanity, will involve, as a counteracting force, State interference in practically every sphere of social and economic activity.

It is not the function of this book to judge how far this process has continued; it only remains to assess—so far as it is possible—the immediate consequences, locally, regionally and nationally, of the shifting currents of populations forced by sheer economic necessity to migrate. Whilst the location of industry is no concern of the State (except in war or under the threat of war), hundreds of thousands of human beings are required by the State in the name of industrial transference to move around the country at the behest of industry. Whilst this is euphemistically described as "finding work for the workless", it is but part of a vicious circle gaining force. What, then, are the cumulative effects of industrial transference and migration on

the populations of the areas with which this book is concerned ?

(2) THE FACTS OF POPULATION MOVEMENTS

The following tables show the regional changes in the populations between the years 1921, 1931 and 1936.

TABLE 53

CHANGES IN REGIONAL POPULATIONS AND INTER-REGIONAL MIGRATION, 1921–36

Region	Estimated Mid-year Population, 1936	Change in Population, 1931–36	Proportion of Increase by Births over Deaths	Proportion of Increase by Migration (Net Balance inward)
	(1)	(2)	(3) %	(4) %
England and Wales	40,839,000	851,000	68	32
South East .	14,192,640	777,600	28	72
"Standard" .	5,616,940	394,100	18	82
North . .	13,129,537	26,000	..	..
North I . .	2,222,270	- 30,000	..	..
Wales . .	2,516,880	- 75,000	..	..
Wales I . .	1,830,720	- 70,000	..	..

Region	Percentage Change in Total Resident Population		Percentage Natural Increase		Estimated Net Balance of Migration	
	Mid-years 1921–31 (adjusted to 1931 Boundaries)	Census 1931 to Mid-year 1936 (adjusted to 1936 Boundaries)	Mid-years 1921–31 (adjusted)	Census 1931 to Mid-year 1936 (adjusted)	Mid-years 1921–31 (adjusted)	Census 1931 to Mid-year 1936 (adjusted)
	(5)	(6)	(7)	(8)	(9) %	(10) %
England and Wales	5·6	2·22	6·0	1·50	- 0·4	0·72
South East .	10·8	5·30	5·6	1·48	5·2	3·82
"Standard"	13·3	6·94	4·7	1·23	8·3	5·71
North .	2·5	0·20	5·9	1·45	- 3·4	- 1·25
North I .	0·5	- 1·11	9·7	2·75	- 9·2	- 3·86
Wales .	- 2·5	- 2·89	7·2	1·47	- 9·7	- 4·36
Wales I .	- 3·4	- 3·69	8·6	1·94	- 12·0	- 5·63

TABLE 53—*continued*

Region	Estimated Net Balance of Migration (Approximate Number of Persons)		
	Mid-years 1921–31 (adjusted)	Census 1931 to Mid-year 1936 (adjusted)	Mid-years 1921–36 (adjusted)
	(11)	(12)	(13)
England and Wales	– 158,000	285,000	127,000
South East	632,000	515,000	1,147,000
"Standard"	389,000	300,000	689,000
North	– 440,000	– 170,000	– 610,000
North I	– 207,000	– 88,000	– 295,000
Wales	– 259,000	– 112,000	– 371,000
Wales I	– 237,000	– 106,000	– 343,000

Notes.—(*a*) The composition of the regions are given in the Tabulated Statistics.
(*b*) The percentages in columns 5, 7 and 9 are based on the population in 1921 of the regions as their boundaries were constituted in 1931.
(*c*) The percentages in columns 6, 8 and 10 are based on the population in 1931 of the regions as their boundaries were constituted in 1936.
(*d*) Owing to the changes that have occurred in the boundaries of most of the regions between 1931 and 1936 the figures for 1921–31 and 1931–36 are not strictly comparable.

Observe the percentage change for the "Standard" area for both periods, and the enormous disparity with the national percentages and those for the North and Wales.

Note, too, the percentage natural increase (excess of births over deaths) and the fact that the "Standard" percentages are the lowest for both periods, those for North I, for instance, being twice as high. These bear out the remarks elsewhere in these chapters that it is only higher fertility in the North and Wales that is preventing an earlier decline in population by feeding the more prosperous areas of the country with a constantly high stream of young migrants.

The official statistics relating to inter-regional migration cannot be considered altogether satisfactory, as although we can assess the net inward

or outward balance, no figures are available to evaluate the sum-total of the flow in either direction. Neither do the figures tell us the destinations of the outward balances or anything of the great movements of populations within each region. The preceding tables do, however, indicate the broad outline of the net balance of population movements. It will be seen that in fifteen years the North and Wales have lost, on balance, approximately a million people. The annual net loss for 1931–6 was, it seems, higher than for 1921–31, and that for 1936 was considerably in excess of the average for 1931–5. As will be illustrated later, some areas lost a larger percentage of their 1921 populations than is shown in the foregoing tables.

In general, the more depressed the region the greater the tendency to emigrate. South Wales, for instance, lost practically one-sixth of her 1921 population. Of the million who emigrated from the North and Wales the great majority came South, the "Standard" area receiving nearly three-quarters and a far greater annual number during the quinquennium than prior to 1931. During the period 1923–37, the *insured* population of the Home Counties increased by the abnormally high figure of 74 per cent. This tremendous rate of growth was, it should be remembered, accompanied by the almost complete absence of any sort of planned development.

One tendency which is shown by an intensive study of the inter-regional movements of population

over the last fifteen years bears out the conclusion, constantly forcing itself to the front in many of these chapters, that the general recovery from the depression has not affected the North and Wales to anything like the same extent as the South. When the depression was generally widespread—as in 1932–3 for instance—there was less inclination on the part of inhabitants of particularly depressed areas to move. The years 1935–6 witnessed, however, an intensified emigration impelled, no doubt, by the far greater recovery in the South. This is clearly shown in the following statistics relating to the Ministry of Labour's Industrial Transference Schemes:

TABLE 54

INDUSTRIAL TRANSFERENCE FROM THE DEPRESSED AREAS, 1928–36

(Numbers of Individual Workers Transferred under Ministry of Labour Transference Schemes)

	1928	1929	1930	1931	1932	1933	1934	1935	1936
Men, women, boys and girls (total)	1840	43,698	33,031	23,374	14,140	13,443	16,421	29,753	43,506
	1937 (six months only) 22,843				Total to June, 1937 242,049				

These figures of assisted migration do not include the families of married transferees (under the Ministry of Labour's Land Settlement Scheme [1] 27,809 families transferred from 1929 to June 1937), so the actual number of persons must have been considerably in excess of 242,000.

[1] Included in Table 54.

On the other hand, a large number of persons do not settle down and eventually return to their homes. The Ministry of Labour assesses the "coefficient of wastage" for juvenile transferees at about 35 per cent and for adults at 27 per cent. In the case of families under the Land Settlement Scheme the proportion is very much lower.

(3) INTER-REGIONAL MIGRATION AND ITS CONSEQUENCES

The constant stream of emigration from the North and Wales during the fifteen years to 1936 must have in its entirety far-reaching consequences on the social and economic life of the depleted areas. These effects condition, and are naturally cognate to, many of the other social problems that have been considered. It is, however, beyond the scope of these chapters to consider all the possible deleterious effects. For instance, no attempt will be made to judge statistically the effect on future fertility in the North or Wales following upon the emigration of large numbers of potential parents. Many of the consequences of a declining and ageing community indicated in this chapter are of course discussed in the chapter, "The Problem of Population".

As the issues involved by such large-scale movements of population and wealth are almost illimitable, a survey of the possible and probable consequences will be confined to a consideration of

some of the more important factors that contribute to the subject. In the first place, then, Wales I will be considered, as this area has its counterpart —in varying degrees—in the North. As a preliminary to a review of the factors it is necessary to assess the effect of migration on age structure. After taking into consideration a number of relevant factors such as higher mortality and fertility, a "survival rate" for each age group in Wales I is obtained. The result of this procedure is shown below:

TABLE 55

AGE STRUCTURE AND EMIGRATION

Age Group	Wales I, 1921–31				
	Population according to Rates of Survival	Actual Population	Deficiency (Emigration)	Per Cent	
0–4	154,941	153,129	1,812	1·1	
5–9	196,767	185,212	11,555	5·9	4·5
10–14	195,852	184,726	11,126	5·7	
15–19	202,664	170,170	32,494	16·0	
20–24	197,122	154,938	42,184	21·4	17·8
25–29	181,219	152,708	28,511	15·7	
30–34	160,681	143,586	17,095	10·6	
35–39	148,477	135,534	12,943	8·7	9·2
40–44	135,555	124,652	10,903	8·0	
45–49	125,578	116,385	9,192	7·3	
50–54	110,628	104,479	6,149	5·6	5·9
55–59	95,063	90,993	4,070	4·3	
60–64	72,937	70,173	2,764	3·8	
65–69	52,557	50,816	1,741	3·3	2·6
70 Up	60,406	60,085	321	0·5	

Assuming total emigration to represent 1000, the age composition is:

TABLE 56

AGE STRUCTURE OF EMIGRANTS

Age Group	Wales 1	Durham A.C. (excluding the Five County Boroughs)
0–14	126	162
15–29	535	532
30–44	213	176
45–59	101	82
60 Up	25	48
	1000	1000

Of total emigration and transference, it will be seen that over 75 per cent constitutes industrially active and married or marriageable age groups. As these figures cover the decennium to 1931, it must be borne in mind that emigration and transference has, since then, been greatly intensified.

By restricting the analysis to smaller and more depressed communities, such as the Rhondda and Jarrow, the devastating effects consequent upon large-scale " occupiable " emigration can be more clearly visualised (see Table 57).

As the 10–19 group in 1921 is the source of the 20–29 group in 1931, and if, therefore, these two groups are related to each other for the country as a whole and for the Rhondda respectively, the deficiency of 20–29 old people is found to amount to not less than 40 per cent.

Broadly speaking, these effects apply equally well to other depressed communities in the North and Wales. As, however, the extent of the area increases, the effects operate with less intensity but

still with considerable force. A consideration of inter-regional migration, therefore, involves two aspects of each social and economic factor that arises; namely, the depletion in the total population and the changing age distribution. Before discussing these factors it is necessary to remember that it is impossible to consider them *in vacuo*; that is, without relation to the future.

TABLE 57

AGE STRUCTURE AND EMIGRATION, RHONDDA, 1921–31

(Number of People in Ten-year Age Groups 1931 on Basis of 1921 = 100, and Particular Change in the Rhondda) *

Age Group	England and Wales	Rhondda	Particular Change in Rhondda
	%	%	%
0–9	92·3	69·0	– 23·3
10–19	92·7	79·4	– 13·3
20–29	112·1	83·5	– 28·6
30–39	105·6	89·0	– 16·6
40–49	104·2	93·7	– 10·5
50–59	122·1	115·5	– 6·6
60–69	129·1	145·9	+ 16·8
70–79	130·7	138·7	+ 8·0
80 Up	125·8	122·6	– 3·2
Total .	105·45	86·86	– 18·59

* These figures are taken from Interim Report No. III of the Pilgrim Trust Unemployment Enquiry.

What primarily has to be assessed is not the impact of these changes on to-day but on to-morrow —a morrow that is quite near. Realising this, the Pilgrim Trust Unemployment Enquiry included in their Third Interim Report a forecast of the age distribution in the Rhondda in 1941. The Report

explains that "The following table shows the age distribution for the Rhondda U.D. in 1941 on the following assumptions: Industrial transference between 1921 and 1931 is completely attributed to the

TABLE 58

FORECAST OF AGE DISTRIBUTION IN THE RHONDDA, 1941

Age Group		Actual Number	1921 = 100. Percentage of 1921 Numbers		Total Population per 10,000	
			1931	1941		
Pre-industrial age	0–4	6,999	61·0	37·3	727	2457
	5–9	8,140	77·2	42·7	846	
	10–14	8,506	80·7	44·8	884	
Young industrial age	15–19	8,248	77·3	50·8	856	1989
	20–24	5,853	81·4	43·6	608	
	25–29	5,057	85·6	39·5	525	
Industrial middle age	30–34	5,935	88·3	50·8	618	2023
	35–39	6,771	89·4	60·8	703	
	40–44	6,753	92·4	67·6	702	
Industrial old age	45–49	6,554	95·4	71·4	681	1952
	50–54	6,304	105·7	84·2	655	
	55–59	5,932	129·0	110·1	616	
Post-industrial age	60–64	5,202	144·4	141·8	540	1578
	65–69	4,248	148·4	176·3	441	
	70–74	2,888	146·3	210·8	300	
	75–79	1,814	125·2	238·0	188	
	80 Up	1,047	122·6	282·2	109	
		96,251				

quinquennium 1926–1931. In each of the two quinquennia 1931–1936 and 1936–1941 the same proportion of the population (i.e. a successively smaller actual number) to be transferred from the Rhondda. The age distribution of transferred people to remain the same as between 1921 and 1931. The net birth

rate per 100 population between 20 and 50 to fall between 1931 and 1941 in equal steps from the Rhondda rate in 1931 (= 37·11) to the country rate in 1931 (= 32·92). Rates of survival for each age group to be the same as in the whole country between 1921 and 1931."

(4) EFFECT ON BIRTH, MARRIAGE AND DEATH RATES

A reduction by 1941 (considered in terms of 1921 = 100) of over 50 per cent in the biologically important age groups is likely to have a dramatic effect on the number of births : not only quantitatively but qualitatively. One cannot drain away for twenty years the most enterprising, active, alert and healthiest from the young age groups (the Ministry of Labour's Transference Schemes are, of course, selective) without seriously conditioning in a dysgenic direction the quality of the present and future population. Those left behind, below the average in intelligence and physique, will intermarry and consequently tend to create clusters of the "Social Problem Group". This group is the source from which all too many of our criminals, paupers, degenerates, unemployables and defectives are recruited. Though one may then expect to hear the familiar contention of "unemployability", the use of the term is incompatible with the deliberate creation (past and present) of conditions which determine the flow of such types. It is logical to

suppose that feeble-minded types and marginal defectives are being created if the experience of depopulated rural areas is any criterion. The Wood Report on Mental Deficiency stated that the mean incidence of defects for all ages in the urban areas was 6·49 per 1000 population as compared with 10·66 in the rural areas. Remember, too, that the mother is the child's environment—before and after birth—and, as has been stressed in previous chapters, the future population is being increasingly drawn from these areas, the North and Wales. With a higher percentage of old people and consequently an increased burden on the "occupied age groups", a tendency to delay marriage and restrict parenthood is likely to follow. Death rates are likely to rise rapidly with such an undue preponderance of old people. With such a distorted age structure it is not unlikely that the results of a decline in the " occupied age groups " will be to embarrass and shorten the lives of those over 60 years of age through the pressure of harmful economic and social factors.

From the national aspect, the effects of such large-scale population movements imply serious repercussions on the birth rate. As is shown in earlier chapters, those regions of high fertility like North I and Wales I are associated with depression and poverty and the shifting of their personnel to regions where there is no pre-existing tradition of high fertility must be expected to encourage further decline. The process of transferring people belonging

to the industrial age groups from one area to another is not only bound to quicken the decline in the national birth rate, but does not appear, in itself, to provide a solution for the depleted communities unless the only practicable remedy is to completely denude such areas as North I and Wales I of all human beings.

(5) ECONOMIC CONSEQUENCES

(a) *The North and Wales*

A reduction in the total volume of unemployment—so often cited as a measurement of improvement in distressed areas—has little or no value to that community if the incidence of unemployment remains the same. This, of course, is the case in many declining communities. In actual fact the population of one-third of the country—the North and Wales—was declining by 1936, the reduction in Wales having set in much earlier. Naturally one would expect to find a decline in the total volume of unemployment in those regions. Approximately 66 per cent of the net outward balance of migrants from South Wales between 1921 and 1931 were under 30, and 87 per cent under 45; in North I the percentages were 69 and 87 respectively. These were mainly registered or potentially registerable employed persons. Thus, with a reduction in the number of unemployed and even with a decline in the incidence, the importance of the workless that remain assumes, in all probability, far greater dimen-

sions in the eyes of the depressed community than it did before with a larger population of a more balanced age composition. According to the Pilgrim Trust Unemployment Enquiry estimates, the " number of 60–64 years old people in the Rhondda will be higher than that of 25–29 years old (in 1941), whereas in 1921 there were more than 3, and in 1931 more than 2, of the younger group to each of the 60–64 years olds ". Thus, assuming the industrially active age groups (15–50, including women) = 100, the change in the relationship can be seen:

TABLE 59

BURDEN OF INACTIVE AGE GROUPS, RHONDDA, 1921–41

	1921	1931	1941
Inactive because of youth, 0–14 .	67	57	52
Inactive because of age, 51 Up .	25	38	61
	92	95	113
	=100	=103	=123

The " deadweight " of old and ageing people will therefore have doubled in twenty years in a community drained of its best types.

All these factors, declining population (qualitatively as well), increased burden of unemployment and old people, will result not only in a diminution of local purchasing power but in a change in demand. All the social apparatus will still be needed and have to be maintained chiefly on the local rates. The roads, lighting, water, sewage and other services will assume more expensive proportions

to this changed community. Repercussions will be felt in many other directions, such as local transport facilities. The results will be seen in a drop in ratable values. Many of these factors will contribute to a rise in local rates (compare, for instance, the rates for Merthyr Tydfil, Jarrow, etc., with Eastbourne) which will tend to drive away the remaining wealthier people in the depressed communities; and will in turn repel industry, thus creating favourable conditions for further economic deterioration. Even if industry is induced to settle in these areas, the "raw material" for future skilled workers has diminished. So, whilst there will be overcrowded schools, insufficient health-services, hospitals, etc., lack of playing-fields, clubs and public utility undertakings in the South, all this social capital will be, and is, rendered redundant in communities in the North and Wales.

Mr. Humbert Wolfe, Principal Assistant Secretary of the Ministry of Labour, in giving evidence on 2nd February, 1938, before the Royal Commission on the Geographical Distribution of the Industrial Population, stated, according to *The Times*: "On the other hand, the establishment of industries in new and undeveloped areas had its disadvantages. It involved expenditure for the provision of roads, houses, schools and similar services at a time when such services were available and had to be maintained in the older industrial areas. At the same time the decline of industrial activity made the older industrial areas less and

less able to support the necessary services for the maintenance of their communities. If in the future there was a decline in the population of the country, the cost to the community of the duplication of services would become increasingly burdensome.

" Again, where migration had taken place from the older industrial areas, it was, in the main, the more vigorous sections of the population which had tended to leave, and if, as appeared inevitable, the average age of the population rose, elderly people would form a disproportionate share of the population. Migration also tended to lessen the chance of attracting new industries to the depressed areas by reducing the size of what was one of their chief economic assets—an experienced industrial population.

" If things were left to work themselves out there might be a long period of decline, involving widespread suffering."

It is indeed questionable whether any revival is possible in these areas with a declining population unless action on a far-reaching scale is undertaken. Many authorities are of the opinion, despite " popular " belief, that a declining population will not mean declining unemployment. Mr. H. D. Henderson, for instance, states that " It seems to me unlikely therefore, despite the popular impression to the contrary, that a declining population will tend to diminish unemployment ".[1] Whilst these opinions are based on the problem from a

[1] *Sociological Review*, July, 1937.

national viewpoint, they may similarly apply to areas as large as the North and Wales comprising one-third of the population of the country.

There is no space to discuss here the social effects: the tendency away from independence and initiative towards reliance on State aid, the general, physical, moral and mental devitalisation, the loss of institutional life, churches, clubs, etc., and the impoverishment of local culture. It would seem, however, that the cumulative effect of all the contributory factors is likely to result in a lowered standard of living, a debased level of mental and physical health, and a rise in premature death.

(b) *The South East*

As long ago as 1662 Graunt, in *Natural and Political Observations upon the Bills of Mortality*, observed that the population of London was increasing only through immigration from the country. More recently Mr. Malcolm Stewart, the late Commissioner for the Special Areas, stated: "The microcosm of London grows with a rapidity which is beginning to cause alarm. Its sheer magnitude and density of population are such that, in the event of a hostile attack, it is doubtful if it could be assured of adequate protection or food supplies. Its growth is not wholly due to its amenities, to the extent of its market, or to its temporarily freer labour conditions. There is a considerable volume of opinion which associates assured industrial prosperity with this visible growth. Every new

factory built creates a demand for more material, transport and services. Local prosperity abounds; nothing succeeds like success. Is it to the national interest that this phenomenal growth should be allowed to proceed unchecked?" Since then Sir George Gillett, the present Commissioner, has underlined these observations in his first report (to 30th September 1937). Later still, Mr. Humbert Wolfe, who has already been cited, in answering a question from a member of the Commission as to whether London, instead of being the home of a fifth of the people might become the home of half the population, said, "Yes, that is the real menace to the country".

Between 1923 and 1937 the insured population of London increased by 42·7 per cent and that of the Home Counties by 74 per cent. According to the Annual Report of the Medical Officer of Health for Middlesex issued in January, 1938, the population of the county is increasing at the rate of 1400 a week.

Reference has already been made to the economic consequences of large-scale immigration. Other factors which are coming increasingly to the fore are transport congestion in London and the Home Counties and unplanned and speculative suburban development. As to the latter, the Annual Report just cited significantly remarks: "Unless some profound change of a national character occurs, it seems likely that the growth of building development in the county will continue until all

available land is covered with streets of houses. As many of the houses erected during the last decade are of a relatively poor standard of quality and unlikely to withstand the effects of weather and the vibration of modern traffic, it is probable that they themselves will create housing problems in the not distant future."

Apart from these consequences, such large-scale influx is likely to affect death rates. It is impossible to say whether this influence is already at work, but it is worth quoting Mr. E. C. Blight, Chief Officer of Public Assistance to the London County Council, who stated at a Public Assistance Conference held in the Central Hall, Westminster, on 16th March, 1937, that " Of the 20,000 new cases dealt with at the Welfare Office on the Embankment every year, three-fourths of them came from the provinces, and about half of the total were under 30 years of age ".

Whilst the majority of these immigrants represent purchasing power, the additional cost to the community of providing essential services, already in existence in the depleted areas, must not be overlooked. Most of the newcomers have, of course, already been " educated " at a cost of about £100 per head, half of which has already had to be found, ironically enough, by the overburdened ratepayers of the depressed areas. The low fertility of London and the Home Counties has been commented upon and as has already been indicated it would seem not improbable that the immigrants

from areas of high fertility will be influenced accordingly. Although in 1759 the editor of the "Collection of the Yearly Bills of Mortality" mentioned, among the factors reducing fertility in London, "the crowded manner of living" and "the unhealthfulness of many occupations", little progress appears to have been made to remove these unpleasing features of city life.

Sir Kingsley Wood has stated that "the vital problem of population could not be left to look after itself", but, after an assessment of the relative evidence, and faced with the arraigned forces of what Señor de Madariaga calls "statistical democracy", can one, with any standard of social values, say that anyone is attending to it?

CHAPTER XIV

THE SUMMATION OF POVERTY

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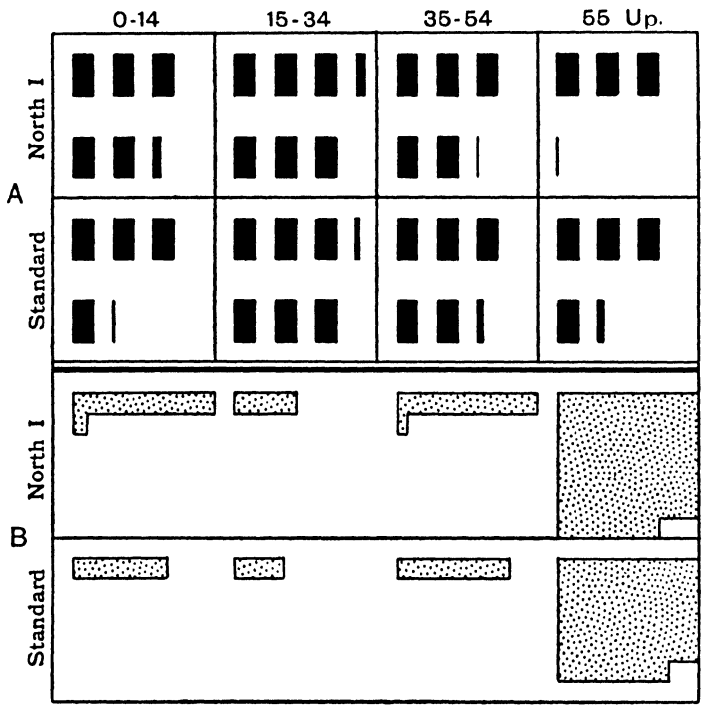
The Times, in an editorial on 13th February, 1936, said, " One half of the population is living on a diet insufficient or ill-designed to maintain health ". Assuming this generalisation applies to the whole of the country, there is ample justification in the regional distribution of causative factors of inadequate diet to assess the proportion in the North and Wales at, if not above, three-quarters. That such a supplementary estimate is well grounded is evident from the cited facts which illustrate poverty resolved into the unnecessary and untimely deaths of 150 men, women and children every day in the North and Wales throughout at least the last ten years, culminating in a total social waste of over 500,000 human beings. These figures not only confirm the opinion expressed by *The Times* but, as the expectation of life at birth and at all ages is considerably lower in the North and Wales than in the South East, read in conjunction with all the other relative indices they point to the fact that the incidence of inadequate diet must be extensively above that for the whole of the country.

The following diagram brings out the results of the economic inequalities existing between the depressed and relatively prosperous.

DIAGRAM No. III

THE INEQUALITIES, PAST AND PRESENT, OF MORTALITY RATES BETWEEN DEPRESSED AND RELATIVELY PROSPEROUS AREAS

(BASED ON 1936 POPULATIONS)



A represents the four age groups expressed as percentages of the total areal populations, *e.g.*:

North I . .	26·7	32·4	25·2	15·7
"Standard" . .	20·8	31·3	26·7	21·2

Each whole block represents 5 per cent.

B represents the death rate in each age group, *e.g.* the deaths in each group related to the estimated total population within that group and expressed as the rate per thousand living :

North I . .	7·7	3·2	7·5	47·0
" Standard " . .	4·8	2·2	5·7	40·5

North I, it will be seen, had 28 per cent more children under 14 years of age than " Standard ". Its child population exceeded the number of people over 55 by 70 per cent, whilst in the " Standard " region people over 55 exceeded children by 2 per cent.[1] Yet the death rate in North I greatly exceeded

[1] REGIONAL DISTRIBUTION OF CHILDREN (1936–7)

Supplementary to statistics in preceding chapters the following proportions should be noted in order to appreciate something of the effects of environmental conditions in the North and Wales on the future adult population :

Children aged 0–14 in the North and Wales form 40 per cent of total child population.

" " South East form 33 per cent of total child population.

Adults aged 15 + in the North and Wales form 38 per cent of total adult population.

" " South East form 35 per cent of total adult population.

Proportion of children in average attendance in public elementary schools maintained by Local Education Authorities to total child population aged 5–14 :

North I	75·5
Remainder of North . .	75·4
Wales	75·8
South East	69·4

Children in elementary schools in the North and Wales form 42 per cent of total elementary school population.

Children in elementary schools in the South East form 31 per cent of total elementary school population.

that for " Standard " in all four age groups, despite a proportionately smaller population from the age of 35 up. The social and economic implications behind these differences are far reaching.

Despite the gravity of these figures, what other results could but accrue from a high measure of sustained poverty in Durham and Northumberland. Consider for a moment a recapitulation of some of the more striking inequalities between these two areas :

NORTH I

Birth rate . . .	29% excess	Above South East. Percentage natural increase being twice as high as " Standard " (Table 53). If the birth rate for North I had obtained throughout England and Wales during the last ten years, our child population would have been increased by approximately 1,100,000.
Population (declining) .	300,000	Approximate loss through estimated net balance of migration, 1921–36. (Table 53.)
Infant mortality . .	65% excess	Tabulated Statistics.
Deaths from bronchitis, pneumonia and other respiratory diseases	96% ,,	Ages 0–4, Tabulated Statistics.
Deaths from tuberculosis	112% ,,	,, 5–14, ,, ,,
Deaths from tuberculosis	125% ,,	,, 15–24, ,, ,,
Deaths from heart disease	96% ,,	,, 35–44, ,, ,,
Deaths from all causes .	74% ,,	Ages 15–24 women. Tabulated Statistics.
Maternal mortality .	120% ,,	Ages 15–44. Tabulated Statistics. (Above Greater London.) 1936 rate for North I higher than national rate for 1896 and every subsequent year.

NORTH I—*continued*

Maternal mortality	213%	excess	Ages 15–44. Chapter VII. Percentage of Maternal Mortality to total mortality. (Above Greater London.)
Army rejections	59%	,,	Tabulated Statistics. (Above Home Counties.)
Unemployment	200%	,,	Above South Eastern Division. (Table 27.)
Unemployment, Durham	56%		Percentage increase January 1930–May 1936. (Table 32.)
Unemployment, Northumberland	17%		
Long unemployment	1325%	excess	Above South Eastern Division. (Tables 33 and 44.)
Poor relief (domiciliary)			
Durham	594%	,,	Above South East. (Table 36.)
Northumberland	162%	,,	
Overcrowding, Durham	71%	,,	Above London. (Itself one of the worst areas.) Durham and Northumberland are the two most overcrowded counties in England and Wales. (Tables 39, 40.)
Overcrowding, Northumberland	60%	,,	
Family income and size of family	..		Refer wide disparities revealed in sub-chapter, "Insufficient Purchasing Power", and "The Home Market" analysis. (Tables 45, 46, 47.)

Broadly, the facts for Wales I follow similar trends, whilst those for the whole of Wales and the North reveal somewhat smaller, but still excessive, divergencies. All these conclusions have been verified by different statistical approaches, and, further, the use of Cancer Mortality for certain age groups as a control provides additional confirmation.

Remember that these are not just statistics but the lives of men, women and children. These conditions obtained in 1936, a year of relative prosperity which appears unlikely to recur again for

some considerable time—if the Chancellor of the Exchequer's warnings and the present and future weight of the budget impacting on demographic trends are reliable indices. The fact that premature deaths to the extent of 54,000 should occur during such a period is a condemnation of past complacency and a reflection of our disregard for human life. If these lives had been suddenly—and sensationally—terminated in some tremendous catastrophe, revulsion would have swept the country. We have seen that if one child is cruelly maltreated by its parents great newspaper publicity ensues and questions are—quite rightly—asked in Parliament. But allow these men, women and children, through poverty and a revolting environment, to sink slowly from one stage of degradation to the next and ultimately to take prematurely their allotted places in the Registrar-General's return—then nothing stirs to ruffle the insulated calm of the nation.[1] Paradoxically, the nation considers 3s. per week sufficient to maintain one child in health, yet if that child should be certified as mentally defective, 30s. per week for life would be spent on its maintenance.

It is not only those who die but the thousands now clinging to a precarious existence who, wracked by poverty and aged before their time, will con-

[1] Mr. R. Cartland, M.P., in moving a resolution viewing the population trend as a danger to the maintenance of the British Empire, remarked: "I cannot see that the Ministry of Health can do very much more in the way of lowering the death rate" (House of Commons, 9th February, 1937).

tribute in the years ahead to the total of premature mortality.

With a declining and ageing population interacting on the pressure of economic recession ahead, what lies before the unemployed who, like the young man, " intelligent, fit and anxious to work ", was told, according to the Pilgrim Trust, that he was " too old at 29 " ? What is his future ? What of the older men and women long rejected by industry ? Who shall restore to them the years that the locust hath eaten ? What of the children whose only ambition is to " stand behind their father in the queue" ? Who could blame them if they should perforce echo the wish of Euripides, " Not to be born is the best, and to die as soon as possible the next best ".

At the commencement of this book a note of interrogation was sounded. In the realisation that in twelve years we shall have more old people over 60 than children under 15, whereas in 1931 we had twice as many children as old people, was there at present, it was asked, any avoidable wastage of human life ? After an intensive study of all the assembled material on social demography in relation to the North and Wales, the conclusion, though serious, is inescapable. The facts of 54,000 surplus deaths in the North and Wales alone, supply the answer. If they in themselves express the logical effect of contributory factors, what is the primary cause ?

The high maternal mortality, the excessive mortality among infants, children and young people, the severe incidence of nutritional defects and

tuberculosis among young people, and of deaths from heart disease in the thirties, the premature ageing and the defect-shortened lives, and all the amassed evidential statistics from many and varied sources, included, and not included, in this book, studied and weighed in the knowledge that we are losing one-quarter of our population every generation, and faced with the fact that at least 500,000 excess deaths have occurred in the North and Wales during the last ten years, can only point, after every alternative reason has been discarded, to the presence of intense poverty on a scale so considerable and so widespread, but at the same time so veiled and hidden by British stoicism and complacency, that public opinion has hitherto refused to recognise as conceptible the existence of such conditions in the heart of the British Empire in the twentieth century.

These deaths of over 50,000 men, women and children every year represent not only a national, social and economic problem of fundamental importance, but on humanitarian grounds alone, a problem that cannot be dismissed, because they need not have died when they did.

Those conditions that can be, and have been, created in the South can likewise be built in the North and Wales. They are, as is evident from the existence of London's slums, not a maximum standard by any means, but they would do much to prevent unwanted morbidity and untimely death and eradicate the shadows cast by suffering over the

lives of so many English people from conception to the grave.

Before an agitation for more babies is begun, let us, if man is something more than human live-stock to be moved around, save the lives of those children and mothers we already have. Because it is only now—and if nothing is done in the years to come—that the nation will begin to reap the sequelae of the last slump in terms of human wastage.

There are, it cannot be denied, unpleasant facts in this book, but it is only by a study of the available statistical data that the extent of the problem can be evaluated. That its true value must be determined is, however, evident, if we are to assess its importance in relation to contemporary socio-economic questions.

The cold and unsensational truth behind the many figures tells us, however, but a fraction of the misery and degradation endured by those who live among these dying people. But they do reveal that, if nothing is done, next year and in the years that lie ahead more than 50,000 must and will die annually before their time. In the full realisation of what this means in terms of human suffering, can we continue to do nothing but stand and wonder at those who are groping their way down the dark years to premature death ?

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Printed in Great Britain by R. & R. CLARK, LIMITED, *Edinburgh.*