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POPULATION PROBLEMS

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POPULATION PROBLEMS

BY

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PREFACE

The seven years that have elapsed since the publication of the preceding edition of this work have seen a vast amount of population study and research. The chief excuse for a new edition at this time lies in the need to embody the more important results of these studies, most of which have been highly specialized, in a book aiming to present a brief general view of the processes of population growth and of their significance. The data from more recent censuses also contribute to these ends, but unfortunately the war has seriously interfered with the collection and tabulation of census data abroad so that recent foreign data are not used to the extent planned for when this revision was undertaken. Even some of the important materials from the 1940 census of the United States are not yet available and may not be for a year or more, but Drs. Truesdell and Hauser of the Bureau of the Census have been kind enough to furnish a considerable amount of census data in advance of publication although these data will have appeared in print before this book is issued. In later printings it is planned to add an appendix containing the more significant results of our own census yet to be published as well as those from foreign censuses when and if they appear.

My chief obligations for assistance in this revision, aside from those of which I am not conscious, are to my fellow workers on the Scripps Foundation staff. Professor Whelpton has always given his time unstintedly while Evangelyn Dine Minnis and Doris Vance Shaffer have taken a personal interest in all phases of the work as well as shouldering most of the drudgery.

I am indebted to the *American Mercury* and the *Journal of Human Biology* for permission to reprint in substance materials originally published there. Indebtedness for the use of specific materials has been acknowledged at the appropriate place unless I have unwittingly overlooked such obligations, which I fear may have happened in some cases.

The general bibliography has been omitted because it seemed to be no longer needed in view of the publication of *Population Index*, of which special note is made in Chap. I.

WARREN S. THOMPSON.

OXFORD, OHIO,
September, 1942.

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POPULATION PROBLEMS

INTRODUCTION

There has been a great growth of interest in the problems of population in the last two decades. The numerous problems of politics and economics to which we have been forced to give closer attention since World War I so often lead us back to questions of population—its numbers, its make-up or composition, its distribution in space and the changes therein (migration), its growth, its quality—that we necessarily gave more attention to them than formerly. At present, in the midst of World War II, interest may slacken temporarily but there is little doubt most of these problems will become more urgent than ever before in the postwar world. It may not be amiss, then, to call attention to some of the facts which have warranted the increased attention that the study of population has received in recent years and to the conditions which seem likely to make these problems more urgent in the future.

a. In the first place, as regards man's increase in numbers, we have only recently become fully aware of what has happened in the world during the last century and a half. Malthus clearly foretold what was likely to happen if man's productive power were greatly increased while his fertility changed but little, a situation which was then developing—but which even he did not adequately appreciate. Since Malthus himself did not clearly understand how contemporary economic and social changes would affect population growth and levels of living in the near future it is not surprising that most nineteenth-century students of social science thought of the failure of his gloomy prediction, of increasing human misery following upon population growth, as showing that all his population work was of little or no significance. The circumstances out of which World War I arose directed increased attention to what had been happening in the matter of population growth, particularly among the peoples of European descent during the century following Napoleon. It had, of course, been known, by those interested in such matters, that a great increase in Europeans was taking place; but it came with something of a shock to most men to learn that people of European stock had increased from about 200,000,000 at the time when Malthus wrote his first "Essay on Population," in 1798, to almost 600,000,000 at the outbreak of World War I. From constituting perhaps one-fourth of the population of the world in Malthus' day, Europeans had become about one-third of it in a little over a century (3, Vol. 2, pp. 33–82; 4, pp. 22–51).

Numerous consequences of this European expansion were clearly visible as soon as people began to look for them. European peoples had expanded until they and their emigrants covered a large part of the globe; some of the countries of Europe, in addition to sending out large numbers of emigrants, had become very densely populated at home, owing to the fact that they were manufacturing great quantities of goods which they were selling to peoples who were not yet industrialized; some of the European settlements, notably the United States, had grown to great size through the enormous expansive power of man living under favorable conditions, as well as through additions from without; and, lastly, there had grown up, in consequence of this increase of population, a great urge for territorial expansion on the part of some of the rapidly growing nations, which had resulted in practically all the backward and thinly settled parts of the world, not already occupied by the European powers, being occupied by them during this period. Those lands to which the Monroe Doctrine applied were the only lands easy to subjugate whose independence was preserved throughout this period of European expansion.

It needs no more than a mere statement of this expansion of Europeans to convince anyone that the political and economic situation of the world was greatly changed by it. Some of the most urgent international problems today are a heritage from this period of European expansion, and their liquidation is perhaps the greatest task facing the next few generations. The expansion of Europe has vastly increased the complexity of the world's race problems and of those problems involving the adjustment of land and resources to the needs of peoples increasing at varying rates—the economic problems of the "haves" and the "have-nots" (see Chap. XV).

b. The dawning realization of the problems which the expansion of Europe has left in its wake would alone be sufficient to make us more interested in population today than our fathers were. But, in addition to the urgency of the political and economic problems arising from the expansion of the Europeans, certain new attitudes of mind have developed in our Western civilization which would naturally lead us to devote more time and thought to such matters than people have done in past times. Today we have a belief in our ability to control our own destiny which amounts almost to a religious faith. This belief is probably the product of the scientifico-mechanical age in which we live. But whatever its source, the world has never known anything like it. We believe that if we can secure the proper knowledge, we can control the activity not only of the chemical elements and the so-called inanimate forces of nature but also the behavior of all animate beings, including man. That we should be intensely interested in our numbers and the factors which control them is a very natural consequence of this general belief in our power to cooperate

with nature to attain our desired ends. We feel that we should be able to control our growth as seems best and thus make it serve our welfare, rather than that we should become the victims of our own growth and be held in bondage by it. Man's efforts to make of his life what he wants it to be will, then, account in part for this growing interest in population questions.

c. But perhaps of greater direct importance than the mere growth of the numbers of Europeans and the belief in man's ability to control his destiny, in creating interest in population, is the economic rivalry between nations, which is in last analysis an outgrowth of the population increase just noted. This manifests itself in a variety of ways, as would be expected. One of the most important manifestations is the attempt that has been made and is still being made by different countries to assure themselves abundant supplies of all the resources they may need to meet the wants of their growing populations and enable them to compete with other peoples in world markets and thus to improve domestic levels of living. As a consequence of this interest in the relation between resources and population we have been made aware of the relative abundance, or scarcity, of various kinds of natural wealth in different parts of the world, and we are beginning to appreciate the probable influence of the presence or absence of natural resources on the welfare of different peoples. This relation between resources and economic welfare, to which Malthus devoted his attention, is taking on new but somewhat different significance today and bids fair to become one of the most urgent of all our social problems. Today we are fortunate in having at our disposal for the study of these problems considerable bodies of facts regarding birth rates, death rates, standards of living, and agricultural and mineral resources, which were not available to earlier students.

d. But if the very rapid growth of population during the last century has helped to create interest in population, the even more abrupt decline in the birth rate, now manifesting itself in a rapid decline in its rate of growth in Western lands, is attracting still more attention to population questions because the consequences of these changes in rate of growth are likely to affect seriously both the internal economy of nations and the international relations arising from differential rates of national expansion. It is not exaggerating to say that just about the time the economic and social system of the Western world became adjusted to a rapidly growing population this growth became slower. We must now readjust our social organization to a slowly growing population. It is not surprising, therefore, that we are becoming more and more interested in the relation of our numbers to our welfare. Any change as sudden as the present change in rate of growth cannot fail to attract attention and demand careful examination. Indeed, such a change in rate of growth as we are now experiencing in the West may very properly be called a social crisis. It need not

alarm us but we can ignore it only at our peril. In the field of international relations this change from a rapidly expanding population of western Europeans to a stationary or declining population, at different rates in different nations, raises new problems of social and economic adjustment both within this area and between the peoples of this area and the rest of the world. These problems cannot even be enumerated here but among the most important are the demand for the redistribution of the world's resources and the right of free migration to the more thinly settled areas of the globe by the crowded peoples of both Europe and Asia.

e. The factors mentioned above will perhaps sufficiently, though by no means fully, explain the growing interest in population which is being manifested today. When we begin to study population, however, we soon find that there are many aspects of population growth to understand which involve more than merely knowing its size and rate of increase. Thus, we find that populations of equal numbers and similar rates of growth may be quite different in their make-up or composition, in their mental attitudes, and in their social and economic organization. As a consequence, they may have quite different social and economic problems. This brings us to another reason for the growing interest in this general field.

It needs no argument to convince anyone that, when a country like France lost about 1,900,000 of its young adult males, it faced many economic and military problems which did not confront a country like the United States. Not only did we not lose many men in the war but for a long time we have had a large immigration of vigorous young adults, preponderantly male. Such differences cannot be ignored in searching for an explanation of the social and economic differences between nations. Furthermore, the very rapid decline in the rate of population growth just referred to will everywhere issue in quite a different age composition from that which developed in the past when population was increasing very rapidly. The probable consequences of these age changes are of interest in many respects, as will be shown in Chap. VIII, Sec. 3.

f. In the United States as in most of the other countries of the Western world the growth of urban industrial population has attracted the attention of even the most casual observer. In many parts of this region the population is no longer a rural population scattered over the land, living chiefly on individually owned farms or in agricultural villages. More and more it is coming to be an industrial and commercial population living in cities, some of which have grown to an almost incredible size. It is only natural under these circumstances that people should begin to be interested in the problems arising from this new distribution of numbers on the face of the land. Quite obviously, the mere fact that people live in compact city groups rather than on isolated farmsteads and in small agricultural villages is going to affect their welfare in a variety of ways (1).

What the human significance of modern city life may be is not yet clear, but it is clear that many people have been greatly disappointed and disturbed by what cities have done for them and to them and are beginning to wonder whether the present distribution of population is the best possible one. It is not in the least surprising, then, that a growing number of men are asking whether the urban agglomerations made possible by modern engineering are the groups best suited to develop the human, as well as the economic, capacities of man. This growing interest in the spatial distribution of man's numbers is another reason for the increasing study of population (2, pp. 157–175, 225–252).

g. Finally, there are the problems of eugenics which are being discussed in all quarters today. Everywhere one hears much about the quality of our population. That there are natural (hereditary) differences between individuals no one doubts. Starting from this fact much has been said regarding the qualitative changes in our population arising out of the differential birth rates of the several social and economic classes. Manifestly if the feeble-minded are increasing more rapidly than the people of talent, the equilibrium now existing will be disturbed. The belief that this is happening has caused many people to view with alarm the present situation and has done much to quicken general interest in the study of population. But even more than the traditional interest in eugenics (hereditary differences), the differences between classes as regards the opportunities they can give their children are attracting the public attention to differences in birth rates. There can be no doubt that the differential birth rate will henceforth rank as one of our most important population problems.

In a world undergoing as many and as rapid changes in the growth and organization of population as ours it is not to be wondered at that many people desire to know more about what is happening to our population. Human welfare is so obviously bound up with the growth in numbers, with the make-up of these numbers, with their disposition in space, and with the quality of the human stock that the problems involved can be ignored only at great peril to our present and future welfare. It is in the hope of contributing somewhat to the better understanding of these problems that this book has been written.

References

1. Bookwalter, John W.: "Rural Versus Urban," 292 pp., Knickerbocker Press, New York, 1910.
2. Mumford, Lewis: "The Culture of Cities," 586 pp., Harcourt, Brace and Company, New York, 1938.
3. National Bureau of Economic Research: "International Migrations," ed. by Walter F. Willcox, 2 vols., National Bureau of Economic Research, Inc., New York, 1929–1931.
4. Willcox, Walter F.: "Studies in American Demography," 556 pp., Cornell University Press, Ithaca, N.Y., 1940.

CHAPTER I

POPULATION CONTROL IN FORMER TIMES[1]

The adjustment of his numbers to his environment so that he could live as seemed good to him has always been one of man's major problems. It is not in the least surprising, therefore, that even the so-called primitive peoples have frequently developed population policies which have aimed at controlling their growth in numbers. Indeed when one studies the factors affecting the growth of population among different peoples one is impressed with the fact that the uncontrolled growth of population (that is, uncontrolled by man's mores, or by his deliberate acts) is the unusual condition, while controlled growth is quite general, although it is by no means always successful in effecting a nice adjustment between numbers and means of subsistence (2, Chap. 22). *Laissez faire*, as a population policy, seems to be of quite recent origin and no doubt can be explained, as all other population policies can be explained, as an attempted adjustment of particular groups to a particular milieu.

1. Population Policies Classified

Population policies in times past have generally been established (consciously or by the slow accretion of tradition) to serve one of three ends: (*a*) to slow up or prevent an increase in numbers; (*b*) to encourage an

[1] Bibliographic Note: In previous editions of this book a fairly extensive general bibliography including statistical sources was appended. This was thought advisable because at that time there was no readily accessible reference source to general literature in the field of population nor to statistical materials. The situation is now so changed that such a bibliography is no longer needed. We now have a current bibliography (*Population Index*) which is comprehensive and of excellent quality. The reader is referred to this both for current material and for reference to the standard official sources of population data. *Population Index* also contains "Current Items" and "Statistics," which are invaluable in keeping up with the times in this field. The author strongly urges that every class using this book have easy access to *Population Index*.

In view of this changed situation the references at the end of each chapter are intended primarily as a guide to supplementary reading, although they also indicate sources of views and facts used in the text. The sources of most statistical materials are given at the point of use.

The scheme of cross references is simple. When a work first appears it is given a number at the end of the chapter and referred to in the text thus: (1); thereafter, in later chapters, the chapter number is placed in front of this number, so that a reference to the first work referred to in Chap. I would appear in all succeeding chapters as (I, 1), plus chapter or page number if the reference is specific.

increase; or (*c*) to improve the quality of the population. There have also been cases where the control of numbers was combined with the control of quality. For the sake of brevity, we shall designate these policies as (*a*) restrictive, (*b*) expansive, and (*c*) eugenic.

There is little doubt that throughout the greater part of human history the restrictive policies have received more attention than have the others. This is probably due to the fact that, as a rule, whenever such policies were not in effect, man found himself in a position where he had difficulty in securing the necessities of life. Expansive policies have been less common than restrictive ones, since there have been but few periods in human history when a rapidly increasing population could live according to its customary standards within its own boundaries.

One need make only a very simple arithmetical calculation to convince himself that a rapid increase of mankind, or even of any considerable part of it, has been a rare occurrence in human history and that such an increase could not last for any great length of time. Supposing that man arose from a single pair and that his numbers doubled every 25 years (this rate has actually been attained under favoring conditions in modern times), it would require but seven and one-half centuries for his numbers to approximate those now on the earth. Clearly, expansive population policies, if effective, could not long endure, for they would inevitably result in overcrowding and in all the ills issuing from pressure on the necessities of life.

Little need be said at this point of eugenic population policies, as they are not common and have only occasionally formed an important element in the policy of any group. It may well be, however, that they have been more important than they appear, because we know so little about the actual selective value of the restrictive policies of different peoples.

2. Restrictive Policies

As was said above, restrictive policies have been by far the most important population policies in the history of the race. The means used to restrict population growth have been, and still are, extremely numerous. Only a few of the more important—those more widely practiced—can be discussed here.

a. Infanticide (1) has been an almost universal custom from very early times and is still quite common in many parts of the world (3; 4; 9). Almost all the so-called primitive peoples regularly practice infanticide and have done so for ages. Many Australian tribes, many tribes of American Indians, and some of the African peoples belong to this group. Indeed it is such a common practice that one notices its absence rather than its presence when reading the accounts of explorers and anthropologists. It appears that not infrequently the proportion of infants

thus made away with reaches one-half or even more. Among peoples having a more complex social organization infanticide has not been so common, but it was an approved practice among the ancient Greeks and certainly was not rare among other Mediterranean peoples of those days. In Europe it was not until well into the Middle Ages that infanticide came to be looked upon as a crime, and there is clear evidence that it is by no means absent from the modern world. The census of India, 1921 (7, Vol. 1, Appendix 6), shows that among groups where there is a tradition of female infanticide, the proportion of females is much smaller than in groups where there is no such tradition. These differences at times amount to as much as 15 per cent. Clearly, there is still much infanticide in India, and there is reason to believe that much the same condition exists in many parts of China. In Shanghai alone, many thousands of infants are annually gathered from the streets by the free burial societies. It is not improbable that from one-third to one-half of all the babies born in Shanghai are allowed to die, or are killed, almost immediately after birth. Infanticide has, then, been one of the most important means by which man has restricted his numbers in past ages and is still a factor of much importance in many parts of the world.

b. Abortion, like infanticide, has been practiced by many peoples for ages past;[1] but abortion, unlike infanticide, has not been suppressed to any great extent, except at certain times and places. Today it remains a very important factor in reducing the birth rate in almost all parts of the world. By and large, abortion was and is one of the most important checks that man has ever exercised on population growth. It is not at all improbable that the rather small number of children born to individual women among many primitive peoples and even in highly civilized countries like India (7, Vol. 1, Appendix 7) and China is due in a considerable measure to abortion.

There are, of course, no statistics of induced abortions among European peoples today because in most lands abortion is a criminal offense, but physicians everywhere in the West declare that the number is incredibly large. The author has been told on apparently good authority that in preNazi days the number of abortions induced in Berlin each year considerably exceeded the number of births. An estimate published in 1930 (10, p. 268) places the total number of abortions in Germany at 600,000 to 800,000 per year. This is supposed to be about three times as many as in prewar years. Glass (5, p. 279) quotes estimates as high as 1,000,000. Since the annual number of births in Germany averaged about 1,200,000 during the 1930's it will be seen that if even the lowest estimate is accepted the birth rate would have been raised by about one-half if abortion had been entirely suppressed. Estimates of somewhat similar

[1] A Chinese recipe for abortion is said to date back in writing to about 2737–2696 B.C. (1; 6).

proportions for other countries would indicate that abortion is still one of the leading methods of keeping down man's numbers in many parts of the world.

c. Until the last few centuries, sexual taboos of various kinds have been quite effective in keeping down the number of births among many peoples. These taboos are particularly effective among primitive peoples, where segregation of women, for frequent and often for long periods, is quite common; where elaborate marriage and sexual codes lead to prolonged periods of sexual continence on the part of women; and where remarriage of widows is discountenanced (9, Chap. 9). Since such sexual taboos scarcely exist in Europe and its settlements or in most other civilized countries except as survivals in religious institutions (a celibate priesthood), we are apt to underestimate their importance in restricting births (11, Vol. 1, Chap. 11). There can be little doubt, however, that throughout most of human history they should be classed with infanticide and abortion in importance as restrictive practices (2, Chaps. 7 and 8).

d. The killing of aged and the killing or abandoning of the sick have also played a part in restricting population growth in times past; and even today, in China and India, the abandonment of the sick and helpless is by no means unknown. When life is hard, such practices are rather common.

e. The passive acceptance of recurring catastrophes may also be regarded almost as a policy among certain peoples and unquestionably is a very important factor in keeping down numbers in many areas. Professor Ross (8, p. 90) cites the case of a Chinese official who did not want measures taken to avoid the almost yearly recurrence of the plague in his city because he regarded it as the best friend of those left after its visitations. It so reduced numbers that life was more tolerable for those who remained.

The failure to make any provision against recurring famines may also be regarded as a population policy when it is definitely recognized that life would be made harder for everyone all the time if it were not for these famines, which only do quickly what would otherwise be prolonged indefinitely and be far more painful.

f. Modern war cannot be regarded as a definite restrictive policy, as will be seen later, but among tribal peoples war is often so large a part of the life of the tribe, or horde, that it can very legitimately be regarded as a population policy. Head-hunters, who must have a given number of enemy heads before they marry; nomads, among whom the men must show their ability to steal cattle before the women will take notice of them; and many other warlike peoples may be said to rely upon war to keep down their numbers. War in some form is a regular part of their daily life, and over long periods of time their losses of men from this source must be fairly constant.

g. Legal restrictions upon marriage are in certain respects analogous to sexual taboos, but in other respects they are quite different; and though they are probably not so effective as sexual taboos in reducing the birth rate, they are yet of sufficient importance to deserve notice. They impede easy marriage and lead to high rates of infant mortality among children born to unmarried mothers, thus helping to keep down numbers, to some extent.

h. The migration of a part of a group to new lands has frequently been resorted to in past times when the standards of the group could no longer be maintained on the resources of a given area. This sending out of colonists or of raiding armies which settled the lands that they conquered has certainly been one of the important elements of population policy among many peoples in times past, and it is still important today if one may judge from the resentment expressed by emigrating peoples toward those peoples and countries that refuse to admit their emigrants. For ages migration has been regarded as one of the means by which a country could keep its population within reasonable limits. There is much discussion as to whether emigration really relieves population pressure. Whether it does or not there is not the least doubt that many peoples have believed that it did and have encouraged it for this reason.

i. Methods of preventing conception have been known for ages (Genesis 38:8, 9); but as an important factor in determining the rate of population growth the practice of contraception appears to be fairly recent. Even now its effects are largely confined to Europe or the countries settled by Europeans. But it seems quite likely that this will not long be the case. Evidence is beginning to accumulate that certain classes in Japan and China are already practicing a small measure of contraception, and there is good reason to expect that such a movement will follow much the same course in the Orient as in the Occident. In view of its very manifest advantages, it seems highly probable, then, that contraception is destined to become the foundation stone of the new population policies needed to bring about a rational adjustment of numbers to resources and to maintain the quality of the population.

The point in enumerating the practices which have been and are being used to limit the growth of population is to call attention to the fact that population policies are almost as old as the race. Man's greatest problem has always been his adjustment to his environment, and the control of his numbers is certainly one of the most important elements in this adjustment. Looked at from this point of view, it is not surprising that practically every people has developed some sort of population policy rather than allowing matters to take their own course.

We differ from our ancestors in the matter of population policy only in that today we discuss these matters a little more openly and are, perhaps, a little more aware than they were that we are trying to make an

adjustment between our environment and our numbers which will add to our welfare.

3. Expansive Policies

Expansive policies are by no means so common as restrictive policies and can be treated rather briefly.

a. From early historical times and probably before, there have been rulers and dynasties that have desired large numbers of subjects in order to render themselves formidable to their foes, to enable them to seize adjacent lands which were desired, or to enhance the prestige of their position. This desire for population growth appears never to have met with much success unless it coincided with a period when other conditions, particularly economic ones, favored a growth in numbers. If readily accessible colonies offered good opportunities, or if a people, were passing from a nomadic, pastoral life to a settled agricultural life or from a predominantly agricultural life to an urban-industrial regime, then the larger economic means becoming available were quite likely to lead to an increase in numbers in accordance with the monarch's desires. But direct efforts by rulers and political leaders to stimulate the growth of population seem to have been singularly devoid of results. Whether the methods now being employed by France, Italy, Sweden, and Germany to stimulate the birth rate will be more successful remains to be seen (see Chaps. XXV and XXVI).

b. Religious motives have, at times, been effective in stimulating population growth. The injunctions to "be fruitful and multiply" and to "replenish the earth," although there were only eight people thereon, according to the Biblical account, at the time that this command was supposed to have been given (Genesis 9:1), have helped to build up attitudes of mind which were favorable to population growth. Their effectiveness, however, has consisted chiefly in removing certain of the restrictive measures discussed above, for example, infanticide and sexual taboos. Hence, in recent times when there was earth to replenish, they may have contributed not a little to the expansion of population. But more probably it was to the favorable economic conditions and to the lack of the means to control conception rather than to the positive encouragement of large families that the growth of population was actually due. Perhaps the most notable examples of the influence of religious institutions on the growth of population are to be found in China and India and in the influence of Christianity upon the later Middle Ages and our own times. In these cases it appears that religious institutions exerted their influence by setting up certain social ideals which made the growth of population inevitable when economic difficulties were removed. Thus, universal and early marriage in China and India, together with the strong desire for male offspring, undoubtedly prepared the way for a rapid increase in

numbers whenever sustenance was available and disease was held in check.

Christianity helped to prepare the way for a great increase of population among Europeans by its condemnation of abortion and infanticide and by its removal of sexual taboos. Probably its injunction of charity toward the poor and afflicted also has had some effect, although this is more doubtful. When the time came that economic conditions would allow of increase in numbers, Europeans no longer employed the restraining practices which were common in earlier times; hence, it was only natural that a laissez-faire policy as regards population growth should issue in a great increase. It is in this rather indirect way that religious institutions have exerted their greatest influence on population growth. At present the influence of religion on population growth is of decreasing importance and bids fair largely to disappear in the not-distant future.

c. Imperialism is not the same thing as the dynastic motive discussed above. The development of nationalism and imperialism involves an acceptance of the expansive idea by a whole people, not merely by the monarch or ruler. A whole people (tribe or state) becomes imbued with the idea of expanding over a given area and of forcing its power upon the people already settled there. Clearly, soldiers and workers are needed for nationalistic or imperialistic expansion, and gradually, because the expansion of the power of the nation depends upon increasing numbers, a whole body of social attitudes is developed which are favorable to the growth of population. Rome is a good example of a nation in which the encouragement of the growth of population became a tenet of public policy. In Rome's early days the father was lord and master; the wife existed for the purpose of bearing children; and the children were absolutely at the disposal of the father, who in turn was always at the disposal of the tribe and, later, the nation. As soon as numbers began to fail—with the development of slavery and the growth of the city—definite state policies to encourage the rearing of children were adopted. But even under such conditions, infanticide and abortion were by no means uncommon. There is no doubt, however, that from very early times the Romans desired an expanding population and that this desire grew, in part, out of their imperialism.

In modern times we also find that imperialism encourages population growth. It encourages a people in a belief in its superiority over other races and the desirability of peopling a larger and larger portion of the earth with its descendants. It is not clear, however, that imperialism will be more successful in its definite population policies now than it was in the time of Augustus. There is a strong conflict between the imperial duty of the citizen, as seen by the statesman, and his personal desires. If imperialism has occasionally seemed to succeed in encouraging popula-

tion growth, it is doubtless due to other causes rather than to its direct efforts in this matter, namely, to the economic opportunities it has offered.

d. Economic opportunity is probably the most potent of all the forces that have operated to bring about the expansion of peoples. From the earliest times the access to good opportunity seems to have had a stimulating effect upon population growth. This has been true for peoples in all stages of culture—hunters, shepherds, agriculturists, and industrialists—up to the present time. Consequently, the policies of monarchs or governments in making economic opportunities available to the masses have been very potent factors in determining population growth. There is little doubt, for example, that the land policy of this country, namely, to make family farms readily available to all comers, as contrasted with the policy in South America and Australia of great land grants to the few, has had a very great influence in determining the direction of migration from Europe and the consequent growth of population in these several areas. Many other factors which affect economic opportunity, such as taxation, monopoly, and so forth, certainly have had an influence on population growth in times past and still have some effect though, with the spread of contraceptive information in the Western world, there is some reason to believe that large families, except in rare cases, are a thing of the past and that improved economic opportunity will do little to encourage the rearing of families of more than three or four children. Since the widespread adoption of contraception, no nation or people has really undertaken the development of a rational population policy until very recently, too recently to be entirely sure of the effects.

4. Eugenic Policies

Little can be said on this subject, as eugenic considerations have not generally been of much moment in the determination of population policies. There are, of course, some well-known examples of eugenic selection in the population policies of different peoples. In Sparta the children selected for exposure were weaklings—those who did not seem likely to contribute to the military strength of the state. Furthermore, whenever infanticide has been a custom, there has undoubtedly been more or less selection of the strong. However, infanticide, being a conscious policy for keeping the family within reasonable limits, has always borne more heavily upon the later born children; that is, the practice of infanticide increases as the size of the family increases. But as a eugenic policy there can be little question that in most cases natural infant mortality has done far more than infanticide to eliminate weaklings. There has, of course, always been more or less prejudice against the crippled or malformed child; hence, such have generally been eliminated rather early in life and have had but little opportunity to reproduce themselves.

The same is true of those who have been "queer" mentally. Recently, however, the direct elimination of the weak has not been so rigorous as formerly, although it is doubtful whether this has increased their rate of reproduction to any great extent. There is much popular misconception of the rate at which the unfit reproduce.

The eugenic selection to which man has hitherto been subject has been exercised by the natural rigors of his life far more than by his following any conscious policy. The visions of a super race arising from the breeding of selected stocks which have often intrigued the utopians have never gained much support from the masses; nor do they seem likely to in the near future, for the right to mate and rear children as seems best to them is a highly cherished prerogative not to be relinquished lightly.

5. Policies Affecting the Distribution of Population

No people has ever developed a clear-cut policy regarding its distribution. There have been times when statesmen and philosophers were concerned over the distribution of population between city and country; among trade, manufacturing, and agricultural production; and in different parts of the nation or empire; but it can scarcely be said that any policy has anywhere been consciously adopted which was calculated to bring about a changed distribution. It has, of course, been said that Rome's downfall was caused by the latifundia—great estates, all the produce of which, beyond subsistence for the slaves, went to the absentee owners living in the city—and by the excessive urbanization of population in many of the provinces of the empire; but so far as is known no policy likely to result in the redistribution of the population was ever seriously undertaken.

It is also true that every social system leads to its own peculiar distribution of population; for example, population is quite differently distributed both spatially and industrially in England and in France. Here again it can scarcely be said that the distribution actually achieved is the result of any definite policy; it is rather an accidental by-product of the striving for other aims. It is, therefore, not misstating the situation to say that only now are we becoming conscious of the need for a policy regarding the distribution of population if we are to achieve the largest measure of welfare for the mass of workers in any land. We are only beginning to ask whether or not it is socially desirable to have most of the people live in more or less crowded cities; whether or not cities are the most efficient form of economic association for the prosecution of industry and trade that can be devised in the modern world; whether or not it is good to have millions and millions of people living in crowded slums when it is possible to scatter them over areas where they can have some little contact with nature. In a word, it is becoming more and more clear that the distribution of population does affect its welfare, hence, that

any population policy developed today must give careful attention to the grouping of the people within the nation.

This matter of the distribution of people within the nation has taken on added significance with the development of the airplane as a weapon of predominant military importance. The modern city is highly vulnerable to aerial attack, and great massed factories may be destroyed in a few moments. The Soviet Union has adopted a definite policy of scattering its industries over wide areas and building many small cities far back from the frontier; but it has not yet undertaken the decentralization of the great production units characteristic of modern industry. It is quite probable, however, that when Europe rebuilds after World War II a new pattern of population distribution will emerge. Military necessity as well as human welfare demands that this matter be given serious attention.

Another aspect of the distribution of population which must be considered in future population policies is the distribution of man over the earth to secure a better relation between numbers and natural resources (see Chap. XVI). This matter has received almost no attention up to the present. It is increasingly certain, however, that the vastly varying densities of population in different lands, coupled with the enormous variations in per capita resources, will raise many questions regarding the effect of the present distribution of population upon human welfare, particularly its effects upon the peace of the world. The distribution of population in both its national and international aspects will be discussed in the proper connection, but it should be made clear here that no population policy can now be considered comprehensive and satisfactory which does not give careful consideration to the spatial distribution of population best calculated to further human welfare.

Finally, attention should be called to the fact that in the Western world, where people are densely packed together in cities, they do not long maintain a birth rate high enough to ensure their reproduction. Thus today in industrialized lands the distribution of population is closely associated with its ability or willingness, or both, to rear enough children to keep numbers from declining. In large communities (cities) there are generally too few children to keep population stationary, while in small communities there are generally more than enough. Whether this deficiency of births is merely a passing phase of urbanization or is inherent in urban life in the modern world cannot be told. Certainly if it is the latter the distribution of population in different types of communities is of prime importance, since it will determine whether a people will survive.

In past times, before the voluntary control of conception was general, cities also had to depend on migration for the maintenance of their numbers but not because of a low birth rate. In those days the death rate was so high that it exceeded the birth rate even though this stood at a high level. Except for a comparatively short period in the early days of industrializa-

tion, it seems unlikely that cities have ever produced enough children to maintain their own numbers or to add to them. When large numbers of people with the birth rates of rural communities move to cities where sanitation is fairly good, birth rates exceed death rates for a while but not for long, if we can judge from the experience of the western European peoples during the last century.

References

1. APTEKAR, HERBERT: "Anjea; Infanticide, Abortion, and Contraception in Savage Society," 192 pp., W. Godwin, Inc., New York, 1931.
2. CARR-SAUNDERS, ALEXANDER MORRIS: "The Population Problem; a Study in Human Evolution," 516 pp., Clarendon Press, Oxford, 1922.
3. "Encyclopaedia of Religion and Ethics," 12 vols., ed. by James Hastings, with the assistance of John A. Selbie, Edin, Clark, and other scholars. Charles Scribner's Sons, New York, 1911–1921. (Index, 1927, separate.)
4. "Encyclopaedia of the Social Sciences," Edwin R. A. Seligman, ed., Alvin Johnson, assoc. ed., The Macmillan Company, New York, 1930.
5. GLASS, D. V.: "Population Policies and Movements in Europe," 490 pp., Clarendon Press, Oxford, 1940.
6. HIMES, NORMAN EDWIN: "Medical History of Contraception," *New England Jour. Medicine*, 210 (1934), 576–581.
7. India, Census Commissioner: "India" (Census of India, 1921), 2 vols., Superintendent of Government Printing, Calcutta, 1924.
8. ROSS, EDWARD ALSWORTH: "The Changing Chinese; the Conflict of the Oriental and Western Cultures in China," 356 pp., Century Company, New York, 1911.
9. SUMNER, WILLIAM GRAHAM: "Folkways; a Study of the Sociological Importance of Usages, Manners, Customs, Mores, and Morals," 692 pp., Ginn & Company, Boston, 1907.
10. TIETZE, CHRISTOPH: "German Population Movements, and Some Comparisons with Those of Other Countries," *Eugenics Rev.*, 21 (1930), 265–269.
11. WESTERMARCK, EDWARD: "The History of Human Marriage," 5th ed., 3 vols., Allerton Book Company, New York, 1922.

Questions

1. What are the chief population policies that have been pursued in times past? Discuss their purposes. If you are acquainted with any other people, for example, the French or German, or have studied anthropology, for example, American Indians, describe and criticize their population policies.

2. Which of the policies discussed above has been and still is the most important? Why?

3. Enumerate the methods used in past and recent times to reduce numbers, and discuss each briefly.

4. Which of the above methods do you consider most salutary? The least? Why?

5. Why is there need of a definite population policy, and what elements should be considered in formulating one?

6. As between conscious, deliberate selection and natural selection, which do you believe will create a mankind better fitted to its environment? Why?

7. Outline the type of policy that you would like to see adopted.

8. Enumerate and describe the different types of expansive population policies. Give examples from your personal knowledge or your reading of history.

9. What are some of the obstacles to the successful operation of an expansive policy? Show how these operate in the case of a particular people.

10. To what extent have eugenic considerations figured in population policies in the human race? Give examples.

11. Show the relationship between population policies and the social and economic conditions of the times. Search for examples not given in the text. Do you see any relationship at present?

CHAPTER II

THE POPULATION DOCTRINES OF MALTHUS[1]

Malthus first published his essay on population in 1798.[2] It is but natural that a large part of the modern discussion of population questions starts with Malthus since he stated certain of these questions in a clear and precise form. His formulation of population problems offered a most convenient point of departure for further discussion. But Malthus' views, as he himself clearly recognized, were not entirely original. They had a long history back of them and represented a point of view which had been developing rather steadily for two centuries. The older conception of a purely static social order in which man played a passive role assigned him by destiny had gradually given place in the minds of the foremost thinkers of the time to the belief that man's fate was more or less in his own hands. The French Revolution, in particular, had done much to set thoughtful men to pondering on man's future and what he could make of it. The idea of human progress was becoming current. Under such circumstances it was altogether natural that there should be a great variety of beliefs regarding the outlook for the improvement of human life. It was because Malthus did not agree with some of the ideas expressed by those who believed in the "perfectibility" of human life that he was first led to write on the "principle of population." He was especially in disagreement with some of the utopian ideas of his day; at least two-thirds of the first edition of the Essay is devoted to a philosophical discussion of these ideas and is only indirectly related to the principle of population.

1. Social and Economic Conditions in Malthus' Time

In order to understand Malthus' work better, it will be well to call attention very briefly to some of the social conditions influencing his thought. As was pointed out in the preceding chapter, some of the very common means used to check population growth in earlier times had, long before Malthus' time, come to be regarded in western Europe as more or

[1] For a review of "Pre-Malthusian Doctrines of Population" see 12. For a general discussion of the population theories of Malthus see 1, Book I, Chaps. 1–4, and Book IV; 3, Malthus; I, 4, Malthus; 4, Chaps. 1, 10; 8, Part 2, Chap. 1, Robert Malthus.

[2] The full title of the first edition was "An Essay on the Principle of Population as It Affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Godwin [5], M. Condorcet, and Other Writers [10]."

less morally reprehensible (infanticide and abortion) or as foolish (sexual taboos). There were also certain contemporary changes taking place in the social organization of western Europe (for example, the improvement of the living conditions of large masses of the population following the breakdown of feudalism and the beginning of modern industrial development) that were favorable to a high rate of population increase. If, in addition, we will recall that mercantilism was the prevailing economic system of western Europe, it will help us to understand Malthus' theory. Although a favorable balance of trade was regarded as a desirable additional element, the mercantilists also taught that national strength depended upon the extent to which a nation was economically self-sufficing and upon the numbers of its people. Indeed, to have a large and growing population came to be looked upon as a sure sign of national health and vigor regardless of the conditions under which the people must live; for numbers were believed to ensure both economic and military strength.

Malthus saw very clearly that under the conditions existing in his day it was of more than doubtful value from both the personal and the national standpoint for a people to increase in numbers if its means of subsistence did not increase at fully as rapid a rate. Since he saw no likelihood that food and other necessary goods could be increased to meet the needs of the numbers that man was capable of producing, he felt it incumbent upon him to expound his views on population growth in opposition to the doctrines of mercantilism and also to those of Godwin, Condorcet, and the other "perfectionists."

The economic and social conditions developing in England in the early years of the Industrial Revolution also had considerable influence on Malthus' thought, leading him to question the desirability of a rapidly increasing population from the standpoint of the general welfare. When the census of 1801 confirmed his conviction that England's population had been increasing rapidly of late years, he was even more convinced that the relation between subsistence and population growth was close and direct and that there was no assurance that an increase in numbers would result in an increase in welfare. Furthermore, he believed that any permanent improvement in the lot of mankind was going to be extremely difficult (at first, he thought impossible) to attain as long as increased production was accompanied by increased numbers (7, Chap. 4).

When Malthus wrote the first edition of the Essay in 1798, he supposed that his ideas regarding the conditions determining population growth were more original than they really were (3). As he went deeper into the question and began to study it more carefully, he found that both English and Continental thinkers had given considerable attention to these questions and that some of them had reached substantially the same conclusions as himself. He also found that he needed to know more

about how men lived in different places and under different conditions if he was to make his work sound. Consequently, he read a great deal and traveled to some extent on the Continent before he brought out the second edition of the Essay in 1803.

This is not the place to go into detail regarding the development of Malthus' thought in different editions of the Essay. It would seem from the offhand way in which he revised and rewrote the first edition that he himself regarded it as a preliminary and inexact statement of the principle of population. It seems rather strange, since this is the case, that so many of his critics have written as though they were unaware that the first edition of the Essay had ever been revised or rewritten. Here it will serve our purpose to point out the differences between the first and the later editions only where Malthus' matured thought may be made clearer by so doing (compare 9 and 10).

There is one aspect in all of Malthus' writing on population which should be explained before entering upon a description of his doctrines. The motive in all his work was humanitarian. He was always thinking about the welfare of men, and his theories on population were arrived at in the process of trying to understand how population growth was likely to affect human welfare. No one would have combated more vigorously than Malthus himself the attitude of the classical economists, who, in accepting his doctrine in its crudest form, came to the conclusion that the poverty and misery of the workers in the early years of the Industrial Revolution were due solely to the tendency of population to increase beyond its means of subsistence and not at all to the greed and meanness of the employers. Malthus certainly did not regard this tendency of population to increase too rapidly for its own good as absolving the employer from the moral obligation to treat his employees as human beings rather than as chattels to be used for his own enrichment.

2. Malthus Examines Utopianism

The immediate inspiration for the writing of the Essay grew out of conversations that Malthus had with his father regarding the feasibility of certain plans put forth by Godwin and Condorcet for the attainment of the happiness of men. In general, they believed that if man's institutions were improved (or abolished), he could rapidly escape from the suffering and evil that he had been forced to undergo in times past and would emerge into a new world where he could attain perfect happiness. They regarded man's suffering as due primarily, if not solely, to bad laws, corrupt government, evil rulers, greedy employers, and so forth. These evils not only produced suffering directly but were also regarded as the causes of those traits of human nature which are commonly styled "selfish," "base," and "evil." Thus, if man's institutions were improved in some cases and abolished in others, not only would the direct suffering

that they caused disappear, but man's very nature would undergo a radical organic change so that he would no longer be his own worst enemy; his passions would be subdued, his vices would disappear, his thoughts would become exalted, and he would be well on the way to establishing an earthly paradise.

Malthus did not believe that man was likely to undergo any pronounced organic change. He could see no evidence that the nature of man had changed or was changing; consequently, man's sex passions, as well as his other impulses, were likely to remain what they had always been. The whole structure erected by the perfectionists on the belief in the possibility of such changes seemed to him of the flimsiest character. In his own words his one assumption regarding organic change in man is "that the passion between the sexes is necessary, and will remain nearly in its present state" (10, p. 11). This and one other postulate, namely, that "food is necessary to the existence of man" (10, p. 11), form the starting point of Malthus' discussion of population. From these two postulates he drew the conclusion that population always had *tended* to increase rapidly and that it always would increase rapidly where "food" or "subsistence" was available. Hence, it was subsistence which limited population growth.

When he came to express in his Essay his idea of the relation between population increase and subsistence he gave it a very definite and striking form by saying that population tended to increase in geometrical ratio, while subsistence[1] tended to increase in arithmetical ratio only. Thus, starting with unity in both cases, the tendency of growth would be expressed by the following ratios: population, 1, 2, 4, 8, 16, 32, 64; subsistence, 1, 2, 3, 4, 5, 6, 7. He also held that the period in which population would double, if it were not impeded by lack of subsistence, would be about 25 years. If these ratios endured, population would increase to 64 times its original size in 150 years, while its subsistence would increase but 7 times.

Clearly, this is an impossible situation, but Malthus explained that the fact that man's numbers did not generally show this rapid increase was due to vice and misery, which operated to produce a high death rate. He recognized from the very first, however, two types of checks to population growth—the positive and the preventive. The only form of the latter that he ever contemplated was abstention—either temporary or permanent—from marriage. He did not believe, however, that this would so reduce the rate of increase of any people that the former—that is, the positive checks—would be rendered inoperative; consequently, he did not believe that schemes for improving human institutions, of themselves, were ever likely to do much to increase man's happiness. It seemed to

[1] Malthus was not sufficiently careful in his use of the term "subsistence." Sometimes he appears to include only food and at other times all the necessities of life.

him that, however good human institutions became, they would serve to mitigate the positive checks for only a short time, until man's numbers grew up to his productive capacity under his new institutions. Then he would suffer from hunger, disease, war, and a host of other ills as he had always done in the past. As a consequence, he was very pessimistic, in the first edition of the Essay, regarding the outlook for human improvement, far more than he was subsequently.

All his life he believed firmly that man's sex passion and his material needs were in essential conflict. Clearly, there was a minimum below which the use of material goods could not be reduced without causing great hardship and thus raising the death rate. It was also just as clear to Malthus that sex passion was not likely to decline and, hence, that there would always be more people born than could be provided for. Thus man was doomed to perpetual suffering. In other words, the positive checks—hunger, disease, vice, war, cold, and so forth—were bound to be in the future, as in the past, the chief destroyers of man and the forces which would keep his numbers from becoming what his nature strove to make them.

These are the central ideas in Malthus' doctrine, and making their significance clear may very justly be looked upon as constituting Malthus' chief contribution to social science. It would be a great mistake, however, to suppose that Malthus stopped thinking when he had stated this position or that he did not make other contributions to the study of population.

In addition to stating, in a striking manner, the problem of population growth, Malthus, once and for all, brought the study of man's growth in numbers within the field of social science. Henceforward men were to discuss this aspect of life as a problem of economics and sociology and were to think of population growth chiefly as related to human welfare. No longer could man's growth in numbers be looked upon as a problem concerning only God and the king. It was to become a proper field of study to all men, with a view to instructing them in the control of their own destiny. Malthus' Essay could not have had this effect, of course, if the time had not been ripe for social science to take unto itself this new field. It was becoming increasingly clear to all thoughtful persons that man must study himself much more carefully than he had done hitherto if he would improve his living; and the study of population was shown to be an important part of this more general study of man in his economic and social relations.

3. Later Editions of Malthus' Essay

Malthus very greatly enlarged the "Essay on Population" when he issued the second edition. Several changes are quite noticeable in this and in the later editions. One of these is the lesser emphasis placed upon

the ratios expressing the tendencies of the increase of population and subsistence. Although these ratios are retained in all editions, Malthus attached less and less importance to this exact statement as time went on. In the last edition he expressed his general position as follows:

1. Population is necessarily limited by the means of subsistence.
2. Population invariably increases where the means of subsistence increase, unless prevented by some very powerful and obvious checks.[1]
3. These checks, and the checks which repress the superior power of population and keep its effects on a level with the means of subsistence, are all resolvable into moral restraint, vice, and misery (9, Vol. 1, pp. 18–19).

Let us set beside these his earlier statement of the case:

That population cannot increase without the means of subsistence, is a proposition so evident, that it needs no illustration.

That population does invariably increase, where there are the means of subsistence, the history of every people that have ever existed will abundantly prove.

And, that the superior power of population cannot be checked, without producing misery or vice, the ample portion of these too bitter ingredients in the cup of human life, and the continuance of the physical causes that seem to have produced them, bear too convincing a testimony (10, pp. 37–38).

Clearly, Malthus, as he grew older and studied the problem more carefully, was more ready to admit that factors other than means of subsistence enter into the determination of man's numbers. He always believed, however, that there was enough truth in the general theory to upset all utopian schemes and to render impossible the easy perfectibility of man.

More and more as time went on Malthus appreciated the fact that the preventive check was operating to lessen the rigor of the positive checks. But he believed that it was accompanied by so much vice, which in turn issued in misery, that it did less to alleviate human suffering than the reduction in the birth rate thus brought about would lead one to suppose. In his study of the preventive check Malthus came to believe that the standard of comfort of a people or a class was a very important factor in determining whether one would marry at all and at what age one would marry. In time he came to lay considerable emphasis upon what is generally referred to today as the standard of living. He also came to attribute considerable importance to the desire to improve one's condition as a preventive check.

There is nothing in Malthus' writings, however, to indicate that he ever thought of contraception as an important preventive check. The following quotation represents his last word on this point:

[1] Note by Malthus: "I have expressed myself in this cautious manner, because I believe there are some instances where population does not keep up to the level of the means of subsistence."

With regard to the preventive check to population, though it must be acknowledged that that branch of it which comes under the head of moral restraint does not at present prevail much among the male part of society, yet I am strongly disposed to believe that it prevails more than in those states which were first considered; and it can scarcely be doubted that in modern Europe a much larger proportion of women pass a considerable part of their lives in the exercise of this virtue than in past times and among uncivilized nations. But however this may be, if we consider only the general term which implies principally a delay of the marriage union from prudential considerations, without reference to consequences, it may be considered in this light as the most powerful of the checks which in modern Europe keep down the population to the level of the means of subsistence (9, Vol. 1, p. 315).

Certainly one cannot infer from this that he was ever aware of the possibility of contraception, although it is difficult to believe that he did not know of the propaganda being carried on by Place, Richard Carlile, and others. Place (11) had begun active propaganda by 1823, and the year before he had published a defense of Malthus' views in refutation of Godwin. It seems highly unlikely, therefore, that Malthus did not know that contraception was being urged as a preventive check. It must be either that he did not believe in its efficacy or that he so strongly disapproved of any preventive check which did not involve continence, at least on the part of the woman, that he was unwilling to consider it in arriving at his conclusions regarding the importance of preventive checks.

In any event Malthus was led into serious error by his failure to know of or to evaluate properly the possibilities of contraception. To the last he believed that population growth would always be held in check chiefly by the pressure of numbers on subsistence. He apparently saw no inconsistency between this view and the belief that standards of comfort (living) even then were acting as a strong preventive check in certain classes of the population. In the one case he was stating what he believed to be an inherent trait of human beings—namely, that they had a tendency (a potentiality) to produce their kind faster than they could secure the physical means of keeping them alive—and in the other he was simply recognizing the presence of certain forces which were checking this tendency or were keeping the potentiality from becoming an actuality. He failed utterly to appreciate that the same motives which he believed were leading to the postponement of marriage in his day would lead to the practice of contraception within marriage once it became widely known.

In nature one force or set of forces always modifies the action of other forces or sets of forces. Natural laws always operate under given conditions—in other words, their operation is relative; the conditions under which they can be expected to operate must be defined with great care. This is exactly what Malthus found to be the case with his *principle of*

population. The crude, exact statement of the law in terms of population growth and food was not the whole truth; it was a "principle" which needed modification to make allowances for the operation of certain other forces so that its relations to other phases of human life would be made clear. This Malthus attempted to do from time to time as he increased in knowledge and experience, but he never succeeded in adequately defining the conditions under which population growth would be determined by the positive checks.

Furthermore, he seems never to have been quite clear as to whether he really meant that population was limited by food or by subsistence and just what the difference was between these terms. He frequently spoke of food as being the limiting factor, and at times he spoke of the means of subsistence as being the limiting factor. The former is a fairly definite thing, while the latter tends to become synonymous with standard of comfort (or living) and is anything but definite. His real position in later years is probably best expressed by *means of subsistence*, which he was coming to think of as a customary standard or level at which a group or class lived.

Malthus expressly recognized that an increase of food in any nation or class may be used not to support an increased population but to trade for other things which enter into the standard of comfort and thus raise the whole level of living. If Malthus had been consistent in his use of these terms, and if he had been more careful to define them exactly, it would have done much to clarify his thinking and save him from some of his most glaring inconsistencies.

4. Other Aspects of Population Problems

We find that, in addition to the ideas discussed above, Malthus expressed himself quite fully on several other aspects of population growth which are of considerable interest to us today. It would be doing him an injustice not to state his position on some of these more important problems because it would give the impression that his thinking was less complete and his Essay less thorough, in the later editions, than was the case.

Malthus saw clearly that emigration was an important factor in population growth, and he discussed the effects both upon the mother country and upon the country of destination. From the standpoint of the country sending out emigrants, he believed that such a policy, as a permanent means of relieving pressure, was useless since it would result almost immediately in somewhat earlier marriages and a greater number of births. Hence, the pressure would soon be as great as or even greater than it ever had been. The following passages state his position plainly:

> The population of the United States of America, according to the fourth census, in 1820, was 7,861,710. We have no reason to believe that Great Britain

is less populous at present for the emigration of the small parent stock which produced these numbers. On the contrary, a certain degree of emigration is known to be favourable to the population of the mother country. It has been particularly remarked that the two Spanish provinces from which the greatest number of people emigrated to America became in consequence more populous (9, Vol. 1, p. 306).[1]

Another passage will also throw light on Malthus' attitude toward emigration:

It is clear, therefore, that with any view of making room for an unrestricted increase of population, emigration is perfectly inadequate; but as a partial and temporary expedient, and with a view to the more general cultivation of the earth and the wider extension of civilization, it seems to be both useful and proper; and if it cannot be proved that governments are bound actively to encourage it, it is not only strikingly unjust, but in the highest degree impolitic in them to prevent it. There are no fears so totally ill-grounded as the fears of depopulation from emigration. The *vis inertiae* of the great body of the people, and their attachment to their homes, are qualities so strong and general that we may rest assured they will not emigrate unless, from political discontents or extreme poverty, they are in such a state as will make it as much for the advantage of their country as of themselves that they should go out of it. The complaints of high wages in consequence of emigrations are of all others the most unreasonable, and ought the least to be attended to. If the wages of labour in any country be such as to enable the lower classes of people to live with tolerable comfort, we may be quite certain that they will not emigrate; and if they be not such, it is cruelty and injustice to detain them (9, Vol. 2, p. 36).

As regards the effect of immigration on the growth of a country, Malthus believed that whether or not it was of importance depended upon the circumstances of the particular case. The United States of America is his favorite example of a country increasing very rapidly in population from a relatively small immigration, owing to the ease of making a living. His *principle of population*, however, would lead him naturally to believe that if the demand for labor in any country were to any considerable extent supplied from without, the growth within the country by natural increase would be retarded. He clearly saw that it was a matter of only a few (two or three) centuries until there would be no unpeopled lands and that then immigration into any country would, according to his view of population growth, inevitably take the place of births and would occur only because of the different levels at which different peoples lived.

Malthus also foresaw that it was possible for a high degree of specialization in agriculture and other industries to develop in any country, provided that it could trade its products for those of other countries specializing along different lines, hence, that there was no inherent virtue

[1] This same statement, using 1800 census figures instead of those for 1820, occurs on page 56 in the first American edition of the Essay, printed from the third London edition in 1809.

in the mercantile system. The following quotations will give his ideas on this matter:

> . . . It must ever be true that the surplus produce of the cultivators, taken in its most enlarged sense, measures and limits the growth of that part of the society which is not employed upon the land. Throughout the whole world the number of manufacturers, of merchants, of proprietors, and of persons engaged in the various civil and military professions, must be exactly proportioned to this surplus produce and cannot in the nature of things increase beyond it (9, Vol. 2, p. 76).

Again he says:

> A country which excels in commerce and manufactures may purchase corn from a great variety of others; and it may be supposed, perhaps, that, proceeding upon this system, it may continue to purchase an increasing quantity, and to maintain a rapidly increasing population, till the lands of all the nations with which it trades are fully cultivated. As this is an event necessarily at a great distance, it may appear that the population of such a country will not be checked from the difficulty of procuring subsistence till after the lapse of a great number of ages.
>
> There are, however, causes constantly in operation which will occasion the pressure of this difficulty long before the event here contemplated has taken place, and while the means of raising food in the surrounding countries may still be comparatively abundant (9, Vol. 2, p. 79).

Malthus believed, in consequence, that the country which depended on adventitious factors, such as skill and capital, could not long hope to maintain its place secure, as there were many forces at work to undermine its power. All countries accumulate capital as time goes on, and skill in work is easily acquired if there is any demand for it. Consequently, commercial and manufacturing countries were always in a more or less precarious position due to the potential rise of competition in other countries having abundance of land as well as other natural resources.

In reading his discussion of the relative advantages and disadvantages of countries largely given over to industry and commerce and of those having large reserves of land, one could almost imagine that he was reading a description of the present-day conditions confronting Great Britain, on the one hand, and Australia or Argentina, on the other. So clearly does Malthus depict the limitations of a nation which acts as manufacturer, middleman, and carrier and has small agricultural resources and the advantages of a nation which has a combined agricultural and commercial system, that one cannot but feel that he was very clear-sighted when he looked ahead and attempted to set forth the effects of commercial and agricultural systems, simple and combined, upon population growth.

From Malthus' view on the advantages and disadvantages of the industrial specialization of nations one may deduce his attitude toward

the distribution of population, as between agriculture and other industries. It would be that a nation should be largely self-supporting if it wished to be reasonably independent of the vicissitudes of the fortunes of other nations. According to his view, any country which supported any considerable part of its population by imported food was doomed to suffer therefor sooner or later. He was also opposed to the growth of great towns as detrimental to both the health and the morals of the people and to the enduring strength of the nation.

Of the problem of eugenics, as it is studied today, Malthus knew nothing. The differential birth rate, or perhaps one had better say the differential survival rate, had not yet made the problem of quality stand out clearly. Malthus frequently mentions the fact that paupers and the improvident nearly always marry early and bring into the world an abundant progeny, while the prudent are cautious, marry late, and consequently have fewer children. It was probably even more true in his day than today that the death rate of the improvident was greatly in excess of that of the prudent, so that the number of the children of the improvident reaching maturity was not so much greater as the differences in birth rates might lead one to suppose. So far was Malthus from feeling that there was any problem of quality involved in the difference of birth rates among the improvident and the prudent that he always urged celibacy and late marriages upon the prudent as the chief means of lessening the pressure of population. He was opposed to poor-law charity not because it allowed an inferior class to increase at the expense of a superior class (as is so often urged today) but because it increased the improvidence of the paupers and defeated its own ends by increasing the numbers dependent upon charity for support. The relief of poverty was like the labor of Sisyphus—it was unending—and, one may add, the better it succeeded at one time the greater was the disaster later on.

According to Malthus' view, there was but one sensible method of improving the conditions of the mass of the population, and that was to control the growth of population so that it would not increase so rapidly as the means of subsistence; the outlook for the future depended upon how effective the preventive check could be made, particularly that form of the preventive check which Malthus called "moral restraint."

5. Pessimistic Outlook

In the first edition of the Essay one may say that Malthus' pessimism was unmitigated and profound, because he did not believe that the preventive check could be made effective. But as time went on, he observed many circumstances which led him to believe that man could more or less control his growth in numbers if he would and that he was actually doing so to quite an extent. If he could do this, then there was no reason why his condition should not be steadily improved, even though there would

always remain a certain amount of pressure on the means of subsistence. The following quotation from the close of the sixth edition of the Essay will give Malthus' final judgment regarding the "future improvement of society":

From a review of the state of society in former periods compared with the present, I should certainly say that the evils resulting from the principle of population have rather diminished than increased, even under the disadvantage of an almost total ignorance of the real cause. And if we can indulge the hope that this ignorance will be gradually dissipated, it does not seem unreasonable to expect that they will be still further diminished. The increase of absolute population, which will of course take place, will evidently tend but little to weaken this expectation, as everything depends upon the relative proportion between population and food, and not on the absolute number of people. In the former part of this work it appeared that the countries which possessed the fewest people often suffered the most from the effects of the principle of population; and it can scarcely be doubted that, taking Europe throughout, fewer famines and fewer diseases arising from want have prevailed in the last century than in those which preceded it.

On the whole, therefore, though our future prospects respecting the mitigation of the evils arising from the principle of population may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human society which, before the late wild speculations on this subject, was the object of rational expectation. . . . (9, Vol. 2, p. 261).

It would indeed be a melancholy reflection that, while the views of physical science are daily enlarging, so as scarcely to be bounded by the most distant horizon, the science of moral and political philosophy should be confined within such narrow limits, or at best be so feeble in its influence, as to be unable to counteract the obstacles to human happiness arising from a single cause. But however formidable these obstacles may have appeared in some parts of this work, it is hoped that the general result of the inquiry is such as not to make us give up the improvement of human society in despair. The partial good which seems to be attainable is worthy of all our exertions; is sufficient to direct our efforts and animate our prospects. And although we cannot expect that the virtue and happiness of mankind will keep pace with the brilliant career of physical discovery; yet, if we are not wanting to ourselves, we may confidently indulge the hope that, to no unimportant extent, they will be influenced by its progress and will partake in its success (9, Vol. 2, p. 262).

If the preceding quotations and comments have succeeded even moderately well in presenting the more salient features in Malthus' thinking, it is clear that he has been greatly misrepresented by many people. Probably the chief sinners in this respect have been those who never read him carefully. There have been others, however, who have been unable to see any truth whatever in his position because they believed that the ratios would not hold. Furthermore, there are those today who seem to think that Malthus is responsible for all the practices now frequently

called "neo-Malthusian," which they believe are harmful to the race, both physically and morally. Therefore, they hold that there is something inherently reprehensible in his doctrines. They fail to appreciate the fact that it is only because there is a large measure of truth in Malthus' doctrines that men feel the need of resorting to contraception to keep their families within reasonable limits. Those who do not believe in contraception should not cavil at Malthus, since he was only the expositor of what he believed to be facts; they should rather condemn nature, which has made man more fertile than he should be if he is to reproduce without hindrance and yet live in decency and comfort.

6. Conclusion

It seems eminently just that all modern study of population problems should start from Malthus, even though the ideas that he set forth were not altogether original and were destined to be greatly modified and amended in the course of time. Malthus presented so clearly a useful point of view for the study of population that his work well deserves to be considered the point of departure for our study of population. He never thought for a moment that he had said the last word on any phase of this problem, though he did believe in the fundamental antagonism of man's sex passion and his ability to produce the means of subsistence. It should also be borne in mind that in some parts of the Essay Malthus couched on most of the present-day problems of population and that in nearly every case this treatment is enlightening if not final. Altogether, Malthus richly deserves the place of honor generally accorded him by those who are familiar with his work.

References

1. Bonar, James: "Malthus and His Work," 438 pp., The Macmillan Company, New York, 1924.
2. "Dictionary of National Biography," ed. by Leslie Stephen and Sidney Lee, 66 vols., Smith, Elder & Company, London; The Macmillan Company, New York, 1885–1901.
3. "Encyclopaedia Britannica; a New Survey of Universal Knowledge," 14th ed., 24 vols., The Encyclopaedia Britannica Company, New York, 1929.
4. Field, James A.: "Essays on Population and Other Papers," 440 pp., University of Chicago Press, Chicago, 1931.
5. Godwin, William: "An Enquiry Concerning Political Justice and Its Influence on General Virtue and Happiness," 2 vols., G. G. J. and J. Robinson, London, 1793.
6. ———: "Of Population; an Enquiry Concerning the Power of Increase in the Numbers of Mankind. Being an Answer to Mr. Malthus's Essay on That Subject," 626 pp., Longman, Hurst, Rees, Orme, and Brown, London, 1820.
7. Griffith, Grosvenor Talbot: "Population Problems of the Age of Malthus," 276 pp., Cambridge University Press, Cambridge, England, 1926.
8. Keynes, John Maynard: "Essays in Biography," 318 pp., Harcourt, Brace and Company, New York, 1933.

9. MALTHUS, THOMAS ROBERT: "An Essay on Population," 2 vols., J. M. Dent & Sons, Ltd., London; E. P. Dutton & Company, Inc., New York, n.d. (Everyman's Library, Nos. 692–693.)
10. ———: "First Essay on Population, 1798," 396 pp., with notes by James Bonar. Printed for the Royal Economic Society and Published by Macmillan & Company, Ltd., London, 1926. A facsimile reprint.
11. PLACE, FRANCIS: "Illustrations and Proofs of the Principle of Population, Including an Examination of the Proposed Remedies of Mr. Malthus, and a Reply to the Objections of Mr. Godwin and Others," ed. by Norman E. Himes, 354 pp., Houghton Mifflin Company, Boston, 1930.
12. STANGELAND, CHARLES EMIL: "Pre-Malthusian Doctrines of Population; a Study in the History of Economic Theory," 356 pp., Columbia University Press, The Macmillan Company, New York, 1904.

Questions

1. Describe the changes taking place in Europe in Malthus' day which made the writing of his essay timely and appropriate.
2. Describe the current social theories to which Malthus was opposed.
3. What two postulates form the starting point for Malthus' essay on population?
4. How does Malthus develop his ideas from the above postulates?
5. Of what value is Malthus' contribution in studying population problems today?
6. Describe the transition in Malthus' ideas from the time the first edition of his essay was published until the second edition appeared.
7. What value did Malthus attach to emigration as a possible solution for overpopulation?
8. What did Malthus have to say with regard to manufacturing and commerce as a means of maintaining a population and as a basis for national welfare?
9. Why was Malthus concerned solely with the quantitative phase of the population problem?
10. Is the high rank often accorded to Malthus as a student of population problems justified? Give reasons for your answer.
11. Look up Malthus' life in some encyclopaedia or some edition of his essay, and see whether reading this enables you to understand his theories any better.
12. In what ways do you consider Malthus' ideas on population most deficient?

CHAPTER III

SOME POST-MALTHUSIAN THEORIES OF POPULATION

It was to be expected that, as shortcomings in Malthus' theory of population became apparent, as interest in social science increased, and as the social structure underwent important changes, there would be many attempts to state a theory of population growth which would prove more satisfactory than his. In this chapter a few of these theories are summarized briefly in order to show the chief directions in which men have been reaching for an explanation of the facts of population growth.

Malthus had set the style in population theory, however, and the most important theories arising in England followed his lead in searching for a "natural" tendency which would explain the actual growth of population and at the same time allow of more optimistic conclusions than he had arrived at. No doubt the conditions arising out of the Industrial Revolution made many people feel that Malthus' pessimism was not justified—hence the search for theories which were just as "natural" as his but which would not to the same degree preclude faith in human "progress."

1. Natural Theories of Population Growth

Sadler's theory was published during Malthus' lifetime. The following quotations show Sadler's general position:

> The principle of human increase thus obtained may be very briefly enunciated and is simply this: The fecundity of human beings is, *caeteris paribus*, in the inverse ratio of the condensation of their numbers; and, still in direct contradiction to the theory now maintained [Malthus'], the variation in that fecundity is effectuated not by the wretchedness and misery but by the happiness and prosperity of the species (7, p. xviii).
>
> . . . Excluding, of course, cases of extreme distress, a state of labour and privation is that most favourable to human fecundity. A dispersed and scanty population invariably implies that state; but as mankind advance from the hunting to the pastoral, and from thence to the agricultural stages of existence, and ultimately rise to the highest condition of civilization, labour becomes divided, and consequently diminished in its duration and intensity, and many are liberated from its drudgeries, so as to devote themselves to other and more intellectual pursuits, or are rendered independent of it altogether; while the means of subsistence become progressively augmented, and ease and luxury more generally diffused. At every step the principle of increase contracts, and, as I contend,

would pause at that precise point where it had secured the utmost possible degree of happiness to the greatest possible number of human beings (7, p. xix).

Just as Malthus believed that he had stated a natural principle or law of population growth, which of necessity precluded faith in the rapid improvement of man's lot in this world, so Sadler believed that he had discovered a natural principle that furnished a rational basis for faith in the perfectibility of man's lot. He says:

> The law of population, by which the increase of mankind has been and still is, in all cases, regulated, is simply this: *The fecundity of human beings under similar circumstances, varies inversely as their numbers on a given space* (7, p. xxviii).

Sadler, then, believed that man's happiness, so far as it depended upon material goods, was ensured by the very law of his growth. This theory furnished the natural basis of an easy optimism as regards man's economic future; for, as soon as his numbers begin to get dense, man will cease to reproduce as rapidly as he has been doing, and all will be well.

Obviously, there are certain grave defects in this theory. So far as we can judge from facts which are available today, the Chinese and Hindus are among the most fertile of peoples, and they are also among the most densely crowded of peoples. Sadler's law, like that of Malthus, does not cover all known facts of population growth. It can, therefore, scarcely be dignified with the name of a natural law. It is also a serious defect of Sadler's that he apparently never clearly distinguished between fecundity—the capacity to reproduce—and the actual growth of a population. Malthus had definitely proved that a population may be very fecund and yet have little or no growth, because of a high death rate. Sadler must have known this, but since he was interested in proving that there was no antagonism between man's fecundity and the capacity to produce subsistence, he was led to hold that man's fecundity diminished as his capacity to produce—due to increased density—diminished. Sadler's theory does not seem to square with as many facts as did that of Malthus.

Doubleday's theory is somewhat similar to that of Sadler but is expressed in terms of food rather than in terms of density. He stated it as follows:

> . . . The *great general law* then, which, as it seems, really regulates the increase or decrease both of vegetable and of animal life, is this, that whenever a *species* or *genus* is *endangered*, a corresponding effort is invariably made by nature for its preservation and continuance, by an increase of fecundity or fertility; and that this especially takes place whenever such danger arises from a diminution of proper nourishment or food, so that consequently the state of depletion, or the deplethoric state, is favourable to fertility, and that on the other hand, the plethoric state, or state of repletion, is unfavourable to fertility, in the ratio of

the intensity of each state, and this probably throughout nature universally, in the vegetable as well as the animal world; further, that as applied to mankind this law produces the following consequences, and acts thus:

There is in all societies a constant increase going on amongst that portion of it which is the worst supplied with food; in short, amongst the poorest.

Amongst those in the state of affluence, and well supplied with food and luxuries, a constant decrease goes on. Amongst those who form the mean or medium between these two opposite states—that is to say, amongst those who are tolerably well supplied with good food, and not overworked, nor yet idle—population is stationary. Hence it follows that it is upon the *numerical proportion* which these three states bear to each other in any society that increase or decrease upon the whole depends.

In a nation where the affluence is sufficient to balance, by the decrease which it causes amongst the rich, the increase arising from the poor, population will be stationary. In a nation highly and generally affluent and luxurious, population will decrease and decay. In poor and ill-fed communities population will increase in the ratio of the poverty, and the consequent deterioration and diminution of the food of a large portion of the members of such communities. This is the real and great law of human population, and to show that it unqestionably is so, must be the aim of the following pages (1, pp. 5–7).

This theory needs but little comment. Obviously, the facts do not support it in its entirety. If they did, it would be found that the most fecund peoples were always those worst off. This certainly has not been the case at all times in the past, nor is it true at present, so far as one can judge from available facts. Whether there is any general tendency for reproductive power to decline with too great an abundance of food is a matter which is still being argued. There are a good many physicians who believe that the overeating of rich foods does have a depressing effect upon the reproductive capacity of man, but, inasmuch as this overeating is generally accompanied by many other conditions which might also reduce reproductive capacity, it cannot be said with certainty just what is the effective cause of lack of reproduction in the overfed classes, where this lack is involuntary. There is here, as in Sadler's theory, some confusion between the actual increase of man's numbers and the reproductive capacity of a population. It might well be true that a certain amount of hardship is favorable to the bearing of children, without its being true that it is favorable to the rearing of them. It was just this antagonism between fecundity and the ability to rear the children that led Malthus to his belief in the general and continued operation of the positive checks. Neither Sadler nor Doubleday seems to have realized that a *law* of population growth must do more than explain the changes in the reproductive capacity of a population. Growth of population results from the difference between the birth rate and the death rate, and both these are variables. It is not sufficient to explain the variations in either alone; their relations to one another are of prime importance. Both Sadler and

Doubleday failed to recognize this fact, and their theories suffer in consequence.)

Of somewhat the same sort as Sadler's and Doubleday's theories is Spencer's theory—that, as complexity of life increases, a reduction in fecundity takes place. Spencer's belongs to this same group of theories, because, though it is directly at variance with them on certain points, it invokes a natural law of population growth. To use Spencer's terms, there is in nature an antagonism between *individuation* and *genesis*. As the output of the individual's energy used in personal development increases, the amount of energy available for reproduction decreases. Hence, the more strenuous the adjustments the individual must make to ensure his own existence and success the weaker are his efforts toward reproduction. The following quotation will help to make Spencer's position clear:

> That absolute or relative infertility is generally produced in women by mental labour carried to excess, is more clearly shown. Though the regimen of upper-class girls is not what it should be, yet, considering that their feeding is better than that of girls belonging to the poorer classes, while, in most other respects, their physical treatment is not worse, the deficiency of reproductive power among them may be reasonably attributed to the overtaxing of their brains—an overtaxing which produces a serious reaction on the physique. This diminution of reproductive power is not shown only by the greater frequency of absolute sterility; nor is it shown only in the earlier cessation of child bearing; but it is also shown in the very frequent inability of such women to suckle their infants. In its full sense, the reproductive power means the power to bear a well-developed infant, and to supply that infant with the natural food for the natural period. Most of the flat-chested girls who survive their high-pressure education are incompetent to do this. Were their fertility measured by the number of children they could rear without artificial aid, they would prove relatively very infertile (8, Vol. 2, pp. 485–486).

As a consequence of the operation of a natural law, Spencer, like Sadler and Doubleday, foresees the disappearance of population pressure and its accompanying evils. When this time comes we shall have "a state of things requiring from each individual no more than a normal and pleasurable activity" (8, Vol. 2, p. 506). Spencer felt that he had found a law of population growth or a theory of population which would explain the facts of human growth and would fit into his general theory of the nature of evolution. Indeed, when he says: "In the end, therefore, the obtainment of subsistence and discharge of all the parental and social duties will require just that kind and that amount of action needful to health and happiness" (8, Vol. 2, p. 506), one is inclined to believe that he was probably more interested in developing a population theory consistent with his general biological views than in searching for the truth. Life

does not appear to have the beautiful consistency of Spencer's theory. The easy optimism that it encourages scarcely seems justified in the light of our greater knowledge regarding the operation of social processes.

Gini's theory is more than a theory of population growth, for it is also a theory of social evolution in which the evolution of nations is closely linked to the changes in their population growth. Gini believes that the different rates of increase in different classes or sections of the population may very rapidly change the biological traits of a population. He bases this belief on the well-established fact that from one-eighth to one-third of one generation often produces one-half to three-fourths of the next generation (4, pp. 17–18). The process of the growth of nations he describes as "the cyclical rise and fall of population" (4, p. 4). This cycle of growth in a population is likened to the life cycle of the individual. There is first a period of extremely rapid growth, followed by a period of slower growth and mature achievement, which, in turn, passes into a period of senescence, during which numbers decline and the quality of a civilization deteriorates. Every nation in its youth is simple and undifferentiated in structure and has a high rate of fertility, because each generation springs from the people who are hereditarily most prolific. As a consequence, such a nation grows rapidly in numbers; and with this growth in numbers goes growth in complexity of organization, as manifested by the development of social classes and the growth of industrial and commercial activities. With increasing numbers, pressure of population begins to be felt, and expansion takes place through war or colonization or both.

In the next stage there is increasing complexity of social and economic organization, accompanied by a decrease in rate of growth due, in part, to the loss of the most energetic through war and colonization and, in part, to the increase in the proportion of the population in the upper classes, which are always less prolific than are the lower classes. The chief cause of slackening of population growth, however, is biological (4, p. 23). Gini believes that the biological factor in declining fertility is the fundamental factor and that it really underlies the influence of economic and social factors, which only *apparently* determine the decline in fertility. In other words, the decline in fertility (the actual number of children born) is really a decline in fecundity (the ability to bear children). This decline in fertility is first manifested in the upper classes; but once it sets in there, it is only a comparatively short time before it becomes apparent in all classes. Indeed, with the absorption of the more energetic and prolific members of the lower classes into the upper classes, they, too, become relatively sterile, like the older portion of these classes, and do not revive the fertility of the class as a whole. Even the sterility of these climbers is not a consequence of the social conditions surrounding their climbing, according to Professor Gini: it is rather the outgrowth of

the weakening of the reproductive instinct and is an inevitable phase of the cycle of population growth.

Professor Gini also holds that when the decline in reproduction sets in, there is a similar decline in the qualities of the individual; and so far as one may judge, both of these follow upon some biological change in the hereditary qualities of the individual. To quote:

> The ideas set forth above throw new light on the phenomenon of the different rate of growth of the social classes, which has led many students in the past to fear progressive decline in the quality of the nations. On the contrary, we now see it is a providential mechanism for the elimination of those family stocks which have fulfilled the cycle of their evolution . . . (4, pp. 24–25).

Even allowing that the word "providential" is not happily chosen, it yet appears that Gini believes in some inevitable and natural force which determines the rise and fall of populations. This he finds in the mixture of races and in the selection of new types arising from this mixture, thus looking to biological more than to social factors in human life for the explanation of man's growth in numbers and also of the distinctive characteristics of his civilizations.

No attempt will be made here to criticize Gini's general theory of population growth and of social evolution. It is, however, a matter of doubt whether or not one may accept as valid any theory of population growth which, for the explanation of human conduct, falls back upon those unknown and inscrutable natural forces over which we have little or no control. To do this savors somewhat of that mysticism of which there is always too much in the study of social science. The author's views on the forces determining population growth will be found in numerous places in what follows, particularly in Chaps. XII, XIII, XIV, and XXVI.

2. Some Social Theories of Population Growth

Karl Marx denied that poverty and hardship are due to any natural tendency of man to produce more children than he can care for, as Malthus maintained, but claimed rather that they owe their existence to the economic system prevailing in a given place and at a particular time, which fails to provide for adequate employment. He maintained that there was no fixed law of population but that each age and society had a law of population of its own, arising out of the particular circumstances by which it was surrounded. In capitalistic society, constant (fixed) capital increases more rapidly than variable (working) capital, and thus the very increase of capital leads to a surplus of laborers; that is, the accumulation of constant capital in the form of production goods leads to less need for laborers because these goods tend to take the place of laborers. In his own words:

. . . The laboring population therefore produces, along with the accumulation of capital produced by it, the means by which itself is made relatively superfluous—is turned into a relative surplus population—and it does this to an always increasing extent. This is a law of population peculiar to the capitalist mode of production; and, in fact, every special historic mode of production has its own special laws of population, historically valid within its limits alone. An abstract law of population exists for plants and animals only, and only in so far as man has not interfered with them (5, p. 397).

In Marx's view, there would be no surplus population and no poverty if capitalism were changed to socialism. It is the circumstances of the time rather than any fixed traits of human nature which create a population problem. Marx had nothing but contempt for Malthus and other "parsons" who discussed the law, or principle, of population as though there were but one such law and that immutable.

In its general nature, Marx's theory of population resembles Godwin's, a theory which originally called forth Malthus' essay in reply. Marx can find no natural law of population growth which inevitably prevents any permanent improvement in man's condition, and he is inclined to believe that Malthus and his followers are the tools of the ruling class rather than searchers after truth.

Henry George, like Marx, was interested in population theory only because he had a particular theory of social reform to set forth and needed to refute Malthus' theory of population growth to make his single-tax theory appear plausible. George believed that if the system of utilization of property in land were made over by the adoption of the single tax, there would be no danger of overpopulation and poverty for an indefinite period. He held that it was only because men did not have easy access to land that they could not find work which would enable them to support themselves and their families, however large, in decency and comfort. The application of the single tax to land, taking all its rental value for the government, would give access to the land to those who could use it best, and, as a consequence, a very great increase in man's productive power would ensue. This would, of course, render him able to support a vastly increased population and would postpone indefinitely the day when overpopulation and poverty would be his lot. Indeed, George goes so far as to say that "unlike that of any other living thing, the increase of man involves the increase of his food" (3, p. 131); and he infers that this will always be so if only man has easy access to the resources of the earth and is not prevented by customs and laws from exploiting them for his welfare. George's own statement of the law of population is as follows:

If the real law of population is thus indicated, as I think it must be, then the tendency to increase, instead of being always uniform, is strong where a greater population would give increased comfort, and where the perpetuity of the race

is threatened by the mortality induced by adverse conditions; but weakens just as the higher development of the individual becomes possible and the perpetuity of the race is assured. In other words, the law of population accords with and is subordinate to the law of intellectual development, and any danger that human beings may be brought into a world where they cannot be provided for arises not from the ordinances of nature, but from social maladjustments that in the midst of wealth condemn men to want . . . (3, pp. 138–139).

Dumont's theory has been called the "theory of social capillarity." Briefly stated, it is that the individual, like oil in the wick of a lamp, tends to mount to higher levels in his social environment and that in this process of climbing he becomes less and less likely to reproduce himself; he is drawn out of his natural milieu and away from the family. As a consequence he loses interest in the family and in the welfare of the race. He becomes interested chiefly in climbing or moving in such a way as will benefit him personally, regardless of whether such movement will be of benefit to the community or the race. Dumont believes that in a society where movement from class to class is easily accomplished, social capillarity is as inevitable as gravity; for he says: "what gravity is to the physical world, capillarity is to the social order" (6, p. 33). He also regards this movement from class to class as directly related to the decline in birth rate, for he says: "The development of numbers in a nation is in inverse ratio to the development of the individual" (6, p. 33).

Naturally, social capillarity is greater in a country where obstacles to movement from class to class are few; hence, in France, where democracy is well established, the movement is rapid, and the birth rate suffers greatly in consequence. Furthermore, in a democratic society, large cities exert a powerful attraction upon those living near them and thus increase the capillary movement of people; and since cities sterilize the people thus drawn in, they increase the speed of decline in the birth rate. People at a distance from centers of attraction and in occupations where individual ambition has little opportunity to develop are not drawn into this capillary movement so rapidly and hence are not likely to reduce their birth rate to the same degree. They will continue to increase, while the ambitious climbers will die out.

In countries like India, where capillarity is small because of a rigid caste system, there is no tendency for the birth rate to decline and for population to die out; just as a very solid substance (copper or iron) will prevent any considerable capillary movement in fluids, so a rigid social structure will prevent upward movement in society and will thus obviate the danger of individual development becoming so engrossing that the person has not time for the rearing of a family.

One is reminded of Spencer's theory of the antagonism between individuation and genesis. These two theories certainly have many points in common, although Dumont's theory allows for a much larger

psychological element in determining the birth rate than does Spencer's. On this subject Dumont says: "From the moment when the imagination and the attraction of the ideal enter the scene, we find ourselves in the presence of a new principle of population" (6, p. 35).

On the whole, this statement of the relation between individuation and genesis seems a decided improvement over Spencer's, but it still leaves much to be desired as a complete explanation of the decline of the birth rate even in France, and it is still more inadequate as applied to other countries. It does, however, have the merit of directing attention more closely to the actual social conditions of a people in the effort to find out the reasons for changes in their rates of growth.

In his theory of population growth Carr-Saunders holds that man has always striven to attain the optimum number. "This is the number which—taking into consideration the nature of the environment, the degree of skill employed, the habits and customs of the people concerned, and all other relevant facts—gives the highest average return per head" (I, 2, p. 476). Man's growth in numbers has, then, always been more or less controlled by him with a view to attaining this optimum which, of course, varies from time to time. The optimum "is not fixed once and for all. On the contrary, it is constantly varying as the conditions referred to vary and, as skill has tended to increase throughout history, so has the number economically desirable tended to increase" (I, 2, p. 476).

In brief, then, Carr-Saunders may be said to sponsor the theory that man's growth in numbers has been determined by his notions of the economically desirable numbers under his conditions of life. He so far accepts Malthus' view, that man has a tendency to increase faster than his means of subsistence, as to hold that without the use of definite means for slowing up his increase (abortion, infanticide, and so forth) he would never have approached the optimum number; but he believes that Malthus was wrong in supposing that man, having developed practices which gave him the optimum, was constantly pressing against his means of subsistence and that only vice and misery kept him from increasing more rapidly than he actually did.

Carr-Saunders' theory is especially interesting just now, because it seems to have started a considerable discussion of the optimum population which has followed his lead—namely, discussion of the optimum population in purely economic terms. Carr-Saunders regards man's growth as quite within his control and as conditioned by the attitudes of mind that he has developed under the particular conditions of his life. On the whole, it would seem that this is, in the present state of our knowledge, a more scientific approach than the natural theories mentioned above.

3. Is There a Law of Population Growth?

The foregoing statement of theories is, of course, incomplete but selection has been made with a definite purpose in mind; namely, to show the two general types of theories that have predominated in the discussion of population growth since Malthus' day—*natural* theories and *social* theories. The former are based on the belief that there is something inherent in the nature of man, or of the world in which he lives, that determines his growth at a rate and in a direction largely or wholly beyond his control. This is apparently a seductive type of quest; biologists, in particular, appear eager to find the *law* of population growth. Once this is discovered and is given definite expression mathematically, the search for causes may be abandoned because a law of nature is the ultimate achievement of the human intellect, at least of the scientific intellect. There is nothing beyond it which man can legitimately hope to know. From such a law both what has happened in the past and what will happen in the future may be known, and we need not concern ourselves about the values of the tendencies shown because they are natural and, therefore, inevitable. It is not surprising that wherever and whenever men have thought about population, many have been eager to find the natural law of its growth; for this would give them a sure basis for reasoning on many related social problems.

In the social theories of population growth, on the other hand, the common assumption is that population growth is not subject to any immutable natural law but is rather the resultant of the social conditions (social here is used to include economic) in which a people finds itself. Population growth is, therefore, determined by a great variety of circumstances—as great a variety as there are social environments in which people live. Hence, it is folly to search for a simple natural law of population growth; what should receive attention is rather the factors which determine its growth in a particular community at a particular time. The Marxian and Georgian theories are good examples of this type, while Spencer's and Doubleday's theories belong to the natural group. Gini's theory seems to have something of both the natural and the social in it (although the former predominates), while that of Carr-Saunders is predominantly social.

The author believes that the social theorists are working in the right direction. This does not mean that Marx and George are any nearer right, except in their method of approach to the problem, than are Spencer and Doubleday. The man who has a particular reform to preach is as likely to twist facts so that they fit into his scheme of redemption as is the man who believes that he has discovered a law of nature and then seeks to verify it by observation. But it does seem eminently reasonable

to hold that the way to find out the truth as to the factors determining population growth at any given time and place and in any given group is to study the environment of this group for elements which affect its birth rate and death rate. When these are found, then we can tell with considerable accuracy whether or not man can exercise any effective control over them. After all, social science can find its *raison d'être* only in the practical application of its findings to the welfare of man.

No attempt will be made in this book to develop a complete theory of population. The chief factors in population growth in the modern world will be studied in some detail, on the assumption that there is no natural law of population growth but rather that the conditions of life, both physical and social, determine this growth and that it varies from group to group as these conditions vary. We shall expect, therefore, to find some valuable suggestions in practically every theory, but we shall not try to combine them into any consistent and comprehensive theory that will explain population growth at all times, in all places, and among all peoples.

References

1. DOUBLEDAY, THOMAS: "The True Law of Population Shewn to Be Connected with the Food of the People," 2d ed., 278 pp., George Pierce, London, 1847.
2. DUMONT, ARSÈNE: "La Morale basée sur la démographie," 181 pp., Schleicher Frères, Paris, 1901.
3. GEORGE, HENRY: "Progress and Poverty; an Inquiry into the Cause of Industrial Depressions and of Increase of Want with Increase of Wealth. The Remedy," 568 pp., Doubleday, Doran & Company, Inc., Garden City, N. Y., 1905.
4. Harris Foundation: "Population. Lectures on the Harris Foundation, 1929, by Corrado Gini . . . Shiroshi Nasu . . . Robert R. Kucznyski . . . Oliver Edwin Baker . . . ," 312 pp., University of Chicago Press, Chicago, 1930.
5. MARX, KARL: "Capital; a Critical Analysis of Capitalist Production," 506 pp., trans. from 3d German ed. by Samuel Moore and Edward Aveling, ed. by Frederick Engels, Humboldt Publishing Company, New York, n.d.
6. RAGEOT, GASTON: "La Natalité, ses lois économiques et psychologiques," 300 pp., Ernest Flammarion, Paris, 1918.
7. SADLER, MICHAEL THOMAS: "Ireland; Its Evils and Their Remedies. Being a Refutation of the Errors of the Emigration Committee, and Others, Touching That Country. To Which Is Prefixed a Synopsis of an Original Treatise About to Be Published on the Law of Population; Developing the Real Principle on Which It Is Universally Regulated," 2d ed., 464 pp., John Murray, London, 1829.
8. SPENCER, HERBERT: "The Principles of Biology," 2 vols., D. Appleton & Company, New York, 1867–1868.

Questions

1. Describe and name some of the "natural" theories of population growth which arose as a reaction against that of Malthus. Why "natural"?
2. What weaknesses can you find in the theories of Sadler and Doubleday?
3. According to Marx, what was the true cause of poverty and hardship? Discuss Henry George's view. Contrast the theories of George and Doubleday.

4. Describe the theory of social capillarity.

5. How does Gini relate social evolution to the movement of population? Why is this theory unsatisfactory?

6. To what extent do you think it is true that man has "always striven to attain the optimum number"? Why?

7. State Spencer's theory of population growth and compare it with George's. Can you give any evidence from your reading or observation in support of either?

CHAPTER IV

WAR, FAMINE, AND DISEASE AS FACTORS IN POPULATION GROWTH

Much has been written on the way in which war affects population growth. The more direct effects of war on population growth can be measured if accurate data on war losses, births, and civilian deaths are available for the war period. The indirect effects of war on population growth must always remain matters of opinion. The discussion here will be confined to the direct effects of World War I on population growth with only a few remarks on the indirect effects. This may help us to judge more adequately of the probable consequences of the present war in this respect.

1. The Effects of War on Population Growth

The data on military losses given here are the best known to the author, but it should be remembered that even official statistics are often none too good in wartime; indeed, they are so bizarre at times that one cannot but feel that in certain countries the entire system of population accounting broke down under the stress of war conditions. The figures on deficit of births and excess of civilian deaths were arrived at as described in the notes to Table 2. In the very nature of the case they are *estimates*, but it is the belief of the writer that they give a not too inaccurate picture of the effects of World War I on population growth in the nations most immediately involved.

In Table 1 the average annual birth rates, death rates, and rates of natural increase are given where available for the five prewar years (1910 to 1914), for the five years (1915 to 1919) directly affected by the war, and for the five years (1920 to 1924) after the direct effects of the war may be assumed to have passed for the countries directly involved in the war and for some of the neutrals rather intimately affected. In general there is a marked decline in the rate of natural increase during the war years as compared with the prewar years, while in a number of countries what had been a fair rate of increase becomes a decrease. Since these rates refer only to the civil population they are not sufficient to tell the whole story. The directly depressing effect of the war on a country's growth must include the direct war losses, the decline in births below what would reasonably have been expected, and the increase in deaths in the civil population above reasonable expectations. The figures in

Table 2 are calculated on this basis and give some indication of how World War I affected population growth in a number of countries. Since it can never be known what proportion of the deaths from influenza in 1918 and 1919 should be charged to the war all deaths for these years are included here. The total of the estimates of war losses figured on the above basis approaches 23,000,000 not including Russia, whose losses

TABLE 1.—BIRTH RATES, DEATH RATES, AND NATURAL INCREASE, SELECTED COUNTRIES, 1910 TO 1924[1]

Country	Birth rates			Death rates			Natural increase		
	1920–1924	1915–1919	1910–1914	1920–1924	1915–1919	1910–1914	1920–1924	1915–1919	1910–1914
England and Wales	21.4	19.4	24.2	12.2	15.2	13.8	9.2	4.2	10.4
France	19.8	11.3	18.8	17.2	19.0	18.2	2.6	− 7.7	0.6
Belgium	20.9	13.6	22.2	13.6	15.9	14.9	7.3	− 2.3	7.3
Germany	23.1	16.8	28.2	13.9	15.9	16.1	9.2	0.9	12.1
Austria	22.6	15.8[2]	29.6	16.7	21.3[2]	20.4	5.9	− 5.5[2]	9.2
Hungary	30.0	20.2[2]	35.0	20.8	22.2[2]	23.3	9.2	− 2.0[2]	11.7
Italy	30.0	22.7	32.0	17.5	22.3	19.2	12.5	0.4	12.8
Bulgaria	39.6	26.6	39.2	21.2	22.3	22.0	18.4	4.3	17.2
Rumania	36.8	31.9[3]	41.8	23.5	35.4[3]	24.5	13.3	− 3.5[3]	17.3
Japan	34.8	32.4	33.6	22.9	22.5	20.3	11.9	9.9	13.3
United States[4]	25.8	27.0	27.7	12.4	14.9	14.5	13.4	12.1	13.2
Holland	26.5	25.5	28.2	10.8	13.8	13.0	15.7	11.7	15.2
Sweden	20.3	20.7	23.7	12.4	14.8	13.9	7.9	5.9	9.8
Norway	23.4	24.2	25.6	11.7	14.0	13.4	11.7	10.2	12.2
Denmark	23.1	23.8	26.4	11.7	13.1	12.9	11.4	10.7	13.5
Spain	30.3	29.0	31.3	21.2	24.4	22.4	9.1	4.6	8.9
Australia[5]	24.4	25.7	27.7	9.8	10.8	10.7	14.6	14.9	17.0
New Zealand[6]	23.0	24.4	26.2	9.0	10.5	9.4	14.0	13.9	16.8
Switzerland	19.9	18.6	23.8	12.9	14.5	14.6	7.0	4.1	9.2

[1] France, Bureau de la statistique générale, "Annuaire statistique de la France," Imprimerie nationale, Paris, 1913, pp. 168*, 169*; 1929, pp. 214*, 215*. * Résumé rétrospectif.

[2] New territory.

[3] Average 1915, 1918, and 1919.

[4] THOMPSON, WARREN S., and P. K. WHELPTON, "Population Trends in the United States," McGraw-Hill Book Company, Inc., New York, 1933, pp. 234, 266.

[5] "Annuaire international de statistique," publié par l'Office permanent de l'Institut international de statistique, W. P. Van Stockum & Fils, The Hague, 1921, Vols. 5–8, pp. 47, 119, 136.

[6] New Zealand, Census and Statistics Office, "New Zealand Official Year-book," 1926, Government Printer, Wellington, 1926, pp. 109, 137.

may well have amounted to 15,000,000 to 17,000,000. Hence there is good reason to believe that the population of these countries by 1924 would have been larger than it actually was by about this number had there been no war. In the author's opinion this is the minimum loss because the indirect effects of the war cannot be estimated and may very well have been more destructive than the direct effects. What is meant by indirect effects may be shown by definite examples. Thus the birth

TABLE 2.—POPULATION GROWTH AS AFFECTED BY WORLD WAR I, SELECTED COUNTRIES

Country	Deficit in births 1915–1919[1]	Excess of deaths 1915–1919[2]	Military losses (thousands)[3]	Total loss of population due to war (thousands)[4]
Great Britain and Ireland	622,300	402,665	1,184	2,209
France	1,591,600	258,635	1,885	3,735
Belgium	305,560	64,930	63	433
Germany	2,947,030	301,400	2,400	5,648
Austria	1,503,440	394,105	1,000	4,236
Hungary	1,316,715	21,410		
Italy	1,477,315	694,160	615	2,786
Bulgaria	308,990	16,900	130	456
Rumania	287,565	443,005	189	920
Japan	480,265	240,135	.....	720
United States	−97,200	728,985	101	733
Holland	59,025	59,025	.....	118
Sweden	36,655	45,110	.....	82
Norway	3,695	17,250	.....	21
Denmark	14,150	11,320	.....	25
Spain	182,690	263,890	.....	447
Russia[5]	.....	.....	3,000	3,000
Australia	7,310	14,615	54	76
New Zealand	1,145	7,455	15	24
Switzerland	61,825	13,525	.....	75

[1] This is the difference between the number of births that would have occurred in the 1913 population with a birth rate the average of that of 1910–1914 and 1920–1924, during the years 1915–1919, and the births which actually occurred in these years.

[2] This figure for deaths is arrived at by the same procedure as described in the preceding note.

[3] DUMAS, SAMUEL, and K. O. VEDEL-PETERSEN, "Losses of Life Caused by War," Clarendon Press, London, 1923, pp. 137–182.

[4] Sum of preceding columns.

[5] Russia probably suffered more loss from the war and the resultant civil war and disease and famine than any other country. The deficit in births was probably at least 3,000,000 to 5,000,000 and the excess of deaths may easily have mounted to 10,000,000.

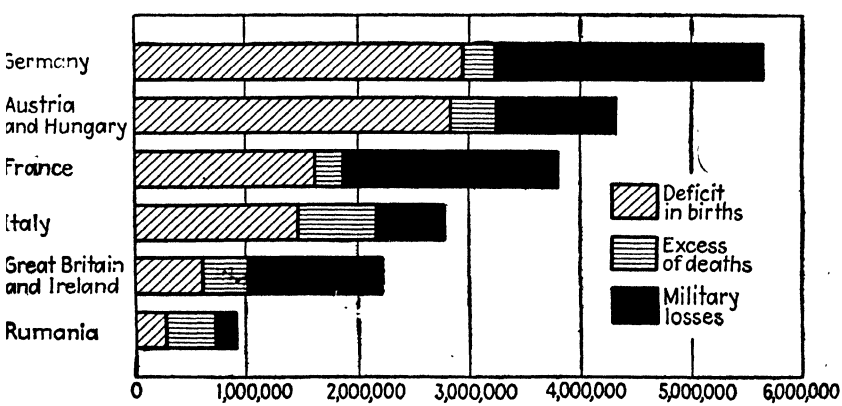

FIG. 1.—Population losses due to World Wor I, selected countries (Based on Table 2).

rate in Germany for the five years preceding the war averaged 28.2. It had been declining rather steadily for some years. The average rate for the years 1920 to 1924 was 23.1. This is somewhat lower than would have been expected if one had projected the prewar decline on into this period. Following 1924 the birth rate declined even more rapidly and reached a low of 14.7 in 1933. This very rapid decline is commonly thought to be due to the economic depression and the unstable conditions in Germany at this time. But did these conditions not arise, in part at least, from the war? There is certainly no proof that this is the case but it seems quite reasonable to assume that indirectly the war was responsible for a part of the unprecedented decline of the birth rate in Germany in this later postwar period.

There is also good reason to believe that the rapid postwar decline in the birth rate in many other European countries was at least hastened by the war, which created unstable conditions culminating in the economic depression of the 1930's. The point of importance here is that war may have far-reaching but indirect effects on the birth rate and thus on population growth which are fully as important as the direct effects. Again, the revolution and civil war in Russia is certainly in part the aftermath of war, and, as is shown below, the great famine of 1918 to 1922, accompanied by a devastating typhus epidemic killed many millions.

Similar enormous losses of life among noncombatants are going on today in many of the conquered regions of Europe—the Balkans, Poland, Czechoslovakia, and, to a lesser extent, Norway, Holland, Belgium, and France. Spain is still reaping the whirlwind from the civil war, in famine, or near famine, and in typhus and other diseases, which appear to be taking a huge toll. In China, to judge from past experience (see pp. 51, 52), many millions have died and will die as the consequence of the Japanese invasion and still more millions will probably remain unborn.

Thus when account is taken of the toll of war in the last 30 years there can be no doubt that many tens of millions of people have been killed directly or have died as the consequence of hardship and disease, while even more millions who would have been born under normal conditions have remained unborn. War is still a great destroyer in our time, a greater destroyer than we have been accustomed to think it, because the century between Napoleon and World War I was a period of unusual quiet and peace.

It is often assumed that while the birth rate of a country is greatly depressed during a war it rebounds rapidly after it is over and soon makes up for the loss. This did not happen after World War I (Table 1). The birth rate rose from the low point of the war period, but there is scarcely a country in which it rose above the level that would have been projected for it in the 1920's if one had been making this projection in 1913. It is quite possible, of course, that a projection made in 1913

on the basis of trends would have been too high in the early 1920's even had there been no war. This must always remain a matter of opinion. The author's opinion is that even the rise in the birth rate following the war as compared with that of the war period brought the birth rate of 1920 to 1924 little if any above what it would have been had the prewar decline continued without interruption. He does not believe that the very rapid decline in the birth rate which set in about 1922 or 1923 would have taken place five or ten years sooner if there had been no war. Moreover by 1930 only a few countries in Europe had as high a birth rate as they had during the years 1915 to 1919. In fact even in the two years 1920 to 1921, when the postwar birth rates were highest, no country in Europe, belligerent or neutral, except France, had as high a birth rate as it had in 1912 to 1913. Thus it does not appear that the European countries or any of the countries settled by people from northern and western Europe made up the war losses to any appreciable extent by an increase in the birth rate following the war. If anything, it appears that the war hastened the decline of the birth rate which was already under way in the Western world.

The situation in Japan appears somewhat different from that in Europe if the usual figures for crude rates are accepted. The birth rate there according to these figures seems to have been little affected by the war and to have reached a new high point following it. However, not much faith should be placed in the Japanese data prior to 1920, when the first census was taken. Furthermore, birth and death registration in Japan have probably been improving rather steadily for some years and the proportion of women in the most fertile ages, twenty to thirty-four, has been increasing. Hence, we must conclude that we can place little reliance on birth rates and death rates in Japan prior to 1920. Since that time, however, it is clear that the birth rate has been declining. Penrose (16, p. 93) calculates a decline from 169.4 births per 1,000 women aged fifteen to forty-four in 1920 to 142.6 per 1,000 in 1935. Since then the total number of births has declined a little, so it seems reasonably safe to assume that the rate is still declining. But there is no adequate reason to assume that this decline up to 1937 is primarily an effect of World War I. It seems more reasonable to attribute it chiefly to the increasing urbanization and industrialization of Japan. Exactly the same type of change in the birth rate took place in Europe under similar conditions (see Chap. VI). The data for Japan since 1937 are scanty but what evidence there is indicates that the war with China has had a depressing effect on the Japanese birth rate and now World War II will undoubtedly enhance this effect.

Another matter which always arises in connection with war and postwar population growth is the ratio of male to female births. There is a very widespread belief that *nature* compensates for the loss of males in

war by producing a larger proportion of males in such periods than is usual in normal times. Table 3 does not provide convincing evidence that this was generally the case in World War I. The sex ratio at birth did increase during and after the war enough to be significant in several countries engaged in the war but it also increased about as much in Holland and Chile, which remained neutral. In Italy, where the increase during and immediately after the war was very small, there was a decrease below prewar levels by 1932. In Sweden, in contrast to what happened in Holland, there was a decrease in sex ratio throughout this period. In the United States there was also a decrease, although it was small, and in Japan the increase was quite negligible until well after the war (1930 to 1932). In three of the other countries shown here the ratio was also higher in 1930 to 1932 than in 1920 to 1922.

TABLE 3.—RATIO OF MALE LIVE BIRTHS TO FEMALE LIVE BIRTHS, SELECTED COUNTRIES, AVERAGE 1911 TO 1932[1]

Country	1930–1932	1920–1922	1915–1917	1911–1913
Japan	104.9	104.3	104.2	104.2
Australia	105.7	105.9	105.5	104.7
New Zealand	106.1	105.4	105.4	105.3
Germany	106.2	107.2	106.3	105.6
Austria	106.2	106.6	105.4	105.8
Belgium	104.5	105.5	104.8	103.9
England and Wales	104.8	105.1	104.4	103.9
France	104.2	105.3	104.7	104.3[2]
Hungary	106.1	107.1[3]	106.4	105.4
Italy	104.9	105.6	105.5	105.3
Finland	105.7	106.0	105.9	106.8
United States	105.4	105.7	105.7	
Chile	106.4	104.6	105.3	104.9
Sweden	105.2	105.5	105.6	105.9
Holland	106.5	105.9	105.6	105.0

[1] "Annuaire international de statistique," publié par l'Office permanent de l'Institut international de statistique, W. P. Van Stockum & Fils, The Hague, 1916——; Institut International de Statistique, "Aperçu de la démographie des divers pays du monde, 1922——."

[2] 1909 to 1911.

[3] 1921 to 1922.

In view of these facts it cannot be said with any assurance that the sex ratio at birth is altered by war. As a normal thing it seems to vary as much as two or three points from time to time but this change does not always or even generally seem to be closely associated with war (17). Nature does not seem to provide for a change in sex ratio at birth to make up for the loss of male lives during a war. Emigration and war both reduce the male portion of the population, but a postwar excess of male births seems to have little influence on the normal sex ratio in a population.

2. Famine and Disease, General[1]

In spite of the restrictions on births referred to in Chap. I, one can safely say that from one-half to two-thirds of the people living in the world today have birth rates but mildly affected by any form of deliberate control. Among this great part of mankind the chief factors determining the growth of population, apart from war, are the supplies of the necessaries of life—food, clothing, and housing, chiefly food—and the toll which disease takes. It will be well, therefore, to give some consideration to the role of famine, disease, floods, and so forth, in keeping down the growth of population in the less industrialized parts of the world.

The lack of food has always been one of the most important causes of a high death rate among men. The folklore of almost all peoples is full of tales of dry seasons resulting in short crops; of late frosts in the spring interfering with plantings or with natural growth; of early frosts in the fall damaging the harvest; of the failure of the salmon run; of the spoiling of harvests in storage; of rainy cold seasons when crops did not mature properly; of the failure of certain tree crops due to uncontrollable blight; of the ravaging of the fields by locusts, grasshoppers, or some other pest; or of the failure of the customary supply of food from any one of a dozen other natural causes. Food shortage has been one of the most constant worries of mankind in all past ages and is still imminent in a large part of the world.

In ages past, as has already been pointed out, many tribes have adjusted their numbers to their probable food supplies with fair success. The most effective of their methods of adjustment, though by no means their only ones, have been infanticide and abortion, but all their efforts have not prevented starvation when some unusual combination of circumstances has reduced the customary supply of food.

3. Effect of Chronic Lack of Food on the Death Rate

In consequence of the constant pressure on the food supply in many parts of the world and of the catastrophic food shortages that frequently recur in many of them, it is often said that half of the people in the world go to bed hungry every night. This may be an exaggerated statement, but there is no doubt whatever that a very great many millions of people are chronically underfed, and it is well known that underfeeding weakens the individual and renders him less resistant to disease, whether it be of the degenerative or of the germ type. When we find death rates regularly mounting to 30 or 40 per 1,000 we may be reasonably certain that undernourishment is one of the factors at work. Where undernourishment is chronic the immediate cause of death is usually some well-

[1] For some interesting accounts of the ravages of plagues and epidemics see references 1, 2, 3, 4, 5, 6, 8, 15, 19.

known pathological condition but one from which the patient would have a far greater chance of recovery if he were in good physical condition at the time of attack. People who know China and India well have not the least doubt that chronic lack of food is an extremely important element in their high death rates.[1]

4. Past and Recent Famines in Europe and Asia

It would be both tedious and unprofitable to list all the famines that have occurred in any one country during historical times, but it may be of some interest merely to mention the numbers that have occurred within given periods in certain countries where the records have been searched rather carefully.

Walford (20) lists 350 famines, 201 of which occurred in the British Isles between A.D. 10 and 1846. No doubt Walford's list is fairly complete for the British Isles, but it is only a beginning for most other lands. In China "a study recently completed by the Student Agricultural Society of the University of Nanking brought to light the surprising and significant fact that between the years 108 B.C. and A.D. 1911 there were 1,828 famines, or one nearly every year in some one of the provinces" (13, p. 1).

Walford (20) is also authority for the statement that 31 famines occurred in India between 1769 and 1878, and it is by no means certain that he has listed all of them. Although no historical study of famines in India comparable to that just mentioned for China has been found, it seems only reasonable to assume that India, like China, has had many hundreds of famines during the last 2,000 years and that untold millions of people have died both directly and indirectly as the consequence of these famines.

Since famine has been such an important factor in determining the growth of population in the world in the past and still is for a large part of mankind, it may not be out of place to give some figures to help us realize what a terrible calamity famine is to peoples who depend almost solely upon local agriculture for their livelihood.

China has had several famines about which a considerable amount is known. The worst in recent years occurred as the result of a great drought in the years 1876 to 1879. The area affected was 300,000 square miles (about the area of New England, the Middle Atlantic States, Ohio, Indiana, and Illinois), and somewhere between 9,000,000 and 13,000,000 people perished from hunger and the disease and violence accompanying prolonged want. In 1920 and 1921 not less than 20,000,000 people were

[1] In a recent study of the vital statistics of a Chinese community undertaken under the direction of the writer (18), the average death rate for a four-year period was found to be 38.7 per 1,000. While it is not implied that the death rate is this high in all China there can be no doubt that it is very high. See also (21).

made destitute by crop failures, and in spite of the most efficient famine relief ever known in China, by which more than 7,000,000 people were fed, at least 500,000 died of want. During 1929 and 1930 the newspapers reported that millions died of starvation and disease in northwest China. Some reports placed the number of deaths as high as 4,000,000.

Scarcely had a fair crop in the northwest of China eased matters there when the most disastrous flood ever known covered many thousands of square miles along the Yangtze River and its tributaries. Crops were totally destroyed, and the number of deaths was very large, although the fact that relief could be brought by water to much of this area kept the toll far below what is usual under similar circumstances in China.

A little farther back in Chinese history occurred disasters even worse than those just mentioned. Various authorities estimate that the Taiping Rebellion (1856 to 1860) resulted in the loss of 25,000,000 to 50,000,000 lives, only a part of which, of course, was caused directly by famine. The Mohammedan Rebellion in western China 1861 to 1862 is also supposed to have so disrupted the normal course of life that widespread famine ensued and caused the deaths of several millions of people.

The history of China is replete with the stories of such disasters. Mallory is fully justified when he says: "In fact, the normal death rate [in China] may be said to contain a constant famine factor. Depleted vitality following years of want also tends to increase the death rate" (13, p. 1).

The story is much the same for India as for China. Droughts are common, and almost every year some region suffers more or less from the shortage of food. In 1769 to 1770 there was a great famine in Bengal which is said to have carried off one-third of the total population, or about 10,000,000 people. There is no way of checking such an estimate, but certainly several millions of people died at this time (14, p. 253). Other great famines occurred in 1803 to 1804 and in 1837 to 1838. The mortality resulting from them can only be guessed at, but the victims must certainly be counted by millions, if we take into account the after-effects of these periods of want.

It may not be out of place to quote from a description of the great Indian famine of 1837 to 1838, as it will help us to understand the profound effects of such a calamity upon the growth of population. This description was written by a man who had access to the full official reports.

> The famine of 1837 to 1838 was the last of the great desolating famines which characterized this epoch; like the Doji Bara in the Deccan, and the Chalisa in Upper India, it loosened the bonds of society, laid waste large tracts of country, and permanently modified the development of industry. It is the one famine of the old type of which we possess adequate detailed record; the reports of the local officers at various stages of the famine are, in many cases, still extant, and

Mr. Girdlestone, in his "Past Famines in the Northwest Provinces," has given a history of it which covers 28 pages. The main features of the famine may be clearly traced, and they are unmistakably characteristic of the worst famines of this epoch. There had been a succession of bad harvest since 1832 which had caused considerable distress in various localities. The summer of 1837 brought a terrible drought. . . . July and August are described as having been absolutely rainless, and such were the anticipations of dearth that "in Aligarh the *baniyas* would not produce grain even when payment was offered at their own exorbitant prices." With the prospect of inevitable starvation at their homes, the people naturally began to wander; in August Bulandshahr was already being overwhelmed with emigrants from Marwar and Hariana. In September there were a few partial showers towards the south, but in the upper Doab this month was practically rainless. "The utter hopelessness of their case was enough in the minds of the lower classes to justify recourse to violence, and soon . . . neither grainboats nor storehouses were safe from attack, whilst the public roads were dangerous to travellers, owing to the number of armed men who were roaming about in quest of plunder." On October 20, John Lawrence wrote from Gurgaon: "I have never in my life seen such utter desolation as that which is now spread over the pergunnahs of Horul and Pulwul. The people have been feeding their cattle for the last two months on the leaves of trees, and, since this resource has failed, are driving them off." The difficulty of feeding the cattle is often mentioned. From Cawnpore in the beginning of 1838, Mr. Rose wrote: "There was not, I am told, in 1783 that total absence of vegetation which has caused the present dearth of cattle, and in milk the people then possessed a valuable article of food which is now wanting. . . . To those who have not witnessed the melancholy change it will scarcely be credible that an extensively-cultivated and thickly-populated country like the Doab could, by one year's drought, be reduced to its present state of waste and desolation. Flourishing villages, which last year contained from 300 to 400 cultivators, are now occupied by half a dozen starving beggars, and I have travelled for 20 miles in the pergunnahs adjoining the Jumnal, where there are no wells, without seeing a vestige of cultivation." . . . So long as the rich zemindars had the means, they fed their poor neighbours, and even went to the length of selling jewels and ornaments in order to raise money for the purchase of food. When their resources were exhausted and the *baniyas* proved inexorable, the poorer classes resorted to the jungle, in the hope of securing a meal from some of the wild trees. . . . Women were ready to sell their children for 2 or 3 seers of wheat, whilst their husbands and brothers waylaid and plundered travellers. Gold and silver were parted with at half their ordinary value, and brass and copper were esteemed worth their weight in grain. Artisans disposed of their tools at a quarter their cost price (14, pp. 262–264).

But we need not go so far afield as China and India to find fairly recent examples of the way in which famine checks population growth or even reduces the numbers of a given people. During the nineteenth century Ireland suffered from famine on several occasions. In the last great famine, 1846 to 1847, not less than 275,000 persons are supposed to have perished; while some place the number who died from starvation and the pestilence consequent upon it at over 1,000,000. Besides,

nearly 1,200,000 are supposed to have emigrated. The scarcity lasted for about six years, and the total population was reduced by about 2,500,000. Ireland also had other famines during the nineteenth century, and it is probably not far wrong to attribute a large part of the reduction in total population from 8,196,597 in 1841 to 4,390,219 in 1911 to these famines.

A recent famine, which really covered about four years—1918 to 1922—and which concerned us closely, was that of Russia. The American Relief Administration took the most active part in supplying outside relief and at the time of its greatest activity in August, 1922, was feeding 10,491,297 people, and famine deaths had fallen to comparatively small figures. It has been estimated that, out of 30,000,000 to 40,000,000 who were affected during this time, from 2,000,000 to 5,000,000 people perished from famine. In some communities mortality was unbelievably high, running from 4 to 6 per cent a month when matters were at their worst (12, Part 2, No. 5). In other communities 25 to 50 per cent of the total population is supposed to have perished. In 1934 to 1935 there was another famine in Russia which seems to have killed millions but about which comparatively little is known because of the stringent censorship maintained. Certain it is that many millions of Russians have died of famine in the last half century, for in addition to these two recent famines there were others in 1891, 1906, and 1911 which took heavy toll of life.

5. Causes of Famine

This is not the place to go into a detailed discussion of the causes of famine. Quite obviously there is one general cause, namely, crop failure; but we must know more than this to understand the role that famine is likely to play in the future. Crop failure is usually more or less local in character. Even the great Russian, Indian, and Chinese famines of recent years have affected comparatively small areas, perhaps never more than 200,000 to 300,000 square miles. At the same time that people were dying by millions in Russia in 1921 and 1922 there were great surpluses of food in this country, in Australia, in Argentina, and, indeed, even in other parts of Russia. Even in 1930, with millions dying in China, wheat was a drug on the market here and in all other large wheat-exporting areas. Local crop failure, therefore, need not mean starvation if a better distribution of food can be secured. Perhaps the chief obstacle to adequate famine relief at the present time is the lack of transportation facilities in the less industrialized lands. There has been no considerable famine in any Western land since it has become possible to transport food quickly and cheaply. (What is now happening in World War II may render such a statement untrue.) In the 1920 and 1921 famine in China only about one-fourth to one-fifth as many people died as would have died a few years earlier, largely because some outside food was taken to the sufferers.

Poor as communication and transportation were in China, and difficult as it was to organize a supply service, yet the ravages of famine were stayed to a considerable extent. Large quantities of food were gathered in the more favored areas of China itself and taken to the famine sufferers in the stricken areas. Probably owing to internal political troubles, this service did not seem to work so well in the 1929 to 1930 famine, and the number of deaths was far greater. Today, as in the past, the lack of transport and of relief organization may be as important a cause of famine as is the actual failure of crops. This does not mean that all would be well with the world's food supply if we had better transportation facilities in all lands. Obviously the methods of agriculture, the kinds of soil, the climate, the economic organization of a people, the density of population, the social attitudes that it possesses, its religion, and many other factors have a definite relation to its food supply; but one may say that today famine is extremely unlikely to occur in those countries which have good systems of transportation and where the economic system is capable of mobilizing outside resources for the assistance of the endangered areas, provided some additional catastrophe like war does not intervene.

It must be noted, however, that war may result in famine or more likely in semistarvation and disease because of the disorganization of the facilities of production and distribution which accompany it and because of the disruption of the usual medical and sanitary services. Undoubtedly the Russian famine of 1918 to 1922 was greatly aggravated by Russian participation in World War I and by the civil war which followed. The 1929 to 1930 famine in China also claimed many more lives than it would have had it not been for internal strife. At present it appears that World War II may cause such a famine as western Europe has not experienced in more than a century.

It can be said with reasonable certainty that famine as a check on population growth can never be entirely eliminated until man does away with these basic causes—until he creates stores against crop shortages, stops wars, develops the means and the organization to supply famine sufferers, and learns to keep his numbers within the "means of subsistence."

6. Disease and Epidemics

From what has been said about famine it will be clear that it is almost always accompanied by more or less disease and sometimes by devastating epidemics. It is easy to understand how this comes about, for famine of itself means the disruption of most of the normal routine of life and leads naturally to the breakdown of the customary safeguards of the community against disease. When people tear down their houses to sell the stones and timbers in order to get food, when they wander away from their usual abodes in hope of finding food elsewhere, when they gather in great

crowds along the main highways and then scatter to the four winds, when they come together again in concentration camps to receive famine relief or are concentrated in camps to carry on public works instituted as relief measures, it can certainly occasion no surprise if disease breaks out and epidemics sweep over the land with deadly effect.

This close relation between famine and disease is well illustrated by the recent Russian troubles (10). Certain diseases, particularly typhus, had broken out in epidemic form before the famine became severe. Demobilization of the army and the general disorganization of Russia helped to spread the disease still more rapidly because of the lack of any adequate control over the movements of people. Scarcely had the epidemic situation begun to show signs of improvement in the winter of 1920 to 1921, when the country was stricken again by famine in the summer of 1921, and the mortality in the following winter rose to former levels. The consequence was that typhus, relapsing fever, and cholera took a terrible toll, perhaps amounting to 3,000,000 to 4,000,000. This, added to the famine toll, makes a total of perhaps 6,000,000 to 8,000,000 people who perished from these two great scourges between 1917 and 1922.

It is, of course, utterly impossible to say whether famine or disease is the more deadly, when both are present. Is the death of a starving wretch who contracts cholera due to hunger or to cholera? Nor can one decide whether famine or disease is the cause of the deaths in a district where such great disorganization of economic and social life results from the presence of either that the other is certain to follow. All one can say is that practically every famine is accompanied or followed by disease and that the deaths caused directly by starvation are often fewer than those attributable to disease.

But while disease is generally present at times of famine, it is not equally true that famine follows upon disease. This sometimes happens because of the great disturbance to social and economic life caused by disease, but quite frequently the effect is just the opposite. There are numerous instances in history when a great plague which has wiped out a considerable part of the population has made life much easier for the survivors for some years or even for some decades because more land was available per capita than before and because real wages rose as a consequence of the scarcity of labor. This was very clearly the case in England after the great plague of 1348. Cheyney describes the economic effects of this epidemic as follows:

> The lords of manors might seem at first thought to have reaped advantage from the unusually high death rate. The heriots collected on the death of tenants were more numerous; reliefs paid by their successors on obtaining the land were repeated far more frequently than usual; much land escheated to the lord on the extinction of the families of free tenants, or fell into his hands for

redisposal on the failure of descendants of villains or cotters. But these were only temporary and casual results. In other ways the diminution of population was distinctly disadvantageous to the lords of manors. They obtained much lower rents for mills and other such monopolies, because there were fewer people to have their grain ground and the tenants of the mills could therefore not make as much profit. The rents of assize or regular periodical payments in money and in kind made by free villain tenants were less in amount, since the tenants were fewer and much land was unoccupied. The profits of the manor courts were less, for there were not so many suitors to attend, to pay fees, and to be fined. The manor court rolls for these years give long lists of vacancies of holdings, often naming the days of the deaths of the tenants. Their successors are often children, and in many cases whole families were swept away and the land taken into the hands of the lord of the manor. Juries appointed at one meeting of the manor court are sometimes all dead by the time of the next meeting. There are constant complaints by the stewards that certain land "is of no value because the tenants are all dead"; in one place that a water-mill is worthless because "all the tenants who used it are dead"; in another that the rents are £7 14*s*. less than in the previous year because fourteen holdings, consisting of 102 acres of land, are in the hands of the lord; in still another the rents of assize which used to be £20 are now only £2 and the court fees have fallen from 40 to 5 shillings "because the tenants there are dead." . . .

. . . The demand for laborers remained approximately as great as it had been before. The number of laborers, on the other hand, was vastly diminished. They were therefore eagerly sought for by employers. Naturally they took advantage of their position to demand higher wages, and in many cases combined to refuse to work at the old accustomed rates. A royal ordinance of 1349 states that "because a great part of the people, especially of workmen and servants, have lately died in the pestilence, many, seeing the necessity of masters and great scarcity of servants, will not serve unless they may receive excessive wages." A contemporary chronicler says that "laborers were so elated and contentious that they did not pay any attention to the command of the king, and if anybody wanted to hire them he was bound to pay them what they asked, and so he had his choice either to lose his harvest and crops or give in to the proud and covetous desires of the workmen" (7, pp. 88–90).

Such a pestilence, without doubt, left the survivors, particularly in the laboring classes, in a far better economic position than they had been. The fact that a statute of laborers designed to prevent workmen from demanding higher wages because of the scarcity of laborers was enacted and reenacted no less than fourteen times in the century following the Black Death shows pretty conclusively that this plague had greatly thinned England's population.

It is extremely difficult for us today to realize how a great epidemic may thin out a population and for how long a time its effects may be felt. Those of us who went through the influenza epidemic of 1918 and 1919 can recall how people died in our own neighborhoods without being able to secure the services of a physician, how whole families were occasionally

stricken and were unable to call aid of any kind, and how helpless the physicians were in dealing with a disease that was relatively unknown to them. But in spite of what seem to us the terrible ravages of influenza it raised the death rate in the registration area of the United States only 5 or 6 per 1,000 above normal and caused only about 500,000 excess deaths. This was about one-half of 1 per cent of our population at that time. The ravages of this disease in the United States should not be minimized, but when we compare our experience with India's at the same time and with the experiences of other countries in the past, we find that we suffered hardly at all. In India the number of influenza deaths will never be known, but the lowest estimate seems to be 8,000,000, and the highest about 15,000,000. In the light of the fact that the increase of population in the decade 1911 to 1921 was only about 3,800,000, while it amounted to almost 21,000,000 in the decade 1901 to 1911 and to almost 34,000,000 from 1921 to 1931, and, since the influenza epidemic was the greatest although not the only catastrophe in the decade 1911 to 1921, it seems likely that it may have killed or prevented the birth of 15,000,000 to 20,000,000 during this decade. Even such an estimate allows for famine deaths or deaths from other epidemics of 10,000,000 or more if it is assumed that the increase between 1921 and 1931 is fairly normal.

But great as has been the devastation wrought by recent epidemics, their effects appear almost negligible, even in India, when compared with those of earlier times. In past ages people had little or no knowledge of the nature of disease or of the sanitary precautions necessary to prevent its spread; nor had they the economic means to devote to improving sanitary arrangements even if they had had the knowledge.

Hecker (11) in his account of the Black Death (1348) gives figures which seem incredible, but they are so generally accepted that we may repeat a few of them here. All Europe was devastated. London is supposed to have lost 100,000, Venice 100,000, Florence 60,000, and Paris 50,000. The populations of these cities at that time are not known, but it is not unlikely that nearly one-half of their people perished within the space of a few months. The island of Cyprus is said to have been practically depopulated; Italy is thought to have lost at least half of its people, England about one-third, France about one-third. Eastern Europe did not suffer so severely as western and southern Europe. For the entire continent it is quite generally agreed that not less than one-fourth of the people perished in a few months. The loss amounted to no less than 25,000,000, and it appears to have been close on to three and a half centuries before Europe's population again attained the numbers that it had possessed in the middle of the fourteenth century. Of course during this period parts of the Continent suffered more or less frequently from epidemics of one kind or another, but nothing approaching the Black Death again devastated the whole continent.

It may be interesting in this connection to quote from the description of the London plague of 1665 by Defoe, who was four years old at the time and who must have listened to the firsthand accounts of some of the survivors and read descriptions written by eyewitnesses. Like the quotation from Cheyney, it will help us visualize the disruption of life consequent upon a great epidemic.

At the beginning of the plague, when there was now no more hope but that the whole city would be visited; when, as I have said, all that had friends or estates in the country retired with their families, and when, indeed, one would have thought the very city itself was running out of the gates, and that there would be nobody left behind, you may be sure, from that hour, all trade except such as related to immediate subsistence, was, as it were, at a full stop.

I might be more particular as to this part, but it may suffice to mention, in general, all trades being stopt, employment ceased, the labour, and, by that, the bread of the poor, were cut off; and at first, indeed, the cries of the poor were most lamentable to hear; though, by the distribution of charity, their misery that way was gently abated. Many, indeed, fled into the country; but thousands of them having stayed in London, till nothing but desperation sent them away, death overtook them on the road, and they served for no better than the messengers of death; indeed, others carrying the infection along with them, spread it very unhappily into the remotest parts of the kingdom.

The women and servants that were turned off from their places were employed as nurses to tend the sick in all places; and this took off a very great number of them.

And which, though a melancholy article in itself, yet was a deliverance in its kind, namely, the plague, which raged in a dreadful manner from the middle of August to the middle of October, carried off in that time thirty or forty thousand of these very people, which had they been left, would certainly have been an insufferable burden, by their poverty; that is to say, the whole city could not have supported the expense of them, or have provided food for them; and they would, in time, have been even driven to the necessity of plundering either the city itself, or the country adjacent, to have subsisted themselves, which would first or last, have put the whole nation, as well as the city, into the utmost terror and confusion (9, pp. 69–71).

This plague is supposed to have killed not less than 100,000 in the city of London out of a probable population of 400,000. But because of the great exodus from the city in the early weeks of the epidemic it amounted perhaps to one-third or one-half of the actual residents of the city during its visitation.

It would be very easy to give examples of epidemics from all parts of the world in which millions upon millions of people have met an untimely end. Measles has killed many thousands of American Indians, tuberculosis has practically depopulated some of the South Sea Islands, while syphilis has wrought havoc in many quarters. India and China are never wholly free from the most deadly diseases in some part of their vast

territories, and from Africa come reports of frequent epidemics among the Negro tribes which lay waste areas greater than many European states. Man always has been at the mercy of many kinds of disease about whose control he has known nothing.

It would be a great mistake, however, to think of the great plagues as the only diseases exacting their toll from man. In the aggregate there is no doubt that lesser epidemics or even endemic diseases have been far more important in keeping down population growth than the catastrophic epidemics. Thus it is supposed that there were probably not less than 150,000 cases of typhus each year in Russia prior to World War I and that the deaths amounted to from 15,000 to 20,000 annually. This is certainly a considerable drain and, entirely aside from the great epidemics, such as that of 1917 to 1922, when 2,000,000 to 3,000,000 died from this disease, accounts for a considerable slowing up in the rate of Russia's population growth. Cholera is also endemic in Russia and during the last century has probably caused about 2,250,000 deaths. Of course some of these occurred at times of great epidemics. But if we think of the ravages of smallpox, malaria, scarlet fever, typhoid fever, yellow fever, and many other diseases which have but recently come under control, even in the most highly industrialized countries, we can readily appreciate the fact that the unspectacular epidemic has been so common in man's life that it has long since ceased to attract his attention. As long as typhus took a regular yearly toll little attention was paid to it, and as long as smallpox caused a regular death rate of 3 to 6 in 1,000 no particular concern was felt over its ever-present depredations.

In the Chinese community already referred to (18) the death rate for the year Sept. 1, 1933, to Aug. 31, 1934, was 52.0 per 1,000, and I was assured by the field worker that though this was considered a bad year it was not regarded as unusual. The year in which there was not an epidemic of typhoid, or cholera, or dysentery, or smallpox, or of several of these was the unusual year. Epidemics of bubonic plague, or pneumonic plague, or influenza, or typhus would also be regarded as unusual but not those of the diseases that were always with them. When we reflect upon these facts we have no trouble in understanding why man's numbers have increased slowly, if at all, throughout the greater part of his historical period.

We know today that practically all epidemics are preventable. But even when they cannot be prevented, we know that, with care, their ravages can be greatly mitigated. We may, therefore, confidently look forward to the time when they will play a far less important part in determining man's growth in numbers than they have played in the past. Already this is the case in the West and in certain other lands. Of course, war may change this situation at any time. As this is written typhus is said to be epidemic in Spain and in the Balkans and also in the German

army in Russia. It may easily spread to central, northern, and western Europe. Disease is still a factor of prime importance in the growth of the world's population, especially in time of war (22).

References

1. BELL, WALTER GEORGE: "Great Plague in London, 1665," 374 pp., Dodd, Mead & Company, Inc., New York, 1924.
2. BOCCACCIO, GIOVANNI: "The Decameron," trans. by John Payne, 2 vols., Boni & Liveright, New York, 1925.
3. BROWN, CHARLES BROCKDEN: "Arthur Mervyn, or Memoirs of the Year 1793," 2 vols., McKay, Philadelphia, Pa., 1887.
4. BUCK, PEARL S.: "The Good Earth," 375 pp., John Day Company, Inc., New York, 1931.
5. BUER, M. C.: "Health, Wealth, and Population in the Early Days of the Industrial Revolution (1760–1815)," 290 pp., G. Routledge & Sons, Ltd., London, 1926.
6. CAMPBELL, ANNA M.: "Black Death and Men of Learning," 210 pp., Columbia University Press, New York, 1931.
7. CHEYNEY, EDWARD P.: "An Introduction to the Industrial and Social History of England," rev. ed., 396 pp., The Macmillan Company, New York, 1925.
8. COULTON, G. G.: "The Black Death," 120 pp., Harrison Smith & Robert Haas, Inc., New York, 1930.
9. DEFOE, DANIEL: "History of the Plague in London, 1665 . . . " pp. 1–205, George Bell & Sons, London, 1905.
10. GOLDER, FRANK ALFRED, and LINCOLN HUTCHINSON: "On the Trail of the Russian Famine," 319 pp., Stanford University Press, Stanford University, Calif., 1927.
11. HECKER, JUSTUS FRIEDRICH KARL: "The Epidemics of the Middle Ages," trans. by B. G. Babington, 418 pp., George Woodfall (The Sydenham Society), London, 1844.
12. League of Nations: "Epidemiological Intelligence," No. 1 ——, January 14, 1922——, Geneva, 1922——.
13. MALLORY, WALTER H.: "China: Land of Famine," 199 pp., American Geographical Society, New York, 1926.
14. MORISON, THEODORE: "The Industrial Organization of an Indian Province," 347 pp., John Murray, London, 1918.
15. ROSS, EDWARD ALSWORTH: "Standing Room Only?" 368 pp., Century Company, New York, 1927.
16. SCHUMPETER, ELIZABETH BOODY, G. C. ALLEN, E. F. PENROSE, and M. S. GORDON: "The Industrialization of Japan and Manchukuo, 1930–1940," 944 pp., The Macmillan Company, New York, 1940.
17. SHAW, E. R.: "The Ratio of Male to Female Births as Affected by Wars," *Amer. Stat. Assoc. Jour.*, 18 (1922), 250–255.
18. THOMPSON, WARREN S., and C. M. CHIAO: "An Experiment in the Registration of Vital Statistics in China," Scripps Foundation for Research in Population Problems, Oxford, Ohio, 1938.
19. THORNDIKE, LYNN: "The Blight of Pestilence on Early Modern Civilization," *Amer. Historical Rev.*, 32 (1927), 455–474.
20. WALFORD, CORNELIUS: "The Famines of the World: Past and Present," *Jour. Roy. Stat. Soc.*, 41 (1878), 433–526.
21. WATTAL, PYARE KISHAN: "The Population Problem in India," 185 pp., Bennett, Coleman & Company, Ltd., London, 1934.

22. ZINSSER, HANS: "Rats, Lice and History," 301 pp., Little, Brown & Company, Boston, 1935.

Questions

1. Describe the behavior of the birth rate in France, England, Germany, and the United States during and following World War I.

2. Describe the behavior of the death rate in France, England, Germany, and the United States during and following World War I.

3. "The excess of male births following a war makes up for the military losses of a country." Is this true or false? Give evidence.

4. What do you think will be the effect of World War II on population growth? Give reasons.

5. What are the chief agents controlling the growth of population in nonindustrial communities? Give examples from your personal knowledge or reading, and explain them fully.

6. Discuss the effect of chronic lack of food on the death rate. Has your community had any period of unemployment that you can remember? Did this have any effect on its death rate? Why?

7. Do you know of any famine in the world today? How is it affecting population growth? Describe some recent famine, if there is none of importance now.

8. Enumerate the principal causes of famine in the past. Are they the same today? What is the outlook for the future?

9. Discuss the role of disease in population growth. Give definite examples.

10. Discuss epidemics and their death toll in past and recent times. Are they likely to continue to exercise the same influences over population growth? Why?

11. Study the effect of the influenza epidemic of 1918–1919 upon your own community.

12. "Famine and disease do more to reduce population growth than any other factor." Discuss.

CHAPTER V

POPULATION GROWTH AND AGRICULTURE[1]

It is obvious that, so long as man depends upon agriculture for his food and clothing, there cannot be more people in any given area than the agriculture of that area can support, plus those who can be supported by agricultural imports, chiefly food and fibers, secured in the exchange of products with other areas. For the world as a whole, agricultural production is still so clearly a limiting factor in population growth that it seems almost superfluous to call attention to it. The fact is, however, that more and more attention is being given to the possibilities of synthetic food production and to the more economical utilization of our present agricultural products with the result that many people seem to think that it will not be long before the growth of population will be relatively independent of the development of agriculture. It will, therefore, be worth while to mention briefly some of the conditions which might affect the importance of agriculture as a basis for the support of population.

1. Probabilities of Synthetic Food Production

Obviously, if the time is not far off when we may expect agricultural products to be replaced by equally satisfactory synthetic products produced cheaply in factories from forest products or from nature's store of minerals, there is no need to discuss the agricultural limitations to population growth either in the world at large or in a particular country; or, if there is a probability that we shall soon be able to utilize cheaper agricultural products (that is, those easier to produce) for our support with entire satisfaction, the customary limits of population support will be removed or, at least, greatly extended. The way these possibilities appeared to Alsberg, a leading physiological chemist, almost two decades ago is shown in the following quotation:

> If it is true that agriculture utilizes the solar radiation so inefficiently and that labor in agriculture is so little productive, why has not the synthesis of food elements been attempted? To the physiologist and the chemist the reasons are obvious. How completely the simple food elements that the chemist already knows how to produce can be substituted for natural foods has not yet been determined adequately. It is only a few years since it has been known that amino acids may be substituted at least in great part for proteins. Not all the

[1] For discussions of food supply in particular countries and in the world consult references 2, 4, 6, 13.

amino acids have as yet been synthesized. Methods for obtaining large quantities of carbonic acid must be devised. The methods of producing simple sugars and fatty acids are laboratory procedures involving many steps and many difficult operations. Probably few of the methods now in use are suitable for large-scale operations. Even if adequate quantities of cheap power were available, it would still be the work of years to translate laboratory practice into large-scale production. It is, however, very doubtful that energy from our common sources of power—coal, oil, water—is at present cheap enough to permit food synthesis to compete with agriculture. Whether the values of agricultural products and of energy from our present sources of power will ever bear such a ratio to one another as to make competition between agriculture and chemical industry feasible, it is, of course, impossible to say. It is more than probable that such competition will not be possible before the advent of some nonbiological method for the utilization of the solar radiation.

In view of the great progress in photochemical theory in the last decade, the problem is far from hopeless. No one could venture to predict when the theoretical and experimental problems will be solved. The solutions may be nearer than most men think. What is most probable is that the practical application will wait on economic necessity. The work in pure science is likely to be completed before this necessity arises. The chemist's task may be done before the engineer is set to work. If the problem is not solved earlier, it will boldly confront us with the exhaustion of the world's coal and oil reserves. The solution of the world's food and fuel problem will be the same. When it is achieved, a more profound social revolution must follow than followed the invention of the steam engine, for the importance of land and agriculture will diminish; and it will remove to a far more distant horizon the bounds that now tend to limit the growth of population (1, p. 524).

Since the above was written much has happened. Synthetic fibers utilizing timber and coal as raw materials have increasingly displaced natural fibers for clothing and are now invading other fields where the latter were formerly used. Research in vitamins and amino acids has made it possible to synthesize many of them more cheaply and thus put them into manufactured products so that a complete diet from the standpoint of nutrition can be had while the bulk of the energy-producing food comes from products which may be lacking in these vital elements. As yet this increasing knowledge of nutrition has been used largely to supply the deficiencies of a diet from which vitamins have been removed or destroyed by the processes of manufacture that have come into use in supplying food to vast city populations. This does not mean, of course, that our newer knowledge of nutrition is limited to such uses. It is quite possible that crops like corn and soybeans, which are now used largely for livestock feed and industrial purposes, can be made into palatable and dietetically satisfactory foods at only a fraction of the cost of converting them into food by way of feeding them to cattle and hogs and then eating meat, milk, butter, and cheese. As will be shown later, a large part of the earth's population actually does directly consume the

crops grown and it is only because they do so that countries like China, India, Japan, and Java are able to support their dense populations.

Thus while it would be folly to assert that the existing agricultural limits to population growth are permanent it would also be equally foolish to suppose that they have been abolished or are likely to be abolished in the near future. It will, therefore, be worth while to explore these agricultural limits, even if briefly.

2. Agricultural Possibilities of the Earth

It is not a simple problem in arithmetic to figure out the possible growth of population in the world, although one frequently gets the impression that this is the case from the writings of superficial observers. Statements that Texas, with an area about equal to that of France or Germany (pre-World War II), could easily support as many people as they (between 40,000,000 and 70,000,000), and probably a great many more, are by no means rare. A glance at a rainfall map of Texas as compared with that of Germany should be sufficient to convince anyone that Texas can never produce as much food as Germany. Both in total amount and seasonal distribution the rainfall is more favorable for crop growth in Germany than in Texas. Moreover, the surface evaporation is much less in Germany. There are also considerable differences in soils, which affect agricultural production very greatly, to say nothing of differences in mineral resources, which furnish the raw materials upon which millions of Germans expend their labor. To make such offhand comparisons of population "carrying capacity" between areas comparable only in size betrays an almost complete lack of knowledge regarding the factors that actually determine the production of food and the other necessities of life. Area is one of the least valuable of all criteria for estimating the population "carrying capacity" of any land. Some lands are far more fertile than others; rainfall is far better distributed, so far as plant growth is concerned, in some lands than in others; and temperature and sunshine favor plant growth more in some regions than in others.

If we look at the earth's surface, even in a very superficial manner, with the chief requisites of agricultural production in mind, we shall see that there are certain regions of the earth that can at once be ruled out of consideration as far as providing support for population is concerned. There are the areas in all the continents which are too cold or too dry to produce any appreciable amount of vegetation. The arctic and antarctic regions of the earth contain approximately 10 per cent of its total area and are all but useless as far as furnishing food is concerned, Stefansson notwithstanding.[1]

[1] The best statement of the food possibilities of the arctic known to the author is given by V. Stefansson in his book "The Friendly Arctic" (11). But even if we

Besides, these cold lands are a very small part of all useless and semi-useless lands, as the following table shows. The lack of rain alone is a very seriously limiting factor over more than half of the world's surface. All land having under 10 inches of rainfall annually can be classed only as very poor grazing land, unless it is irrigated, and only a very small part of the 25 per cent of the earth's surface having less than 10 inches of annual rainfall can ever be irrigated. Most of the 30 per cent of the earth's surface having 10 to 20 inches of rainfall annually is also of little value agriculturally. Some of it is fair grazing land, some of it is dry-farming land and will, in perhaps half the years, raise fair crops of wheat and other drought-resistant crops, and some is fairly good agricultural land, because of good soil and of a location where evaporation is low and the seasonal distribution of rainfall is favorable to plant growth; but on the average it is doubtful whether this land will yield more than one-fifth to one-sixth as much as those areas of the earth which have both reasonably good soil and a sufficient rainfall.

But even on the 45 per cent of the earth's surface receiving more than 20 inches of rainfall annually there is much land that is of little value agriculturally. A few examples will serve to show how little food or clothing we may expect from considerable areas of even the well-watered lands.

In Japan four-fifths of the area is reckoned permanently untillable. It is rocky, mountainous land which defies the efforts of man to wrest a living from it. In our own country there are from 150,000 to 200,000 square miles of land in the Appalachian highlands which are of comparatively little value agriculturally and an almost equal amount in our western mountains. The farmers living in these regions make but a

TABLE 4.—PERCENTAGE OF THE EARTH'S SURFACE HAVING A GIVEN RAINFALL (7, p. 300)

Inches	Percentage
Total	100
Less than 10	25
10–20	30
20–40	20
40–60	11
60–80	9
80–120	4
More than 120	1

scanty living at best, and little or no increase in food production can be expected from them. In Europe, also, large areas of well-watered lands are practically useless for agricultural purposes because of their moun-

accept his optimistic view, I do not see how we can ever hope to get from these regions the meat rations to support more than a few millions of men.

tainous character. The same situation exists in all the other continents. To these lands, too rough and broken to use for agriculture, we must add considerable areas all over the earth which have a soil too poor to yield well although having a satisfactory rainfall and a climate suitable for the production of almost all kinds of crops. In the United States there is much land in the cutover areas in the Great Lakes region and in the South which is of almost no value for crops. At best, such areas, if reforested, could be expected to yield pulp wood for the growing plastics industries. In the tropics there are also vast areas where the soils are so leached by the heavy rainfall that they will grow only trees and only a few types of these. Such tropical areas, and they are of great extent, offer little opportunity for the development of the intensive agriculture which we who live in the temperate zones are only too prone to imagine is possible throughout these hot, moist regions.

3. Population Capacity of the Land Area of the World

A good illustration of the carrying capacity not infrequently attributed to the tropics is found in Penck's estimates that South America can support about as many people as the whole of Eurasia, while Africa can support even more (9). Relying apparently on the great productive possibilities of the better parts of tropical Brazil he even goes so far as to state that that nation can support twice as many people as the United States and Canada combined. It is true, as is pointed out below, that some tropical lands, for example, Java, are very densely settled, but it does not follow that all tropical lands are equally capable of supporting human life. It is highly probable that Java, the Philippines, and certain parts of southern Asia are peculiarly well adapted to support vast numbers of people living very simply; but until a great deal more is known about the Amazon and Congo valleys it is by no means safe to assume that they can support an equally dense population even at the low levels of living prevailing in these lands.

In most countries the better land is already being fairly well utilized, as can be seen from the fact that in China there are probably 1,000 people or more living on each square mile (640 acres) of arable land; while in Java there are perhaps 1,300 to 1,400; and in Japan, over 3,000 (Table 101, p. 265). In other words, there are probably not less than 1.5 persons per acre of arable land in China, about 2 in Java, and more than 4 in Japan. Of course, there is some food imported into and exported from each of these countries, so that it is hard to say exactly what proportions of their populations are supported by home production. Rough calculations by the author, however, indicate that in China the imports and exports of foods just about balance in normal years, and that in Java there is a net export amounting to about 10 per cent of the home production. There is little doubt, therefore, that an acre of well-tilled fertile land will

furnish the necessities of life to two or three persons in climates where two crops a year can be grown, where clothing is of little consequence, and where mere subsistence is all that is expected. But there are not very large areas of the earth which possess all these qualities.

In the United States we have generally had a net export of agricultural products. However, it was not very large in the immediate predepression years; hence, the tilled acres can be divided by the population, and the result will not be greatly in error as showing the number of acres that it takes to furnish each of us with agricultural products. In 1930 there were approximately 3.4 acres in crops to each inhabitant and about 8 acres in farm land. It has been estimated, however, that 2.5 acres of good tilled land would be sufficient to provide an individual with an abundance of agricultural produce if the land were well cared for. Even in the face of the large agricultural surpluses of recent years most well-informed people do not believe that we have produced more than we need except, perhaps, of wheat and cotton. They believe that we have not been able to use these surpluses because we did not get them into the hands of the people that needed them. It would appear that a good level of living would require about the crop land per person now being used in the United States or a more intensive use of the better 75 per cent of that now being tilled. On this basis much of the world is already overpopulated and will continue to suffer from the effects of subsistence living until a better "man-land ratio" comes to prevail.

The point of interest here is not how many people the world can support but rather that agricultural production does limit population in the greater part of the world today as it did almost universally in Malthus' day. I do not mean to argue that the world cannot support more than the 2.2 billions it is supposed to have today. Obviously if Americans and Europeans lived at the level of the Chinese and Hindus we could support a population two or three times as great as we have, and the utilization of the still unsettled but fertile areas of the world would enable man to expand by some hundreds of millions more; but, as Malthus pointed out, the means of subsistence do place a limit to man's expansion in numbers. Today, however, we in the Western world have a chance to choose between the uncontrolled expansion of numbers with a lowered level of living and the control of numbers with a higher level of living, a choice which is not yet practically available to a large part of mankind.

4. Agriculture and Population in China

In order to make still clearer the basic relation between agriculture and population growth I wish to describe briefly the situation in China, a country where this relation is so clear that even he who runs may read.

It is very commonly supposed by the Westerner that China has reached about the absolute limit of population growth. This belief has

been fostered by many impressive statements regarding the great excellence of Chinese agriculture and the equally impressive assertions that the laborious frugality of the Chinese is unsurpassed (8). It is certainly not the intention of the author either to belittle the excellence of Chinese agriculture or to underestimate the agricultural ability and thrift of the Chinese; but he is fully convinced from personal observation, from many conversations with experts in Chinese agriculture, and from much study, that the possibilities of extending Chinese agriculture are generally underestimated while the common conclusion that Chinese population growth is now limited and will continue to be limited by agricultural production is fully warranted (IV, 18, Appendix I, Part 1).

There are still considerable unused areas of tillable land in northern China, Manchukuo, and Mongolia (2). This land is suitable for growing wheat, soybeans, millet, kaoliang, and the usual vegetable crops of northern China. There are also considerable areas on the lower slopes of the hills (China is a land of hills with only a few valleys of any considerable size) which could be used for crops not needing irrigation, while many of the steeper slopes of the hills now allowed to grow to brush and weeds could be used for fruits and nuts. These tree crops would be a very valuable addition to the Chinese diet, which is particularly deficient in just the elements that they would supply. The timber which could be grown on the hills and more weathered mountains would also be of great value in many ways. Besides, there are many nooks and corners on the average Chinese farm which could be used for fruit or vegetables and which are not now used at all. If all these unused lands could be tilled, there is not the least doubt that a considerably larger population could be supported at the present standards; and that considerable additional areas could be tilled with the labor and tools now available is not seriously questioned by those directly familiar with the life of the Chinese farmer.

But this extension of the agricultural area is by no means the only source of more food and fiber in China. In fact, the plant breeder is quite certain that extension of the area is of much less importance than the development of better varieties of the chief Chinese crops. Experts in this field do not hesitate to say that plant breeding alone should easily increase the yields on the present fields by from 20 to 30 per cent. If one is skeptical of such improvement, it is pointed out that already better varieties are actually yielding such increases in Japan and Korea, although only two or three decades ago Japanese yields were little if any better than Chinese yields, while Korean yields were decidedly lower (12, Chap. 2). Besides, the plant breeder is practically certain that in the course of time he can develop varieties still better adapted to Chinese climates and soils, more resistant to destructive plant diseases, and less susceptible to injury by insects than those now being grown. Such

varieties should increase both the yield and the certainty of the harvests.

In addition, it must be pointed out that Chinese tillage although intense according to the Western standards is by no means the most intense that there is. The Japanese, as a people, in many places the Malays, notably the Javanese, and probably certain European peoples take better care of their crops than do many of the Chinese, so that better yields from this source may be expected in the future.

But in spite of the possibilities of improvement in Chinese agriculture the author does not believe that this improvement would do much to raise the general level of living in the country. In the first place improvement in agricultural production would certainly be slow because of the difficulties of communication, the resistance to change among the farmers, and the lack of capital to carry out improvements even if the two obstacles just mentioned were overcome (5). The birth rate in China is high. A rate of 45 per 1,000 was actually found in a small central China community, where an intensive study was carried on during the years 1931 to 1935 (IV, 18). This rate will be raised rather than lowered by any general improvement in food supply and health conditions. On the other hand, the same improvements will temporarily lower the death rate so that the annual increase of population will be greater than it has been in the past. This is the Malthusian dilemma, and in China there is no way out except through a voluntary reduction in the birth rate, a consummation not to be expected in the near future. When population growth follows so immediately upon the increase of agricultural production as it does in China, there is very little likelihood of any appreciable and sustained improvement in levels of living until this direct causal connection is broken.

It will be well in concluding this brief survey of agriculture and population growth to point out that more people live under conditions approximating those in China than under conditions approximating those in western Europe and America. To understand how utterly the growth of population depends upon agricultural production in China is to understand the chief factor underlying population growth among the greater part of mankind. Malthus' *principle of population* still holds true for more than half of the human race. How soon this great portion of mankind can extricate itself from the vicious circle of poverty, children, more poverty, and still more children, even to the same extent as Western peoples, remains to be seen. But that this circle can be broken has been abundantly proved. Once the determination to live better is taken, the means to control the birth rate are at hand. Today man can adjust his numbers to the agricultural resources available to him if he so desires, but this cannot be done in a few years in countries like China, India, and Japan. It is probably a matter of decades.

References

1. ALSBERG, CARL L.: "Progress in Chemistry and the Theory of Population," *Ind. and Eng. Chem.*, 16 (1924), 524–531.
2. BAKER, OLIVER EDWIN: "Agriculture and the Future of China," *Foreign Affairs* (American), 6 (1928), 483–497.
3. ———: "Population, Food Supply, and American Agriculture," *Geog. Rev.*, 18 (1928), 353–373.
4. BOWMAN, ISAIAH, ed.: "Limits of Land Settlement," 380 pp., Council on Foreign Relations, New York, 1937.
5. BUCK, JOHN LOSSING: "Chinese Farm Economy; a Study of 2866 Farms," 475 pp., University of Chicago Press, Chicago, 1930.
6. GRAY, L. C., O. E. BAKER, F. J. MARSCHNER, B. O. WEITZ, W. R. CHAPLINE, WARD SHEPARD, and RAPHAEL ZON: "The Utilization of Our Lands for Crops, Pasture, and Forests," *U. S. Dept. Agric. Yearbook*, 1923, pp. 415–506, Government Printing Office, Washington, D.C., 1924.
7. JONES, WELLINGTON D., and DERWENT S. WHITTLESEY: "An Introduction to Economic Geography," 603 pp., Vol. 1, Natural Environment as Related to Economic Life, University of Chicago Press, Chicago, 1925.
8. KING, F. H.: "Farmers for Forty Centuries," 379 pp., Jonathan Cape, London, 1927.
9. PENCK, ALBRECHT: "Das Hauptproblem der physischen Anthropogeographie," *Zeitschrift für Geopolitik*, 2 (1925), 330–348.
10. SMITH, J. RUSSELL: "The World's Food Resources," 634 pp., Henry Holt and Company, Inc., New York, 1919.
11. STEFANSSON, VILHJALMUR: "The Friendly Arctic; a Study of Five Years in Polar Regions," 784 pp., The Macmillan Company, New York, 1922.
12. TAWNEY, R. H.: "Land and Labour in China," 270 pp., Harcourt, Brace and Company, New York, 1932.
13. TAYLOR, ALONZO ENGLEBERT: "The Future Food Supply of the United States," 23 pp., *Bull. N. Y. Acad. Med.*, November, 1927.

Questions

1. What are the probabilities of synthetic food production in the near future? Discuss the chief obstacles.

2. What are the natural limitations of agriculture? How do they affect food production in the section of the state that you know? Give other examples of natural limitations upon agricultural production.

3. Arizona is larger than Ohio; can the former support more people than the latter? Why?

4. How many people can be supported on the land area of the world? Explain your answer, and give reasons for it.

5. How would you explain the differences in the per capita acreage being tilled in various countries?

6. In what respects does Malthus' *principle of population* still apply to China?

7. What is the chief obstacle to the improvement of standards of living in China?

8. Describe living conditions in China from articles and stories that you have read. What do they tell you about the factors affecting the death rate?

9. Discuss the agricultural changes in the United States since World War I. Are they likely to continue? What is the likelihood of a food shortage in this country? Justify your answer.

10. Give some examples of the way agricultural production affects population growth.

CHAPTER VI

POPULATION GROWTH AND THE INDUSTRIAL REVOLUTION[1]

That population grew faster in western Europe and its colonies during the nineteenth century than had ever happened in the previous history of the world and that this rapid growth of population was accompanied by a very general and a very great improvement in the standard of living of the masses demand explanation. It is little wonder that many people, seeing these facts, should suppose that Malthus was entirely wrong in his views regarding population growth and its relation to subsistence.

It is true that Malthus but dimly realized the significance of the economic changes which were going on about him, but it is also true that he did realize, as many of his contemporaries did not, the utter folly of supposing that man's growth in numbers had no relation to his welfare. The reasons why the anomalous growth of European population, which was getting under way in the eighteenth century, has not led to the dire consequences he predicted are not far to seek. They are to be found in the economic changes arising out of that new organization of society which was in process of development in Malthus' day as the consequence of the Industrial Revolution (5, Part 1, Chap. 3, and Part 3, Chap. 1).

It was but natural that Malthus should be limited in his outlook by the conditions with which he was familiar, and there was much in his surroundings which made it seem probable that population would continue to be limited by the means of subsistence it could produce at home. But even so he failed to evaluate adequately two very basic changes which were taking place. In the first place he did not recognize the fundamental social and economic changes which were made possible by the advances in science and technology which were going on about him, and, in the second place, he practically ignored the possibility of the control of population growth inherent in the voluntary control of conception. It is little wonder, therefore, that he failed to foresee how his doctrines would need modification in the succeeding century as industrialization proceeded.

1. Birth and Death Rates in Europe Prior to the Industrial Revolution

Malthus was aware, as is shown in Chap. II, that changes were taking place in his day which promised some increase in the comfort of mankind;

[1] For a description of the general features of the Industrial Revolution see references: 1; IV, 7, Chap. 5; I, 4, Industrial Revolution; 3; 6.

but he certainly did not foresee the extent to which they would for a time eliminate the positive checks to population growth in the Western world or that they were to issue in a new kind of preventive check that would make it comparatively easy for man to keep his number within such limits as he might desire.

In order to understand the way in which the Industrial Revolution acted upon population growth, it will be well to turn attention very briefly to the vital statistics of the eighteenth century and to compare them with those of our own day. In the decade in which Malthus published his first Essay, there were in Sweden 33.3 births and 25.4 deaths per 1,000 of the population. Fifty years earlier both birth and death rates were about two points higher. In 1940 the birth rate in Sweden was 15.0 and the death rate was 11.4. Both the birth rate and the death rate have been cut over one-half from Malthus' day to the present (7, 1941, pp. 48–53). Since there is good reason to believe that the conditions of life in Sweden in the latter part of the eighteenth century were more favorable to the increase of population than in most of the other countries of Europe, we can judge somewhat of the death rates that prevailed generally at the time. In the larger cities, in particular, the growth of population prior to the Industrial Revolution was probably due solely to migration into them. Thus a record of baptisms, marriages, and deaths in Paris covering a period of twelve years and seven months—1670 to 1675 and 1678 to 1684—showed an excess of 22,790 deaths over births and for an 81-year period, 1707 to 1789, there were 5,078 more deaths than births (4). There is also evidence which cannot be ignored that in London the death rate was as high as 50 per 1,000 in 1750 and that it was still over 30 in 1800 (IV, 5, Chap. 3). Furthermore, in the period from 1700 to 1750 it is estimated that there were 500,000 more deaths than births in London—an excess of deaths over births of about 10,000 per year, which was equivalent to about 20 per 1,000 of the total population. It is true that in the smaller towns and rural districts of England there was a considerably lower death rate than in London and some of the other larger places; but, even so, it was probably not less than 35 per 1,000 in the middle of the eighteenth century for the whole of England. It fell to between 25 and 30 by 1800. It is obvious that with death rates of 35 to 50 there can be little or no growth of population, because the birth rate can seldom have exceeded 40 to 45, which approaches the maximum known rate for a population constituted as this population must have been. When, however, the death rate fell to 25 or 30 per 1,000, as it did by 1800, there was clearly a considerable margin for increase, even if the birth rate did not exceed 35, and it may very well have been higher. In 1932 the death rate in England and Wales was 12.0, the birth rate was 15.3 and, of course, the rate of natural increase was almost as high as though the death rate had been 30 and the birth rate 34.

The decline from a death rate of 50 in the London of 1750 to one of 11.2 in 1934 is to be attributed largely to the changes in manner of life made possible by the Industrial Revolution (2). For the first time in history man's control over nature made it possible for him to live in fairly large groups and still avoid an enormous death rate. Until about the middle of the eighteenth century it was practically impossible to supply any city, even a small one, with wholesome food, good water, a small measure of sanitary sewage disposal, moderately decent housing, and a minimum of medical attention. Buer's description of sanitary conditions in the English towns of the medieval period will make this abundantly clear.

The streets of medieval towns were generally little more than narrow alleys, the overhanging upper stories of the houses nearly meeting, and thus effectually excluding all but a minimum of light and air. In the seventeenth century Bristol, which still remained typically medieval, the average breadth of the streets was under 20 feet and only trucks and sledges were allowed for transport in the center of the town. In most Continental towns and some English ones, a high city wall further impeded the free circulation of the air. The main streets might be roughly and ineffectually paved with cobbles, the rest of the streets, or rather alleys, would be totally unpaved. Rich citizens might possess a courtyard in which garbage was collected and occasionally removed to the suburbs, but the usual practice was to throw everything into the streets including the garbage of slaughter houses and other offensive trades. By-laws against this practice were quite ineffective, as were the regulations ordering citizens to scavenge the street in front of their houses. Filth of every imaginable description accumulated indefinitely in the unpaved streets and in all available space and was trodden into the ground. The water supply would be obtained either from wells or springs, polluted by the gradual percolation through the soil of the accumulated filth, or else from an equally polluted river. In some towns, notably London, small streams running down a central gutter served at once as sewers and as water supply. The dwelling houses of the well-to-do would be of timber, or timber-framed upon a foundation of brick or stone. Even these, picturesque as they appear to a modern eye, seem to have been designed to admit a minimum of light and air. The dwellings of the poor were mere hovels, built of unseasoned wood and with tiny windows. In the seventeenth century London, which before the Fire largely remained a medieval city, the poorer class house had only a covering of weatherboards, a little black pitch forming the only waterproofing, and these houses were generally built back to back. Thousands of Londoners dwelt in cellars or horribly overcrowded tenements. A small house in Dowgate accommodated 11 married couples and 15 single persons. Old mansions had been converted into 20 or even 30 tenements. It is possible that the overcrowding was worse at this period than during the Middle Ages but there is no proof of this. Another source of unhealthiness were the church vaults and graveyards, so filled with corpses that the level of the latter was generally raised above that of the surrounding ground. In years of pestilence, recourse had to be made to plague pits in order to dispose of the harvest of death. It is not

surprising that the deaths in all medieval towns largely exceeded the births, so that the towns only survived by constant recruitment from the country; this drain on the country was supportable, since the town population was relatively very small. But the towns also indirectly decreased the population by acting as forcing grounds for pestilence which spread over the country side (IV, 5, pp. 77–78).

It is no disparagement of medical science and practice to recognize that the great decline in the death rate that has taken place during the last two centuries in the West is far more largely due to the improvement of sanitary and economic conditions than to the improvements in the practice of medicine. Of course, many of the sanitary improvements that have taken place were shown to be necessary by medical authorities, but we must recognize that the actual installation of improvements depends upon the development of engineering rather than on medical practice and that back of all must be an economic order which is sufficiently productive to allow of a diversion of considerable quantities of its output to such uses. So long as there was no surplus product beyond the daily needs of the people, there could be none of those sanitary improvements which must precede a low death rate. As a consequence of these sanitary improvements and of the better economic status of a considerable part of the population it appears that probably for the first time in history it became possible, about the beginning of the nineteenth century, to have large towns and cities in which births exceeded deaths. This had always been possible and had frequently happened in agricultural communities under favorable conditions, as in this country where, after the establishment of the first settlements, there was generally a large excess of births over deaths.

The importance of the improvement of sanitation in cities can scarcely be overestimated, for the Industrial Revolution has made cities necessary and has led to a great and steady increase of the proportion of the population found in them. If they had continued to kill off each year 2 per cent of their total numbers in addition to the number born in them, as London probably did between 1700 and 1750, the population of all Western lands would soon have become stationary; for the rural population could not long have supplied the cities with the surplus that they would have demanded. Bearing in mind this change in the death rate, which paved the way for a large natural increase of population, let us turn to the consideration of the more basic changes in our social and economic organization which underlay these changes in the death rates. It is also interesting to note that these changes introduced new elements into the thinking of people, and the newer mental attitudes leading to the control of fertility appear to be an unexpected but natural outcome of this revolution. These fundamental changes in the social and economic order are to be regarded as the basic factors governing the growth of population in the West today and as such merit careful attention.

2. Changes Wrought by the Industrial Revolution

The features of the Industrial Revolution to which may be ascribed the rapid growth of population during the last century and a half are two: (1) the development of power machines for the manufacture of goods and for the extraction of nature's wealth from the soil and (2) the application of power to transportation and communication. Of course, there were many other phases to the Industrial Revolution, but these two had most to do with the growth of population, because they made possible both the cheaper production of all manner of goods and the rapid transportation of persons, ideas, and goods from place to place.

The improvements in production and transport following upon the application of steam power to machines made it possible for the western European to free himself very largely from the action of the positive checks to population growth for more than a century. They enabled him to tap new resources and to gather a bounty from nature which had heretofore been inaccessible to man. It requires no argument to convince anyone today that this is so, that power-driven machinery has enabled us to produce many times the amount of goods that we could have produced by hand power alone. But probably even more important than the increase in man's power to produce goods was the increase in his power to transport them from place to place. It is extremely difficult for us to realize nowadays how onerous and slow land transportation was a century and a half or two centuries ago. There were very few roads in any country on which a wheeled vehicle could move at all times of the year. The pack horse was perhaps the chief means of moving merchandise over any considerable distance in Europe, while in many parts of the world man was his own beast of burden, either carrying loads on his shoulders or pushing them on a wheelbarrow. Of course, only relatively expensive goods of light weight which could bear a high cost of transportation could be moved any distance in this manner. Under these conditions almost all communities were necessarily self-sufficing, and very few goods moved far from the point of production.

Water-borne commerce was in a much better situation than land commerce. The science of navigation was well developed before 1700, and shipbuilders had attained a high degree of seaworthiness in their products. Those countries which had ready access to the sea had an advantage over countries which had to depend largely on land transport. This is no doubt one of the reasons for the early and rapid development of modern industrialism in Great Britain.

But the transport of goods is probably of less importance in many respects than the transport of persons and ideas, although the two always go hand in hand. With the rapid extension of commerce during the eighteenth century went an almost equally rapid spread of ideas, which resulted in a quickening of the whole mental life of western Europe and

thus helped prepare the way for the growth of the present social order. With the building of canals and roads, which accompanied or even, in some cases, preceded the actual adoption of the new methods of production, markets became larger and more stable, transport became quicker and cheaper, and a new stimulus was given to human enterprise, particularly in the economic field. Better and cheaper transportation made it possible for new industries to develop in naturally favored localities where costs of production were low, since the product could be shipped where it was needed at a relatively small cost.

The methods of agriculture were revolutionized also; it was no longer necessary for each locality to be wholly self-sufficing in food and fiber production. European agriculturists began to produce staples for markets some distance away, generally cities, as well as for the local community; and this led to a revolution in agricultural methods which greatly increased the efficiency of labor on the land. Between the increased productiveness of agriculture and the better transport, local famines—which were frequent all over Europe, even in England, down to about the middle of the eighteenth century—were practically done away with in the West by the middle of the nineteenth century, and one of the important factors making for slow population growth ceased to operate.

It is not generally realized how common famine was in Europe until quite recently. When there were no roads and almost no means of communication between localities, even when they were only a few miles apart, any local crop failure was almost certain to result in a higher death rate in the stricken area. There was no means of carrying food from one place to another, and there was no organization to undertake this responsibility, even if the transport could have been accomplished. Thus in Sweden the death rate increased from 24.8 in 1760 to 32.9 in 1763, which was a year of poor harvests, while in 1773 it rose to 52.4 after two or three years of poor harvests. In 1809 it was again far above the level of preceding years. Since that time there is no such marked increase in death rates following poor local harvests in Sweden (7).

The improvement of transport and production gradually made it possible for one locality to draw succor from its neighbor and for one country to draw sustenance from other countries at a distance. The new agricultural area thus made available to Europe was enormous, extremely fertile, and easily tilled by the new machines which began to appear about 1800. Foreign trade in foodstuffs gradually became a regular feature of the commerce of the world during the nineteenth century. By the middle of this century England had definitely become a food-importing country; and food was available in these newly opened lands for such other countries as needed it and had manufactured goods to trade for it. For practical purposes, the improvement of transport had, by the middle

of the nineteenth century, more than doubled the area and resources of Europe.

This vast expansion of Europe's area and resources resulted in the practical removal of hunger and famine as positive checks to the growth of population for about a century, and population grew more rapidly than ever before in human experience. This extremely rapid growth of population, far from proving that Malthus was wrong regarding the forces making for population growth in his day, bears out his chief contention. He was right in supposing that under the conditions prevailing in his day population would increase if more subsistence were available. He was wrong in supposing that man's increase in numbers must inevitably proceed at a more rapid rate than his production of subsistence. He overlooked the effect of the Industrial Revolution on the death rate by making possible a steadily rising level of living.

In Malthus' day a very large percentage of the total population was needed to produce the agricultural products essential to life. In England at that time, the proportion of the population engaged in agriculture was probably not far different from that so employed today in China and India, that is, approximately 70 to 80 per cent. Now, however, in such countries as the United States and Australia, where a large amount of agricultural machinery is employed, it appears that not more than 20 to 22 per cent of the working population is actually being used to produce the agricultural products consumed by the entire population and still have a surplus for export. Besides, we have both a greater variety and a more certain supply of food than any people had in Malthus' day. Furthermore, if we were to make full use of the best of the known means of agricultural production, probably not more than 15 to 18 per cent of our population would be needed to clothe us comfortably and feed us abundantly as long as the farmers continued to put in the hours that they have been accustomed to. Malthus could scarcely have dreamed of such an increase in the productivity of agricultural labor.

It is obvious, of course, that if only one-fourth as large a proportion of the population is needed to supply us with agricultural products now as was needed in Malthus' day, those released from this task can be employed in providing other things which may be desired. It is from the work of those who are no longer needed in agriculture that we derive the means to provide the sanitation which has so reduced our death rates; also the means to support the scientists and doctors who have done so much to relieve us from the ravages of disease. From the same source have come the workers who have provided us with better housing and purer water. Our increase in leisure and a thousand and one other factors which contribute to better health and the greater ease of life among the masses of the people today come from the same source. In a word, man's ingenuity in the invention and use of machines for the

exploitation of the accumulated resources of the earth has made it possible for him to increase in numbers at an unheard-of rate during the last century and yet be better off economically at the end than at the beginning. Yet Malthus was right when he called attention to the fact that such a situation could not continue indefinitely.

3. Industrialism and the Birth Rate

There is another aspect of the effect of the Industrial Revolution upon population growth, which we are only now beginning to appreciate but which seems likely in the not-distant future to render Malthus' views on the growth of population as affected by the unchangeability of sex passion of historic interest only. It is that for several decades, at least, the more highly industrialized nations have shown a fairly rapid and steady decline in the birth rate. The reasons for this will not be discussed at this point, but it may not be amiss to say that the very agglomeration of people which was made possible by the application of steam to manufacturing and transport seems to have developed modes of living which are unfavorable to a high birth rate. Thus, the same conditions which have made man's use of nature more effective, and which have made him feel that he can control nature within rather broad limits (through cooperation with her, of course) have made him desire to extend this control to his own destiny. It has become quite obvious to all that, when children no longer die like flies and when epidemics are largely under control, the individual suffers in many ways from an unrestricted birth rate. Consequently, the control of births is spreading rapidly in the West, first in the more highly urbanized areas and then slowly, but apparently none the less certainly, in the rural areas. Industrialism, which for almost a century bade fair to flood the world with people, so that not even its continued advance in efficiency could ensure them a good living, has provided its own cure in making living conditions such that a steadily increasing proportion of the people refuse to rear large families. Indeed, many of them refuse to rear children at all.

If Malthus had analyzed more carefully the tendencies of the new system growing up about him, he might have seen some of the characteristics which it now exhibits so clearly; but it is hard to see how he could have foreseen the spread of the voluntary control of births which has taken place of late years among almost all Western peoples. It seems clear to many today that the crowding of people together in large cities, which is so characteristic of modern industrial and commercial activity, is decidedly inimical to family life and reproduction. But in 1800 no one could anticipate such agglomerations of people as exist today, much less the effects of these agglomerations upon the attitudes of mind of the people as they react upon the birth rate.

But very clearly the Industrial Revolution has wrought a revolution in our mental as well as in our economic life. In the past man's mental attitudes were based upon the unquestioning acceptance of tradition and custom; in other words he inherited his social attitudes. In this new era the distinguishing characteristic of our mental life is the instability of our mental attitudes. So many and such conflicting impressions enter the minds of most people today that they are unable to organize them into any integrated whole, with the result that conduct tends to become erratic and unpredictable for an increasing proportion of the population. This aspect of the Industrial Revolution cannot be pursued far at this point, but the way in which our mental life has been disorganized by the changes contingent upon this revolution is only beginning to be understood; it needs far more attention than has been accorded it hitherto.

Naturally, any set of circumstances resulting in such an upheaval in mental attitudes was bound to exert a profound influence upon the reproductive life of the people affected by it. When simple means for controlling reproduction (contraception) became generally available, the revolution in reproduction could not be long delayed. We are now in the midst of this revolution, as will be made clear in later chapters. What the end will be no one can tell, but we should not forget that it is the manner of life brought about by the Industrial Revolution which lies at the root of the changes in population growth which have taken place during the last century and a half and of those upon which we are now entering. The techniques of contraception as well as the motives leading to their use are also among the consequences flowing from the Industrial Revolution.

In looking into the future and attempting to foresee the probable trends of population growth we must, if this analysis of the effect of modern industry on population growth is correct, take account of the probable extension of modern industry into new areas, its intensification in areas where already lodged, and the spread of urban influences into rural areas. Only by so doing can we hope to arrive at a reasonable conclusion regarding the growth of a people in the next few decades and foresee the problems which this growth is likely to present. Since no one will deny that our welfare in the near future depends in many ways upon the nature and extent of our population growth, it behooves us to give careful consideration to the effects of modern industry upon man's increase and to consider how industry can be so guided that it, in turn, will make possible the most desirable growth in our population. These matters will be discussed in more detail later.

4. Summary

In concluding this brief discussion of the Industrial Revolution and population growth it should be pointed out again that the earliest effects

of the increase in man's productive power were to make possible an extremely rapid increase in Europe's population. The Industrial Revolution largely removed the two great positive checks to population growth which had always been operative in greater or lesser degree until that time, namely, the lack of the necessities of life and the heavy incidence of disease due to the utter lack of sanitation, as we understand that term. The result was just that rapid increase in population which Malthus said would follow the removal of these checks. For more than a century and a half this growth has been almost uninterrupted and is only recently slowing up because of the application of a type of preventive check which did not enter into Malthus' calculations.

This new preventive check is being made use of in consequence of the new manner of life made possible and necessary by the Industrial Revolution. It is just as natural and inevitable as the revolution itself, and it bids fair to upset Malthus' predictions of future hardship for those peoples among whom its practice becomes general. Thus, we can look to the future, so far as the increase of numbers among industrialized peoples is concerned, with but little misgiving as regards overpopulation. There is almost no likelihood that the peoples having knowledge of contraception will endure for long the hardships of a declining standard of living and of the rise in the death rate which must necessarily accompany such a decline. Industrialized man will no longer submit tamely to the hardships of a too numerous family.

This does not mean, however, that the danger of overpopulation is past for all peoples or even for any people at all times. As will be indicated elsewhere, it appears that England is overpopulated today because of economic changes which are largely beyond her control. Consequently, she will experience some of the evils of overpopulation until economic conditions become more favorable, either through the expansion of her trade or through the decline of population to the point where all the people can find profitable employment. Thus, even highly—perhaps too highly—industrialized lands may experience overpopulation, but it need not be for more than a few decades, and with more careful appraisal of the situation in advance even such maladjustments of population to economic opportunity should become less frequent and should also entail less hardship. Beside the temporary maladjustments, there will, of course, continue to be those stresses and strains between population and sustenance which have generally, if not always, characterized preindustrial civilizations. It is to such peoples that Malthus' doctrines apply, and will continue to apply, as long as their conditions of life remain as they are.

In the light of our broader experience today we have far less reason to make the same cardinal mistake that Malthus did. He assumed that the social and the economic conditions of his time were the normal and

usual conditions and also that they would continue as they were indefinitely. We are accustomed to change, and we should also have learned that no particular social order is more normal or usual or natural than another. Every social order is natural under the conditions which produced it and which make its continuance possible, but under other conditions other orders are just as natural and are certain to be confronted with different problems.

When in the course of time our present industrialism changes its form or issues in a new type of social organization, then we may confidently expect new factors to enter into the determination of population growth and new problems of adjustment of numbers to resources to arise. With the outlook that we now have perhaps we may more accurately anticipate some future trends than Malthus and his contemporaries could; but it is not at all unlikely that in many respects we shall fall far short of appreciating fully the influence of the tendencies of our day, just as Malthus did in his, even though our greater knowledge gives us less excuse for doing so. For example, there is a strong tendency today to assume that the rapid growth of population which we have witnessed in the West during the last century and a half is the normal or usual condition, with the result that many people are much disturbed now that the birth rate is falling rapidly and that there is good prospect of a stationary or even of a declining population.

Such a brief discussion of how the Industrial Revolution affected population growth in the West during the last century and a half or two centuries is basic to any understanding of what has happened, but it is far from adequate as a presentation of the role of industry in the development of population. This matter will be more fully treated in the succeeding chapter.

References

1. BEARD, CHARLES A., and MARY R. BEARD: "The Rise of American Civilization," 2 vols., The Macmillan Company, New York, 1927.
2. GEORGE, M. DOROTHY: "Some Causes of the Increase of Population in the Eighteenth Century as Illustrated by London," *Econ. Jour.*, 32 (1922), 325–352.
3. GONNER, EDWARD C. K.: "The Population of England in the Eighteenth Century," *Jour. Roy. Stat. Soc.*, 76 (1913), 261–296.
4. LANDRY, ADOLPHE: "La Démographie de l'ancien Paris," *Jour. de la société de Paris*, No. 2 (1935), 37.
5. MANTOUX, PAUL: "The Industrial Revolution in the Eighteenth Century; an Outline of the Beginnings of the Modern Factory System in England," rev. ed., 539 pp., trans. by Marjorie Vernon, Harcourt, Brace and Company, New York, 1928.
6. MOFFIT, LOUIS W.: "England on the Eve of the Industrial Revolution; a Study on Economic and Social Conditions from 1740–1760, with Special Reference to Lancashire," 312 pp., P. S. King & Son, Ltd., London, 1925.
7. Sweden, Statistiska Centralbyrån: "Statistisk Årsbok för Sverige," 1——arg. 1914——, Stockholm, 1914——.

Questions

1. Is there any necessary relation between increase in population and human welfare? Why?
2. Compare the vital statistics in the period previous to the Industrial Revolution with those of more recent times. What story do they tell?
3. Does a high birth rate mean a rapid growth of population? Explain, and give definite examples.
4. Describe the sanitary conditions of towns and cities prior to the Industrial Revolution. Have you seen such conditions? If so, where?
5. What features of the Industrial Revolution made it possible to support an increasing population at higher standards?
6. Do you see any likeness or difference between the conditions fostering population growth in the early days of the Industrial Revolution and those existing in the United States today? Give reasons for your answer.
7. What changes in economic life made possible a decline in the mortality from famine? Illustrate from current events, if possible.
8. Discuss some changes in mental attitudes affecting population growth which have accompanied the development of modern industry. You can get your materials from talking with older people or from reading diaries and autobiographies.
9. How do you think an industrial revolution in Japan or China would affect its birth rate? Why?

CHAPTER VII

INDUSTRY AND COMMERCE AS BASES FOR THE SUPPORT OF POPULATION[1]

Probably every country has something to teach other countries regarding the use of the means available for the support of population. To the younger offspring of Europe and to Japan the lessons to be learned from the industrial and commercial experiences of Great Britain are probably of the greatest interest at the present time. For there is not one of these countries but envies Great Britain the economic power that she wielded from the close of the Napoleonic Wars to the outbreak of World War I, and not one but would pursue whatever policies might seem necessary to enable it to emulate Great Britain. It would seem particularly worth while, therefore, to ponder carefully the facts of Britain's situation in order to learn some of the lessons that they have to teach us, although we should also be able to learn much from the experiences of other peoples in maintaining their populations.

1. Rise and Fall of Trade Centers

It is a well-known fact that, in general, centers of commerce and industry rise through some definite advantage which stimulates their growth, that they flourish for a time and then decline in power. Sometimes they disappear altogether as did Troy, Mycene, Carthage, and numerous others. Sometimes they become second-rate market towns serving only a restricted area, as did some of the Hanseatic towns. Sometimes they decline only relatively, owing to the more rapid growth of other centers, as in the case of Venice and Nice (II, 3, Venice, Carthage).

Industry and commerce, in general, appear to be rather fickle sources of support to the places and peoples that become their devotees. If, in more recent times they seem steadier and more dependable, it is probably due to the shortening of our historical perspective as regards modern cities. London, Paris, Antwerp, Amsterdam, Canton, Bombay, and a number of other cities have held positions of more or less economic importance for several centuries. They have all had their ups and downs, however—their times of prosperity and depression. In the Orient, particular cities have been important centers of industry and commerce

[1] General references: 1; 2; 4; I, 4, Commerce, Commercialism, Industrialism; 5; 7.

for comparatively long periods, but even here the relative importance of different cities changes quite rapidly. Witness the decline of Peiping (Peking), Kyoto, and other older centers of industry and commerce and the rise of Tientsin, Shanghai, Osaka, and other new centers more advantageously located.

Since the Industrial Revolution, we have seen a growing tendency for whole nations to put their faith in industry and commerce as a basis for the support of their populations. Great Britain was, of course, the leader in modern economic development and for about a century has been relying more and more on her industry and commerce to furnish the means for the support of a rather rapidly growing population. Her political power, too, was largely the outcome of her preeminence in industry and commerce. Her great and continued success in wielding vast influence in world affairs because of her industrial and commercial strength has led her to put almost unlimited confidence in these pursuits alone. This is witnessed by the fact that, at the present time, agriculture employs less than one-tenth of her population (3) and furnishes the food for only about two-fifths of it; in addition to food, native agriculture furnishes probably about one-half of the wool consumed, while all other agricultural products are procured abroad in steadily increasing amounts. On the other hand, Great Britain's natural resources, other than agricultural, are utilized almost to the full because they contribute directly to her industrial and commercial prestige; for example, her iron ore meets from one-half to three-fourths of her yearly needs, her coal supplies all her needs plus some for export, and her tin is still of much value, though steadily decreasing in importance compared with the imported product.

Elsewhere the author has maintained that it is unlikely that Great Britain can ever regain the position of industrial and commercial preeminence that she held before World War I (8; 9, Chap. 12). She has too many efficient competitors, and the expansion of foreign markets is likely to proceed at a slower pace than during the half century preceding 1914. If this is indeed the case, Great Britain finds herself today in much the same position that a commercial and industrial city of former times found itself when new trade routes were opened up or when new sources of the products in which it specialized were discovered. The truth of the preceding statement will be still more apparent at the end of the present war. Whatever the issue, Great Britain is on the way to become a second-rate power along with France.

The conditions which make it possible for any city or country to attain great preeminence in industry and commerce and to support a large part of its population by trading with other areas are necessarily uncertain and temporary because they arise out of the exercise of some monopoly which can seldom, if ever, be long maintained in the face of competition from other peoples and other areas.

2. Conditions of Temporary Monopoly, Natural

The conditions upon which a temporary monopoly is based are of two kinds: (*a*) natural and (*b*) acquired. If the natural resources of an area in certain materials are practically inexhaustible, are not progressively difficult to exploit, are essential to the welfare of large numbers of people, are the only such resources available, and if no substitute can be found for them, then and then only are the industries based on them and the trade growing out of their use likely to be permanent. Very few if any of the resources under the control of any nation meet the conditions here laid down. Either they are exhaustible, or they exist elsewhere in as available a form, or there are substitutes for them, or they are not essential to the life and happiness of any great part of the human race. Even the potash of Germany, often spoken of as a natural monopoly, does not meet all these conditions. It is certainly not inexhaustible—in fact, there is comparatively little of it—and the most permanent agriculture that we know—Chinese—manages to thrive without it. As long as it lasts, however, export trade in it will support a certain number of people, though, of course, only a very small fraction of Germany's present population.

As regards the most basic resources of modern industry—coal and iron—no nation has anything like a monopoly. It is true, of course, that certain countries, because of their lack of these basic resources, will never become great centers of factory industry. But it is just as true that no country can in the future expect anything like the industrial and commercial preeminence that Great Britain enjoyed during the time when she had almost a monopoly in the foreign trade in manufactured goods, unless this monopoly is enforced by military power, as Germany apparently intends that it shall be if she wins the present conflict. It should be clearly recognized in this connection that the possession of great resources is an altogether different thing from having a monopoly of resources. The former may furnish the basis for a long-continued national prosperity, if properly used, but it does not furnish the basis for any long-continued preeminence in world trade if other countries also have an abundance of such resources. So far as can be told at present, then, there is little likelihood that any nation has the *natural* resources to enable it to support a highly industrialized population, largely dependent on outside sources of food, for any great length of time.

On the other hand, the lack of certain natural resources may make a given area dependent on other areas for certain goods for an indefinite period. Thus, the comparative lack of fuel in South America seems likely to keep it predominantly agricultural for some time to come. But this fact does not assure to any particular country a steady supply of food and raw materials from this area, as there will henceforth be several

countries competing for the privilege of getting these raw materials in exchange for their manufactures.

Certainly Great Britain has no basis in her own natural resources for a permanent position of preeminence in manufacturing and commerce. No more have the other countries which are competing with Great Britain and would like to displace her as the economic leader of the modern world. Germany, the United States, and Japan are the most active foreign competitors of Great Britain at the present time, and they are also just as active in competing with one another. Each probably has certain natural advantages of resources, or climate, or location, which will enable it to carry on certain industries or to cultivate the trade of certain peoples better than the others. But these advantages are not large in any one of them, and it would be folly to base a hope of economic supremacy in world trade upon them. This is especially true in the case of Japan.

Advantages of location would seem to be the most permanent of all natural advantages in the struggle for foreign trade, although even these are greatly modified by the development of new means of transportation and the shifting of trade routes. Venice, as was mentioned before, succumbed upon the establishment of an all-water route to the East. Great Britain's very favorable location for trade in the North Atlantic is, on the whole, less favorable now that a larger proportion of the world's trade enters the Pacific. Japan should always gain some profit from her location off the east coast of Asia, and the United States should derive some permanent benefits from her ready access to the markets of both the North Atlantic and the North Pacific as well as to certain parts of South America. Anything that cheapens transportation, however, tends to equalize the value of different locations, and it seems probable that differentials in commercial activity due to this cause will be less in the future than in the past.

Another advantage which is quite permanent and which will exercise more or less influence upon the commercial prestige of a nation is its climate. Thus, textiles of certain kinds are more easily manufactured in certain climates, although the artificial creation of favorable manufacturing conditions within factories is rapidly rendering even such advantages of little consequence. Possibly some other types of industry may also be better adapted to particular climates—steelmaking to the temperate latitudes—but it seems more likely that climate will play a less important part in industrial and commercial success in the future than in the past. It is in agricultural production, of course, that climate appears as one of the important determining factors, but even here it does not seem that any country possesses a monopoly of any particular kind of climate adapted to the economical production of some particular crop; consequently, climate can furnish no basis for the enduring preeminence of any people or nation in industry, commerce, or agriculture.

So far, then, as one can see there is no sound basis for any country to hope for a position of leadership in world industry and commerce lasting any great length of time because of its superior natural advantages in resources, in location, or in climate. If any country is to attain and hold such a position, it must be on some other basis than the endowments that nature has given it. This brings us to the consideration of the acquired advantages which may lead to this result and of the likelihood of their being permanent.

3. Conditions of Temporary Monopoly, Acquired

These acquired advantages, aside from the use of force, may be summed up under two heads: (*a*) advantages of technique and (*b*) advantages in the accumulation of capital. The last probably flows largely from the first, although differences in the social organization of two countries might determine the distribution of the goods produced and thus the rate of capital accumulation, that is, whether the surplus above necessary consumption would take the form of new consumption goods and be widely distributed and consumed or of production goods and fall into the hands of a small group accumulating them for further production.

It is to the advantages of technique that Great Britain owes most of her greatness during the last century. The application of steam power to manufacturing processes at once gave her a long lead over the Continental countries. Her workmen and engineers soon developed a machine technique which made her industry far more productive and profitable than the old hand industries. Her economic leadership rested largely on this monopoly of the technique of machine production, which was hers for some decades. But this factor is decidedly one of temporary nature. The proof of this lies in the rapidity with which the productiveness of many British industries has been equaled and surpassed by those of other countries.

It requires no more than statement to convince anyone that the training and knowledge of the engineers of any country are readily acquired by those of other countries and that the skill and experience of the workers in machine industry are just as rapidly diffused. The types of organization developed both in the productive processes and in the distributive processes of modern nations are also open to the inspection of the world. There is no reason why successful processes, with the necessary local adaptations, should not spread over the whole world in a comparatively short time. Japan's success in adopting and adapting the economic processes developed abroad abundantly proves the ease with which these can spread under favorable conditions. The success of the students from the Orient and South America in the technical schools of Europe and North America also shows how readily technical knowledge can be diffused.

If one doubts that technique is readily acquired by new countries, that is, new to the industrial processes of the Western world, one should ponder what is happening to Great Britain's cotton trade, especially the cheaper grades, by reason of Japan's and India's competition; what Germany is accomplishing in the electrical trades; what the United States is doing with the aid of automatic machines in the automobile industry; and the rapidity with which all western Europe and its offshoots are coming to supply themselves with goods of their own manufacture. More recently the industrialization of Russia bids fair to establish a new record in the acquirement of technical skills by an agricultural population.

One might go on almost indefinitely to point out how the technique which gave one nation an advantage over others at one stage of industrial development has either been acquired by the others or been rendered obsolete by the development of new processes, new methods, and new machines in new quarters. In these latter days nations tend very rapidly to approximate each other in the technique of their industry. Patents, copyrights, and secret processes somewhat retard this movement, but probably the habits of the workers as they affect their use of tools and their adoption of new methods of work and the attitudes of the employers toward the newer methods of industrial and business organization do far more to account for the differential element in the productive capacity of different countries than the actual lack of skill on the part of workmen and engineers. Today, therefore, no country or area dares rely on this acquirement (the possession of unusual skill and technical training) for the permanence of its economic position. Such qualities have too little of the monopoly element in them to give one country any long-continued advantage over another.

The second advantage mentioned above is the greater ease with which capital is accumulated in one social group than in another. Before there can be any appreciable accumulation there must be a surplus above the customary consumption of the working population. In western Europe the institutions of society were well adapted to making it possible for any such surplus to be gathered into the hands of a very small proportion of the population, and nowhere was this easier than in Great Britain. For several centuries prior to the Industrial Revolution the rights of laborers as against employers had been the subject of restrictive legislation which had quite effectually brought the laborers under the complete control of the employing class. Since the industrial enterprisers of early times were also men of frugal habits, all that was needed to make possible a rapid accumulation of capital was the presence of a considerable surplus above the customary consumption of the people. This was furnished by the application of water and steam power (particularly the latter) to the driving of machinery. In a comparatively short time, therefore, the entrepreneur class in Great Britain had accumulated large sums of

capital. It was this new command over a readily movable capital that gave Great Britain her firm grip on the economic life of the world. Never was the truth of the saying "to him who hath shall be given" better exemplified. There is no doubt that even the recipients of this accumulating surplus were astonished at its size. But shortly they accepted it as their rightful portion, and economists justified it as such. Thus, the large returns of machine industry to capital were fastened upon the new industrial system as a first charge.

Great Britain had a good head start in the modern race for capital accumulation, and it was necessarily some time before any other country could come within hailing distance of her. It is not surprising then that until well on toward the beginning of the twentieth century Great Britain was not even aware of the approach of industrial and commercial competition.

4. Present Position of Great Britain

It will be interesting and instructive to trace very briefly the process by which, under modern conditions, a nation like Great Britain rises to power and then after several decades loses her position of preeminence.

Great Britain had good natural resources, particularly fuel and iron. She had also a trade of long standing in woolen goods and in some other lines which made her merchants familiar with the ins and outs of foreign commerce. In addition to this the very happy invention of machines to utilize her fuel, machines for working textiles, and new methods of smelting iron gave her a greatly increased productive power and furnished the basis for the accumulation of capital at an unprecedented rate. It was not long before she had capital and to spare. Her leadership in finance was based upon her ability to make large foreign investments. Thus, Great Britain became the economic dictator of the Western world. Never had any other country enjoyed such economic ascendency. To many of her leaders her ascendent position seemed impregnable. It looked to them as though she had so far distanced other nations that she need not fear their competition, particularly under a capitalist system in which the supplier of capital became the controller of the industry, whether at home or abroad.

In considering the factors at work in the development of the economic life of Great Britain, it seems rather curious (until we look about us today and see much the same lack of vision) that the economic leaders of Victorian Britain did not realize more clearly the certain outcome of a preponderant dependence upon foreign trade and investments. It was inevitable that other countries should profit by Great Britain's experience. They borrowed her capital only to make for themselves the machines and the goods that would in time render them not only economically self-contained but to a high degree competitive with her.

The self-sufficiency of a newer (industrial) country develops gradually, and it is not apparent at first that the capital that it borrows will ultimately reduce its trade with the lending country, for foreign loans, whether private or public, are generally devoted to developing, first, transportation and, later, industry. The development of transportation in new countries greatly stimulates trade by extending the area of trade as well as by creating a direct demand for the goods necessary to construct the lines and carry on the traffic. However, it is not long before capital is invested in industrial plants in the new country, which shortly come into competition with those of the investing country. Thus, the greater the success that attends the efforts of a country to accumulate capital and acquire interests abroad the sooner is it certain to feel the competition of its borrowers. It is just the competition of the industries of the countries which were but a short time ago Great Britain's borrowers, or are even yet borrowers, that has brought upon Great Britain the crisis she has faced ever since World War I (United States, Japan, Australia, Canada, South Africa, and so forth). It is one of the ironies of history that the greater the success of a highly industrialized country in accumulating capital and in making investments abroad the more quickly comes the time when its home industries will be sick unto death because of the competition largely made possible by these investments.

But this is not the only disadvantage of giving hostages (loans) abroad. It creates such a lively interest in the affairs of the debtor country that we find all manner of expedients resorted to in order to ensure the integrity of these foreign loans. Of course, the cost of this insurance (military expeditions, navies, protectorates, and elaborate foreign services of various kinds) is borne by the nation at large, while the benefits accrue to a few investors; naturally, the powerful investors regard it as a matter of *national honor* that these investments be safeguarded in the most approved imperial manner.

But even in the heydey of power and wealth of a country like Great Britain, depending on external resources for so much of her raw materials and foods, she is at the mercy of every adverse wind that blows. A civil war in the United States causes untold suffering to her cotton-mill workers because of the inability to get cotton, and as a consequence during America's Civil War she pursued a policy toward the North which every self-respecting Britisher blushes to remember. A new tariff act in Australia causes consternation in the woolen industry of Yorkshire. The possibility of the Panama Canal's giving preference to American ships is viewed with alarm as an obstacle in the path of British commerce. A new constitution and its enforcement in Mexico cause the withdrawal of a diplomatic representative as a protest against the diminution in value of certain of her investments.

Our own conduct in the West Indies and Central America shows numerous incidents of the same nature, due to our efforts to preserve the value of our investments abroad. A country depending largely on industry and commerce for prosperity is at the mercy of economic vicissitudes in all parts of the world. She can know no peace; and her policies must be governed by the interests at stake in each particular case. Hard times in India due to the failure of the monsoon—with the resulting famine—a boycott in China, an earthquake in Japan, over-expansion of agriculture in Argentina or the United States or Canada, and so forth, are causes of much concern to the nation which has far-flung capital investments and needs to sell a large portion of its annual product abroad.

A good example of the way in which the economic dependency of industrialized countries governs their conduct to other countries is found in the Chinese situation. The treaty ports are a result of the coercion of a defenseless power because of the desire for her markets. The abuses arising out of the holding and governing of foreign concessions, also forcibly obtained, are supposed to be necessary if the vested interests of the several nations in China's trade are to be preserved. Simple justice and decency have but little chance against the demands of the manufacturers and traders who are dependent upon the markets thus held, while many people not directly interested in this trade see danger of unemployment and distress at home if it is not maintained. Thus, it comes about that the country which is supposedly fortunate in having a highly developed industrial organization and far-flung trade is really the most dependent of all. It has the least freedom to go its own way, and its people dare not follow their natural impulses of generosity and justice. Its organization is too delicate to withstand the loss of markets and raw materials, and so it must needs "stand up for the *rights* of its nationals" (property rights in general) and regard any infringement of the customary rights of its nationals by another nation as "an affront to its national honor." Truly the outcome of modern industrialism and trade is well calculated to make the man from Mars open his eyes in wonder at the obtuseness of its devotees. The way in which industry and foreign commerce excessively developed enmesh their creators would furnish a theme for ironical treatment if it were not for the fact that the chief sufferers are the innocent bystanders, the working people.

These reflections upon the price which must be paid by nations that aspire to great power through the excessive development of industry and commerce are inspired by studying the outcome of a century or more of "successful" industrial and commercial development in Great Britain. There is no reason to believe that following in the path blazed by Great Britain will lead to different results in the case of any other nation.

5. Duration of Prosperity Based on Industry and Commerce

Japan, Germany, the United States, and the leading self-governing dominions of the British Empire should study the case of Great Britain carefully so that they may decide in the light of full knowledge whether they want to follow in her footsteps as far as they are able. Of course, none of these lands can reasonably expect to hold the economic hegemony of the world as long as Britain has held it, even if they should chance to attain it for a brief spell, unless they are prepared to maintain it by military power.

It would certainly seem that the difficulties Great Britain has experienced since 1918—the loss of certain markets; the consequent contraction of certain industries with a huge burden of unemployed workers depending upon insurance funds for their daily bread; the harassing struggle to retain a part of her former financial prestige; the confusion as to how best to keep on fairly good terms with Russia, Germany, Japan, and China; the practical certainty of being drawn into any important war anywhere because of the necessity of "protecting the interests of her trade and her nationals," to mention only a few of the more obvious difficulties faced—prove the enormous handicaps that nations are certain to encounter in the modern world if they adopt the British method of supporting a growing population. Industry based upon foreign commerce is so sensitive to changes in the economic and social structure of all parts of the world that it cannot be relied upon to any great extent for the support of population without increasing largely the instability of a nation's economy. This fact should be far more widely realized than it is today. In all lands where machine industry is established or is being introduced, people seem to think that there is some magic power in it which will free them indefinitely from the limitations imposed upon the production of wealth by the older agricultural economy. It is true that the term of the increase in man's efficiency in transforming raw materials into consumers' goods is not in sight, but the amount of these that can be disposed of profitably is, of course, limited by a variety of social and economic factors, while the amount that any particular people can dispose of regularly in foreign trade is a very uncertain matter.

In this respect the situation in Japan is very interesting and should also be most instructive. Japan's population is now growing as that of Great Britain grew when modern sanitation began to function in it. The death rate has been greatly reduced, while there was until recently but a slight decline in the birth rate. Also, the development of steam transport and the introduction of modern factories have greatly increased production in many lines. But population is increasing so rapidly that it is occasioning Japanese statesmen much concern. The very general feeling among them seems to be that Japan can support her increase of

population only by continued industrial expansion. She has been quite successful in this respect in the past, particularly during World War I, and many Japanese see no reason why she should not continue to be. There are, however, some very good reasons why Japan cannot long support a rapidly growing population by increased industrialization and increased foreign trade. If these are not given due weight by the men responsible for planning Japan's future development, trouble of various kinds is practically certain to ensue.

In the first place Japan is poor in all the basic resources of modern industry (6; IV, 16). She lacks coal, iron, copper, and all the other important minerals. In the second place she has no special fund of technical skill which gives her any particular advantage over other countries; in fact, as compared with Western countries, she is deficient in this respect. In the third place, if she is relying on cheap labor, there is still cheaper labor in China and India; and in the case of the Chinese, the labor in certain lines is also probably more efficient. In the fourth place the competition for foreign trade is steadily becoming more intense, and Japan, being rather late in entering the field, will find it extremely difficult to expand this trade at a rate which will enable her to support for long her growing population. Furthermore, it is not at all certain that the total amount of the world's foreign trade will continue to increase in the future as in the past, because of the very general movement all over the world to protect home industry by tariffs, in order to become self-sufficient. It may well be, then, that in a comparatively short time foreign commerce will be largely confined to those specialties which one nation can produce more advantageously than another. If so, the proportion of the total trade of any given country that foreign trade constitutes is likely to diminish rather than increase, and it cannot be relied upon as the means of support for a growing population. The Japanese statesmen would do well to ponder these facts and tendencies when they are considering population policies.

It is possible that the recognition of the difficulties just enumerated had much to do with the decision of Japanese statesmen to seek the solution of their country's economic troubles in national expansion. At the time of writing every American believes that their ventures will end disastrously, but they were right in deciding that increased industrialization and foreign trade would not ensure the permanent support of their growing population. In the writer's opinion the only satisfactory and permanent solution of this problem will necessarily involve the reduction of the birth rate by voluntary control to the point where the increase can be cared for by the means available. But this does not mean the indefinite maintenance of the *status quo* as regards access to natural resources nor the return to an agricultural economy. But it does mean that unlimited growth of population will generally be accompanied, or

followed after a relatively short interval, by a struggle for larger resources such as Japan is now engaged in or by a constant and bitter struggle for existence such as prevails in China. These alternatives cannot be avoided indefinitely by the intensification of industrial and commercial activity any more than by the intensification of agriculture.

References

1. BALLARD, GEORGE ALEXANDER: "The Influence of the Sea on the Political History of Japan," 311 pp., E. P. Dutton & Company, Inc., New York, 1921.
2. BOWMAN, ISAIAH: "The New World; Problems in Political Geography," 803 pp., World Book Company, Yonkers-on-Hudson, N. Y., 1928.
3. CARR-SAUNDERS, ALEXANDER MORRIS, and D. CARADOG JONES: "A Survey of the Social Structure of England and Wales as Illustrated by Statistics," 246 pp., Humphrey Milford, Oxford University Press, London, 1927.
4. CLAPHAM, J. H.: "An Economic History of Modern Britain: The Railway Age, 1820–1850," 623 pp., Cambridge University Press, Cambridge, 1926.
5. FAIRGRIEVE, JAMES: "Geography and World Power," 2d ed., 373 pp., University of London Press, London, 1921.
6. PENROSE, E. F.: "Food Supply and Raw Material in Japan," 75 pp., University of Chicago Press, Chicago, 1929.
7. ROBINSON, HOWARD: "The Development of the British Empire," 475 pp., Houghton Mifflin Company, Boston, 1922.
8. THOMPSON, WARREN S.: "Britain's Population Problem as Seen by an American," *Econ. Jour.*, 36 (1926), 177–191.
9. ———: "Danger Spots in World Population," 343 pp., Alfred A. Knopf, New York, 1929.

Questions

1. Discuss the rise and fall of trade centers. Give some concrete examples.
2. Describe the conditions upon which monopoly in industry and trade can be maintained. Are they likely to give permanent advantage? Why?
3. Mention some concrete cases where one area has lost industry or trade or both to another area, and show why this has happened.
4. Discuss the dangers in overspecialization for countries like Great Britain and Japan. How does foreign commerce render a nation vulnerable in respect to the support of its population? Explain and illustrate.
5. Why is it difficult to maintain advantages in location and in technique? Give illustrations.
6. What are the reasons why Japan should not depend solely on industry and commerce for the support of her growing population?
7. What are some of the effects of the development of national self-sufficiency upon the welfare of highly industrialized populations? Illustrate.

CHAPTER VIII

THE COMPOSITION OF POPULATION[1]

All the diverse elements which combine to make a community distinctive demographically are summed up in the phrase "composition of the population." The composition varies with each type of community; a manufacturing community has a different composition from a commercial community, and they are both different from an agricultural community. Small towns differ rather markedly from cities and from the open country, and cities differ considerably from each other in the composition of their populations. If we are to understand the social and economic problems of any community, we must know the composition of its population.

1. Complexity in the Make-up of Population

Let us take a ride some morning through almost any northeastern city and observe some of these different population elements. They are so usual in most of our communities that they generally pass unnoticed on our customary walks or rides.

As we leave the house, we meet our neighbor Mrs. Adam and her four-year-old son returning from the corner grocery. Across the hedge separating our yard from the Browns' we see Mr. Brown showing Charlie, a Negro, how to trim the spiraea and Mandy, Charlie's wife, washing windows. After riding a few blocks, we find the street temporarily blocked by a gravel truck and a ditch which is being dug to allow the water, sewer, and gas pipes to be laid to a new house in process of construction. While waiting for the truck to dump its load, we hear the ditchdiggers laughing and talking and suddenly realize that we do not understand a word they say. One of us remarks that the Italians are doing almost all the ditchdigging, street work, and cement work in town these days and that the children and grandchildren of the Irish and Germans who used to do it have passed on to better jobs. He recalls that his grandfather used to do the same kind of work when he first came over from Germany shortly after the Civil War. In the next street, we stop a moment to leave a bundle of laundry with Sam Lee, who is patiently ironing shirts in the front window of his small hand laundry. A little farther down the street we are again forced to stop, this time near a church to allow a procession of motorcars to pass. But it does not pass—

[1] General references: 6, 8, 9, 10.

it fills the street in front of the church, and the gaiety of the crowd, since it is not Sunday, suggests that there is to be a morning wedding. A moment later we see the bride step out of a car and enter the church on the arm of her father.

A little farther ahead the laughter and shouts of children attract our notice, and an officer signals us to go slowly. The street, as well as the playground, is full of youngsters, seemingly making a superabundance of noise in anticipation of having to keep quiet for the rest of the forenoon, for it is almost time for the school session to begin.

We are now coming into a different quarter of the town. The houses are smaller, and many of them have not been painted for a long time. The pavements are rougher, and the number of tall smokestacks tells us that there are numerous factories here. Here, also, is the largest market in the city, and, as we have to stop frequently, we hear the housewives and farmers chaffer and bargain over vegetables, fruit, eggs, chickens, and so forth.

In a few moments we enter the downtown business section, and while waiting for the traffic lights we find conversation impossible. We cannot compete with the steam shovels and pneumatic riveters at work on the new First National Bank Building and the Doctors' Building, which are on either side of us, so we count the number of different workmen whom we can see in the minute or less that we have to wait. There are, on the bank-building site on our left, steam-shovel operators; truck drivers; common laborers; an engineer with his level; a man with a roll of plans, who may be either an architect or a contractor; and some acetylene-torch operators cutting out the old safe and some steel beams, while a crew of electricians is installing lights on neighboring buildings so that the work can proceed at night. On our right we find that the new Doctors' Building is farther along and that while the structural-steel workers are busy on the top, stone setters, plumbers, electricians, glaziers, plasterers, tile setters, and many other workers whom we do not have time to identify are pushing the work to completion as fast as possible.

We pass through the business section and emerge on a broad boulevard. Then we decide to drive out a few miles to a place to which we have not been for 20 years. On the way out we leave the boulevard with its fine homes to go through the Negro quarter, the most squalid part of our city. From this we pass into "Warsaw" and so come back to the boulevard. In a few minutes we are in the country, and there we see the places that we used to visit in our childhood and recall the names of the people who formerly lived there. The names on the mailboxes and the type of farming indicate that the German farmers of our youth have largely given place to Polish truck gardeners. In *X* we stop at the crossroads' store, and by rare good chance the storekeeper is an old friend. He is almost the only one of the old group left in the community.

Nearly all the young people have gone to the city, and the village is largely made up of old people who have moved in off the farms when they could no longer work them. It is a quiet, comfortable-looking place to live, but one can readily understand that it would not be attractive to youth in quest of fortune.

Let us reflect upon what we have seen on this very commonplace drive, which probably occupied somewhat less than three hours. We have seen numerous men, women, and children of all ages doing a variety of things—they constitute the sex, age, and occupation elements of a population. We have seen people going into at least one church, and we have seen several other churches of different denominations and sects; we have thus been made aware that the religious composition of the population is varied. We have seen some hundreds of Negroes and at least one Chinese—they represent a small part of the racial composition of the population. We have heard at least one language besides English and probably some broken English, which tells us very clearly that the speaker came from Germany or Poland or some other European country—this reveals something of the nationality and language composition. We have seen a schoolhouse and probably thought what a fine thing it is that every boy and girl can learn to read and write and gain such knowledge as he or she may need to get along in life—education, or literacy. We have had our attention called to the fact that farmers furnish us with food and other agricultural products, while the city gives us most of our manufactures and provides many other services essential to our welfare. We have also seen that there are great differences in modes of life in different parts of the city—income classes, social classes, and so forth.

Perhaps all this is so obvious that it seems rather childish to call attention to it. But it often happens that the obvious is overlooked, that we fail to see its significance. No doubt this is as true of the elements that compose the population as of other facts with which we are overfamiliar. As our study proceeds we shall see that populations having different compositions are faced with different problems in consequence thereof and that we cannot understand their problems until we know the peculiarities in their make-up. We shall, therefore, devote some space to showing the actual make-up of different populations and to pointing out in what ways they differ from one another.

2. Sex Composition

The sex ratios in the United States and in certain states are given in the table on page 99. In 1880 the sex ratio in the United States was 103.6 males per 100 females; by 1940 this had fallen to 100.7. The differences between the states are much larger, however. In 1880 the sex ratio in Washington was 157.7, while in Massachusetts it was only 92.8; by 1940

they were much closer, Washington having fallen to 109.1 in the meantime, while Massachusetts had risen to 95.0.

TABLE 5.—SEX RATIOS OF THE UNITED STATES AND SELECTED STATES, 1940 AND 1880

Area	Males per 100 females	
	1940	1880
United States	100.7	103.6
Vermont	102.9	100.9
Massachusetts	95.0	92.8
Ohio	100.4	101.9
Kansas	101.3	116.8
North Carolina	98.6	96.6
White	99.7	96.1
Negro[1]	95.7	97.6
Texas	100.9	111.1
White	101.8	115.0
Negro[1]	95.3	100.1
Washington	109.1	157.7
California	103.7	149.5

[1] Includes "other races" in 1880.

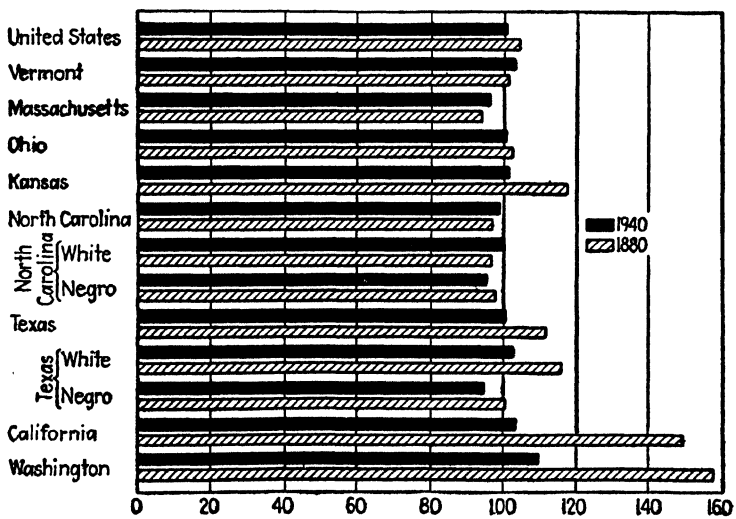

FIG. 2.—Sex ratios of the United States and selected states, 1940 and 1880. (Based on Table 5.)

"But how," it might be asked, "does the ratio of the sexes affect social and economic problems?" Obviously, if there are more males than females, the proportion of men who can marry will be smaller than if the numbers of the sexes are even. Also, if there are many more females

than males, as is the case in some of the European countries, there will be a relatively large proportion of unmarried women. Again, the higher proportion of males the more workers there are available for the heavy industries.

Moreover, the sex ratio is an important factor in determining the death rate of any population. Women generally have a lower death rate than men; hence, if they constitute more than half of the population, as they do in many older countries (England and France, Table 6), the total death rate (crude) of the population is appreciably affected by this fact. Many other social problems are likewise affected in greater or lesser degree

TABLE 6.—SEX RATIOS OF SELECTED EUROPEAN COUNTRIES[1]

Country	Males per 100 females	
	Latest date[2]	1880
Bulgaria (1934)	101.0	104.0
England and Wales (1931)	91.9	94.8
France (1931)	93.4	99.5
Germany (1939)	95.2	96.3
Italy (1936)	96.4	100.5
Sweden (1935)	97.8	94.2

[1] League of Nations, "Annuaire statistique de la société des nations . . . Statistical Year-book," 1939–1940, Geneva, 1940, pp. 14–19.

[2] Date in parentheses is "latest."

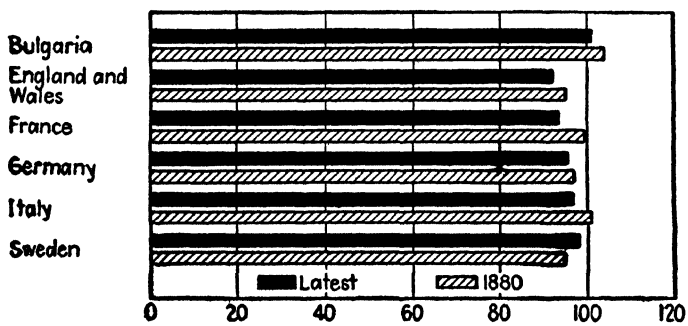

FIG. 3.—Sex ratios of selected European countries, latest date and 1880. (Based on Table 6.)

by sex ratios. There is no doubt that the birth rate, the amount of prostitution, and the status of women in the community are all more or less directly related to the sex ratios of a population. These matters are merely mentioned here to show how important it is to know the sex composition of different populations if any intelligent comparisons are to be made between them as regards their social conditions. Most of these matters will be discussed more fully in other connections.

3. Age Composition

The age composition of a population may not appear, at first glance, to be of much importance. Every population has people of all ages in it,

Table 7.—Percentage Distribution by Age, United States and Selected States, 1940 and 1880

Area	Year	Under 5	5–14	15–24	25–34	35–44	45–54	55–64	65 and over
United States....	1940	8.0	17.0	18.2	16.2	13.9	11.8	8.0	6.9
	1880	13.8	24.3	20.1	14.8	10.9	7.9	4.7	3.4
Vermont.....	1940	8.4	17.4	17.2	14.3	12.6	11.4	9.2	9.6
	1880	10.3	20.4	18.5	14.1	11.9	9.5	7.4	7.9
Massachusetts...	1940	6.5	15.3	17.5	15.5	14.3	13.1	9.3	8.5
	1880	10.1	18.7	19.7	16.6	13.3	9.9	6.4	5.4
Ohio.....	1940	7.4	15.5	17.7	15.9	14.1	12.7	8.9	7.8
	1880	12.7	23.8	20.7	14.8	11.0	7.8	5.3	4.0
Kansas.....	1940	7.7	16.7	17.4	14.9	13.4	12.1	9.1	8.7
	1880	15.2	26.2	19.6	15.4	11.1	7.3	3.5	1.7
North Carolina[1]..	1940	10.5	22.0	21.3	16.1	11.7	8.5	5.5	4.4
	1880	16.7	26.8	20.0	13.4	8.7	6.9	4.2	3.4
White.....	1940	10.1	21.2	20.8	16.4	12.0	8.9	6.0	4.6
	1880	15.9	25.4	19.9	14.1	9.1	7.2	4.5	3.8
Negro[2].....	1940	11.5	23.8	22.7	15.5	10.9	7.4	4.3	3.9
	1880	17.8	29.1	20.1	12.3	8.0	6.4	3.5	2.7
Texas[1].....	1940	9.0	19.0	18.8	17.1	13.9	10.2	6.6	5.4
	1880	17.6	27.5	19.6	15.2	9.2	6.2	3.1	1.7
White.....	1940	9.0	18.8	18.7	17.0	13.8	10.4	6.9	5.4
	1880	17.4	26.6	19.5	15.9	9.5	6.3	3.1	1.7
Negro[2].....	1940	9.1	20.3	19.2	17.4	14.4	9.5	4.8	5.3
	1880	18.2	30.3	19.8	13.0	8.1	5.9	2.7	1.9
Washington.....	1940	7.0	14.1	17.0	16.2	14.0	13.3	10.1	8.3
	1880	13.7	22.2	18.1	18.4	13.5	8.8	3.6	1.5
California.....	1940	6.6	13.2	16.2	17.3	15.6	13.4	9.7	8.0
	1880	10.8	19.8	19.1	18.1	14.9	10.7	4.7	2.0

[1] Excludes "other races" in 1940.
[2] Includes "other races" in 1880.

of course, but the fact that the proportions in the different age groups—zero to four, five to nine, etc.—differ greatly from one population to another introduces a host of complications into the study of each population. Table 7 shows some of the age differences in the United States as a whole and certain of the states now and 60 years ago.

It is obvious that, when such differences in age exist, they will help to account for many other differences; for example, North Carolina has a

TABLE 8.—PERCENTAGE DISTRIBUTION BY AGE, SELECTED COUNTRIES[1]

Country	Year	Under 10	10–19	20–29	30–39	40–49	Over 50
Bulgaria	1934	23.6	19.2	18.3	14.0	9.7	15.2
	1900[2]	27.7	23.4	13.7	11.2	8.6	15.4
England and Wales	1931	15.8	16.6	17.1	14.7	13.1	22.7
	1881	25.7	20.6	17.0	12.6	9.8	14.4
France	1931[3]	17.3	13.0	16.7	14.7	12.8	25.5
	1881	18.3	17.1	15.8	13.8	12.4	22.5
Germany	1933[4]	15.4	15.0	18.8	16.3	12.7	21.8
	1880	25.1	19.7	15.9	13.0	10.4	15.8
Italy	1936	20.3	17.5	17.7	13.8	10.9	19.8
	1880	22.7	20.5	14.4	13.4	11.2	17.8
Sweden	1935	13.8	17.1	17.6	15.4	12.7	23.4
	1880	23.0	19.5	15.7	12.3	10.7	18.8
United States	1940	16.1	18.3	17.2	15.0	13.0	20.4
	1880	26.7	21.4	18.2	12.7	9.1	11.8

[1] League of Nations, "Annuaire statistique de la société des nations . . . Statistical Year-book," 1938–1939, Geneva, 1939, pp. 27–30.

[2] Institut international de statistique, "Annuaire international de statistique," Institut international de statistique, The Hague, 1916, Vol. 1, p. 108.

[3] France, Bureau de la statistique générale, "Annuaire statistique de la France," 1938, Imprimerie nationale, Paris, 1939, p. 9.

[4] Excluding Saar territory.

considerably younger population than Massachusetts, and, other things being equal, it should have a lower crude death rate, for the rate of mortality mounts rapidly at ages above forty. It also has a smaller proportion of able-bodied men and women and should have a lower per capita income among its laboring classes. It should have fewer dependents among the aged but greater need for child-welfare work. Probably it should also have a higher birth rate, since it has a larger proportion in the young adult ages, although we cannot be certain of this until we know more exactly the age composition by sex. It is also probable that North Carolina should have a higher marriage rate. All these results and many

others flow naturally from differences in age composition, if all other factors remain the same in two populations.

There are a number of interesting differences in age composition between foreign countries (Table 8) and the United States and between these countries themselves. For example, note the large proportion of old people in France compared with most other countries. The propor-

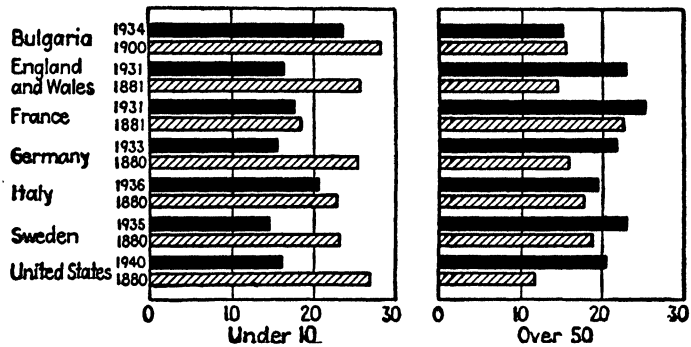

FIG. 4.—Percentage of the population under ten years of age and over fifty years of age in selected countries. (Based on Table 8.)

tion of those over fifty years of age is about 25 per cent greater in France than in this country and over 8 per cent greater than in any other country listed here. But even so these differences are much smaller than they were 60 years ago. In practically all Western lands older people are becoming an increasing proportion of the population. This is significant because old people add to the death rate, subtract from the birth rate, and are less productive than younger people, to mention only a few of the more obvious demographic differences. Clearly, the problem of old age in France has long been of a more pressing character than in most other countries. One wonders whether the great conservatism of France in business, in family life, in standards of living, and in many other respects is in any way related to the fact that it has long had a large proportion of old people in its population. Conversely, is our economic progressiveness and our lack of respect for customary ways of doing things in part a consequence of the high proportion of our population under forty, particularly in the past? If so, what will be the effects on our life of an aging population? Will we become more conservative in business, in government, in personal habits, etc. (7)? Some of these questions cannot be answered with the information now at our disposal, others will be discussed in more appropriate connections; but in passing it may be said there is little doubt that as the average age in the nation mounts we shall find ourselves confronted by many new and puzzling problems. One which is already causing much anxiety is the care of the aged. The political power of this group is steadily increasing and will continue to

increase for some decades, hence the care of the aged is almost certain to become an increasingly important factor in our political life.

4. Occupational Composition (11)

The occupational composition of the population of the United States and certain states is shown in Table 9. There are large variations in the

Table 9.—Percentage Distribution by Sex in Selected Occupations and by Occupation, United States and Selected States, 1940 and 1880[1]

Area and occupation	Percentage distribution by sex				Percentage distribution by occupation			
	1940		1880		1940		1880	
	Male	Female	Male	Female	Male	Female	Male	Female
United States:								
All employed	75.3	24.7	84.8	15 2	100.0	100.0	100.0	100.0
Agriculture, forestry, and fishing	94.3	5.7	93.1	6.9	23.5	4.4	60.5	24.8
Mining	98.8	1.2	100.0	....	2.7	0.1	1.8	....
Construction	98.3	1.7	99.9	0.1	5.9	0.3	0.1	....
Manufacturing	78.0	22.0	82.1	17.9	24.3	20.9	19.7	23.9
Transportation, communication, and other public utilities	88.9	11.1	99.5	0.5	8.1	3.1	3.8	0.1
Wholesale and retail trade	73 1	26.9	95.0	5.0	16 2	18.2	7.1	2.1
Finance, insurance, and real estate	69 0	31.0	99.3	0.7	3.0	4.1	0.4	....
Business and repair services	91.1	8.9	....	....	2.3	0.7	....	....
Personal services	28.3	71.7	27.2	72.8	3.3	25.8	2.8	41.6
Amusement, recreation, and related services	79 9	20 1	94.5	5.5	0.9	0.7	....	....
Professional and related services	44 4	55 6	66.3	33.7	4.3	16.6	2.5	7.2
Government	80.6	19 4	95.9	4.1	4 2	3 0	1.4	0.3
Industry not reported	65.4	34.6	....	....	1.3	2.1	....	....
Rhode Island:								
All employed	67.6	32.4	74.5	25.5	100.0	100.0	100.0	100.0
Agriculture, forestry, and fishing	97 1	2 9	99.6	0.4	3 0	0 2	24.1	0.3
Mining	93 7	6 3	100.0	....	0 1	....	0.3	....
Construction	98 3	1 7	100 0	....	7.2	0 2	0 2	....
Manufacturing	65 1	34 9	69 1	30.9	44 1	49.4	51.6	67.3
Transportation, communication, and other public utilities	85 2	14 8	99.1	0.9	6.1	2.2	4.7	0 1
Wholesale and retail trade	74 2	25 8	94.8	5.2	18 5	13.5	10 9	1.7
Finance, insurance, and real estate	66 0	34 0	99.0	1.0	2.7	2.9	0.6	....
Business and repair services	92 7	7.3	....	....	2 2	0.4	....	....
Personal services	36.5	63.5	27.7	72 3	4.0	14.4	3.3	25.3
Amusement, recreation, and related services	85.9	14.1	....	....	0.8	0.3	....	....
Professional and related services	41.9	58.1	57.0	43 0	4.5	13.0	2.3	5.1
Government	85.7	14.3	97.1	2.9	5.7	2.0	2.0	0.2
Industry note reported	61.7	38.3	....	....	1.1	1.5	....	....
Kansas:								
All employed	80.0	20.0	94.0	6.0	100.0	100.0	100.0	100.0
Agriculture, forestry, and fishing	97.9	2.1	99.5	0.5	38.5	3.3	75 2	5.5
Mining	98.8	1.2	100.0	....	3.2	0.2	1 1	....
Construction	98 7	1.3	100 0	....	5.2	0.3	0.1	....
Manufacturing	84.4	15.6	90.8	9.2	9.6	7.1	9.8	15.6
Transportation, communication, and other public utilities	89.5	10.5	99.9	0.1	9.5	4.4	3.4	0.1
Wholesale and retail trade	74.2	25.8	98.4	1.6	16.1	22 4	5.0	1.3
Finance, insurance, and real estate	69.6	30.4	99.5	0.5	2.3	4.0	0.3	....
Business and repair services	95.0	5.0	....	....	2.6	0.5	....	....
Personal services	26.3	73.7	32.2	67.8	2.4	27.0	1.7	56.9
Amusement, recreation, and related services	83.4	16.6	95.5	4.5	0.8	0.6	....	....
Professional and related services	42 9	57 1	66.7	33.3	4.5	23.9	2.6	20 1
Government	79.3	20.7	96.4	3.6	4.0	4.1	0.8	0.5
Industry not reported	70.3	29.7	....	....	1.3	2.2	....	....

[1] Occupational classifications for 1880 made to conform with those of 1940.
In 1940 all employed persons fourteen years of age and over are used, while in 1880 those ten years of age and over are used.

proportions of the population engaged in certain types of work at different periods in the same state and also as between the populations of different states at the same time. There are also large differences between states in the proportion of the women employed outside the home. It is not difficult to understand most of these differences, for example, why trans-

TABLE 10.—PERCENTAGE DISTRIBUTION BY SEX AND BY LARGE OCCUPATIONAL GROUPS, SELECTED EUROPEAN COUNTRIES ABOUT 1930[1]

Occupation	England and Wales (1931)				France (1931)			
	Sex		Occupation		Sex		Occupation	
	Male	Female	Male	Female	Male	Female	Male	Female
All occupations	70.3	29.7	100.0	100.0	63.4	36.6	100.0	100.0
Agriculture, fishing, etc.	94.3	5.7	7.5	1.1	58.5	41.5	32.9	40.4
Mining and quarrying	99.4	0.6	8.5	0.1	97.5	2.5	3.1	0.1
Industry	71.8	28.2	41.1	38.1	69.1	30.9	34.5	26.7
Commerce	65.5	34.5	17.7	22.1	57.1	42.9	11.2	14.7
Transportation and communication	93.6	6.4	10.6	1.7	84.4	15.6	7.7	2.5
Public and professional service	68.2	31.8	10.5	11.6	71.3	28.7	9.3	6.5
Domestic and personal service	23.3	76.7	3.2	24.7	19.7	80.3	1.3	9.1
Not specified	77.9	22.1	0.9	0.6	....	....	....	....

Occupation	Italy (1931)				Sweden (1930)			
	Male	Female	Male	Female	Male	Female	Male	Female
All occupations	77.4	22.6	100.0	100.0	69.0	31.0	100.0	100.0
Agriculture, fishing, etc.	81.2	18.8	49.6	39.4	76.8	23.2	40.1	26.9
Mining and quarrying	98 3	1.7	0.9	0.1	100.0	....	1.7	.....
Industry	75 1	24.9	27.9	31.8	79.2	20.8	35.4	20.8
Commerce	79.4	20.6	8.5	7.5	53.3	46.7	8.5	16.6
Transportation and communication	96.6	3.4	5.8	0.7	88.0	12.0	8.5	2.6
Public and professional service	71.5	28.5	5.8	7.9	51.1	48.9	4.7	10.0
Domestic and personal service	28.4	71.6	1 4	12.4	1.9	98.1	0.2	22.9
Not specified	52.6	47.4	0.1	0.2	90.0	10.0	0.9	0.2

[1] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1940, Stockholm, 1940, p. 358.

portation should have a larger proportion of the gainfully occupied workers in 1940 than in 1880 or why Rhode Island and Kansas differ markedly in types of workers; but it is important to know these differences, for a number of reasons. Kansas is primarily an agricultural community, while Rhode Island is an industrial and commercial community. Such differences affect both birth and death rates in a variety of ways which cannot be enumerated here, but we may point out that people engaged in different occupations have widely different mortality rates, dependent upon the nature of their work and the living conditions that it entails. A man who works at a machine where brass is ground is several times as likely to have tuberculosis or other respiratory trouble as is one who works on a farm. Again, the death rate among common laborers is about twice as high as among professional men during the larger part of their adult lives (4).

There are also very great differences between industrial communities arising out of the types of work which predominate in them. Thus, mining communities differ rather markedly from most other communities. Generally there is little work outside the home for women unless a special effort has been made to bring light industries using female labor into such communities, as has happened in some of the mining regions of eastern Pennsylvania. Where women are not much employed outside the home, as in mining communities and in cities where heavy manufacturing predominates, the birth rate is generally higher than in communities where light industry employs many women. Thus, in textile cities, a large proportion of women are employed outside the home, and in many of them a low proportion of women are married; as a consequence the crude birth rate tends to be low and infant mortality tends to be high.

Table 10 shows the same kind of occupational differences between foreign countries as are found in different parts of the United States. The difference between England and these other countries as regards rural occupations is marked, as is also the difference between them as regards the proportion engaged in the mechanical industries and the extraction of minerals. Since we know that occupation has a great influence on people's habits of thought, such occupational differences as we see here are bound to issue in considerably different viewpoints and to make it more difficult for these groups to understand one another. It is very important, then, to know the occupational make-up of a population if we would understand its social problems.

5. Marital Composition

There are also very considerable differences in populations as regards their marital composition. In different sections of the United States we find marked dissimilarities in the proportions of the population which are single, married, widowed, and divorced (Table 11).

TABLE 11.—PERCENTAGE DISTRIBUTION BY MARITAL CONDITION OF THE POPULATION 15 TO 44 YEARS OF AGE, UNITED STATES AND SELECTED STATES, 1930

Area	Males				Females			
	Single	Married	Widowed	Divorced	Single	Married	Widowed	Divorced
United States	45.9	52.0	1.1	0.9	34.6	61.1	3.0	1.4
Vermont	49.0	49.2	1.0	0.9	36.3	60.6	1.9	1.2
Massachusetts	50.0	48.5	0.9	0.5	44.3	52.7	2.1	0.9
Ohio	43.2	54.6	1.0	1.2	33.1	62.9	2.3	1.6
Kansas	44.6	53.1	1.0	1.3	33.3	63.1	2.1	1.5
North Carolina	46.1	52.4	1.2	0.3	36.8	59.0	3.5	0.7
Texas	43.0	54.1	1.6	1.3	29.8	64.1	4.0	2.1
California	46.3	50.5	1.1	2.2	29.8	63.8	3 0	3.4

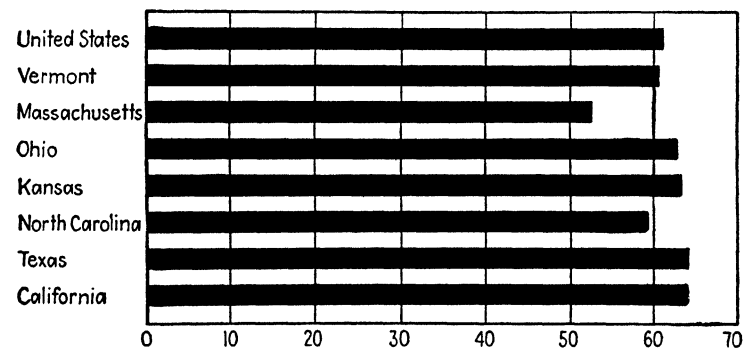

FIG. 5.—Percentage of females fifteen to forty-four years of age who are married, United States and selected states. (Based on Table 11.)

The contrasts shown here are rather marked and are sufficient to account for certain other characteristics which distinguish one group from the other; for example, Ohio has a considerably larger proportion of married women aged fifteen to forty-four than has Massachusetts. When we begin to calculate certain types of birth rates, we shall see that knowing these marital differences will help us to understand variations in birth rates. This matter need not be dwelt on at any great length, for it is quite obvious that, where illegitimacy is not great, the birth rate will be directly affected by the proportion of women married and particularly by the proportion married in the younger age groups (fifteen to thirty). The custom of a community regarding age at marriage may, therefore, have a marked influence upon its life in many ways (5).

In Table 12 we note that the proportion of women in the childbearing ages who are married is over one-fourth higher in France than in Sweden and over one-half higher in Bulgaria, while there is only about 5 per cent

TABLE 12.—PERCENTAGE DISTRIBUTION BY MARITAL CONDITION OF THE POPULATION 15 TO 44 YEARS OF AGE, SELECTED EUROPEAN COUNTRIES ABOUT 1930

Country	Year	Male				Female			
		Single	Married	Widowed	Divorced	Single	Married	Widowed	Divorced
Bulgaria	1934	34.1	64.6	1.0	0.3	24.3	73.0	2.2	0.5
England and Wales	1931	50.8	48.4	0.7	0.1	47.9	50.1	1.9	0.1
France	1931	44.8	53.7	0.9	0.6	35.2	60.3	3.6	0.9
Germany	1933	50.9	48.1	0.4	0.6	44.2	52.8	1.9	1.1
Italy	1936	54.4	44.9	0.7	...	45.4	52.2	2.3	...
Sweden	1935	61.1	37.9	0.6	0.4	53.5	44.7	1.2	0.6

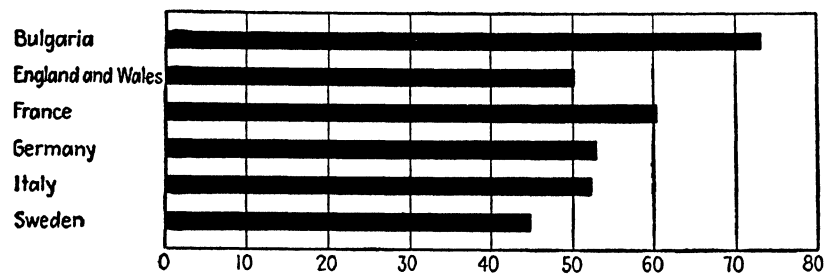

FIG. 6.—Percentage of females fifteen to forty-four years of age who are married, selected European countries. (Based on Table 12.)

TABLE 13.—MEDIAN AGE AT FIRST MARRIAGE, BY SEX, COLOR, AND NATIVITY, URBAN AND RURAL AREAS, UNITED STATES, 1930 AND 1910[1]

Color and nativity	Male		Female	
	1930	1910	1930	1910
All classes	24.8	25.7	21.8	22.1
Native white	24.8	25.7	21.9	22.4
Native parentage	24.4	25.2	21.5	21.8
Foreign or mixed parentage	26.1	27.1	23.0	23.8
Foreign-born white	26.7	26.9	23.0	21.9
Negro	22.9	23.6	20.3	20.6
Urban	25.1	....	22.3	....
Rural	24.3	....	21.0	....
Farm	24.7	....	21.3	....
Nonfarm	23.9	....	20.7	....

[1] U. S. Bureau of the Census release, Oct. 15, 1935.

difference in countries otherwise so much unlike as England, Italy, and Germany.

After studying Table 12, one is inclined to expect even larger differences in average age at marriage of bachelors and spinsters than are shown in Chap. X, Table 54.

The average age of newly married women in Sweden is just 1 year higher than in England and Wales, 2.5 years higher than in Italy, and 3 years higher than in France.

The greater prevalence of early marriage in some countries than in others is further illustrated in Chap. X by Table 50. This table shows that in most age groups, but particularly at the younger ages, Bulgaria leads western European countries in the proportion of its women who are married. On the other hand, in Sweden, Germany, and England and Wales only a small proportion of the women marry before they are twenty-five. These differences in the proportion of women under twenty-five who are married are very significant, as we shall see later in discussing the birth rate.

6. Rural and Urban Composition

Perhaps no differences in composition of the population are more profound in their influence on the lives and problems of the people than are the differences between urban and rural populations. The rural and urban populations of the United States and of certain states are given in Table 14 for the years 1880, 1920, and 1940.

Table 14.—Percentage of the Population Rural and Urban, United States and Selected States, 1940, 1920, and 1880

Area	1940			1920			1880	
	Rural-farm	Rural-non-farm	Urban	Rural-farm	Rural-non-farm	Urban	Rural	Urban
United States	23.0	20.5	56.5	29.7	19.0	51.4	70.5	29.5
Vermont	29.4	36.3	34.3	35.3	33.5	31.2	73.1	26.9
Massachusetts	2.2	8.4	89.4	1.6	3.6	94.8	15.1	84.9
Ohio	15.5	17.7	66.8	19.7	16.5	63.8	67.8	32.2
Kansas	33.6	24.5	41.9	41.6	23.5	34.9	89.5	10.5
North Carolina	46.4	26.3	27.3	58.6	22.2	19.2	96.1	3.9
Texas	33.5	21.1	45.4	48.6	19.0	32.4	91.5	8.5
Washington	19.3	27.6	53.1	20.6	24.2	55.2	90.5	9.5
California	9.2	19.8	71.0	14.4	17.6	68.0	57.1	42.9

In 1880, 70.5 per cent of our total population was rural, and a good many states were more than 80.0 per cent rural; but in 1940, only 43.5 per

cent of the total population was rural and of this over 47 per cent was rural-nonfarm. The number of states in which at least 70 per cent of the population was rural decreased from 33 in 1880 to 8 in 1940 (2 northern and 6 southern states). This fact alone shows that a great change in our manner of life has taken place during this time. It is perhaps hard for us to realize how great this change has been, for most of us know of the older period only by reading and by listening to the

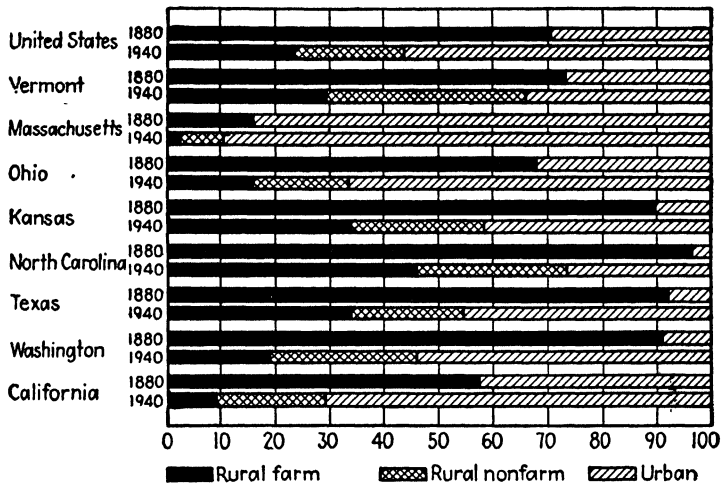

FIG. 7.—Percentage of the population rural and urban in the United States and selected states, 1940 and 1880. (Based on Table 14.) *Note:* Black indicates total rural (farm and nonfarm) in 1880.

tales of older people. We do not need to exercise much imagination, however, to realize that in 1880 the interest of practically our entire population was in the land and its products. Land was the direct source of livelihood for the vast majority of our people, and to the remainder its importance was plainly visible. Today the great majority of the people, even many of those still living in villages of less than 2,500 population, have little interest in, or knowledge of, the land. The incomes of most of us are so indirectly related to the use of land that we do not think of land when we think of making a living; we think rather of factories, banks, stores, garages, railroads, and a great variety of other agencies which, on the surface, have little connection with the tillage of the soil. At present only 23.0 per cent of our people actually live on farms.

The point here is that the differences in rural and urban composition of the population in states like Rhode Island and Kansas or North Carolina make their social problems vastly different and enter into every aspect of the lives of the people in these different communities. Their

health problems, their school problems, their problems of governmental organization, and their economic problems are all different. It seems inevitable that urban and rural people should look upon life from quite distinct points of view (1). It is a historical fact that antagonism between urban and rural people has always been a factor of importance in the lives of nations and that establishing workable, equitable relations between them is one of the perennial problems of statecraft. We may further notice that death, birth and marriage rates and rates of specific diseases in rural communities differ from those in urban communities, also that sex ratios and age groups are different in these two types of communities. In a word, the demographic differences between urban and rural groups permeate all aspects of their lives (see Tables 14, 15, and 16).

TABLE 15.—PERCENTAGE DISTRIBUTION BY AGE FOR URBAN GROUPS AND RURAL AREAS, UNITED STATES, 1930 (9, PP. 129, 362–363)[1]

Area	0–4	5–19	20–29	30–44	45–64	65 and over
Urban	8.1	26.3	18.2	24.0	18.2	5.2
Places of:						
500,000 and over	7.7	25.0	19.3	25.7	17.9	4.3
100,000–500,000	7.8	25.4	18.7	24.4	18.5	5.1
25,000–100,000	8.2	26.5	18.1	23.5	18.3	5.3
2,500–25,000	8.7	28.2	16.9	22.0	18.2	6.0
Rural	10.7	33.4	15.0	18.3	16.7	5.8
Farm	11.0	36.3	14.1	16.9	16.5	5.2
Nonfarm	10.4	29.7	16.2	20.1	16.9	6.7

[1] Excludes "other races."

TABLE 16.—MALES PER 100 FEMALES BY AGE FOR URBAN GROUPS AND RURAL AREAS, UNITED STATES, 1930 (9, PP. 200, 383–392)[1]

Area	Total	0–4	5–19	20–29	30–44	45–64	65 and over
Urban	97.8	103.1	97.6	91.2	101.6	101.6	85.7
Places of:							
500,000 and over	100.5	103.2	98.8	94.6	106.6	104.1	84.7
250,000–500,000	95.6	102.8	96.0	87.9	98.9	99.7	82.9
100,000–250,000	97.1	103.2	97.1	89.8	100.6	100.7	85.7
25,000–100,000	96.3	103.2	96.7	89.7	99.5	99.7	83.0
2,500–25,000	97.2	102.9	97.7	90.4	98.7	101.3	89.1
Rural	108.0	103.0	105.3	104.9	105.0	119.4	120.0
Farm	111.0	103.0	108.3	111.1	101.3	124.9	138.6
Nonfarm	105.0	103.0	100.8	98.5	109.2	113.0	104.2

[1] Excludes "other races."

Nations, like our states, vary greatly in the proportions of urban and rural populations that they contain, and many of their diverse lines of

development arise from or are closely associated with their differences in this respect (see Table 17). One extremely important difference between urban and rural communities which has already been mentioned several times is that in birth rates. This will be discussed more fully in other connections, but it may be noted that none of our large cities

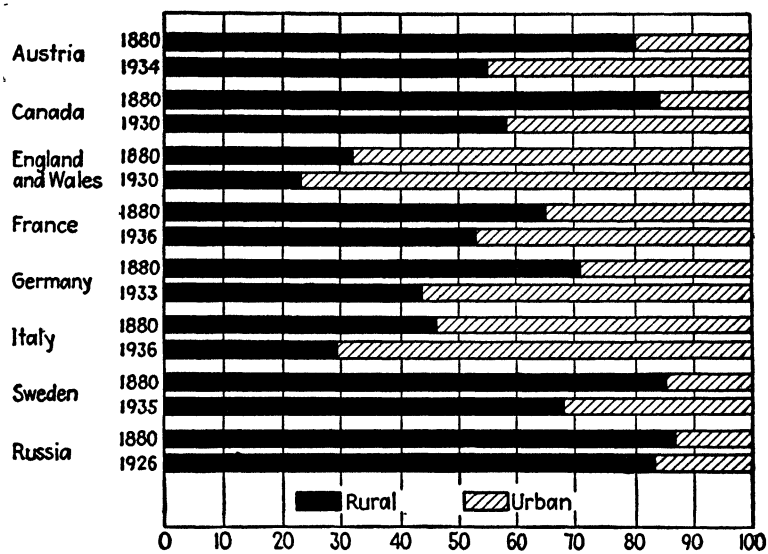

FIG. 8.—Percentage of the population rural and urban in selected European countries. (Based on Table 17.)

TABLE 17.—PERCENTAGE OF THE POPULATION RURAL AND URBAN, SELECTED COUNTRIES[1]

Country	Latest year[2]		1880	
	Rural[3]	Urban	Rural	Urban
Austria (1934)	54.9	45.1	80.2	19.8
Bulgaria (1934)	76.8	23.2	....	....
Canada (1930)	58.3	41.7	84.1	15.9
England and Wales (1930)	22.7	77.3	32.1	67.9
France (1936)	53.1	46.9	65.2	34.8
Germany (1933)	43.5	56.5	70.9	29.1
Hungary (1930)	45.2	54.8	....	....
Italy (1936)	29.3	70.7	46.2	53.8
Japan (1935)	35.5	64.5	....	....
Sweden (1935)	67.7	32.3	84.9	15.1
Russia (1926)	83.4	16.6	86.5	13.5

[1] France, Bureau de la statistique générale, "Annuaire statistique de la France," 1938, Imprimerie nationale, Paris, 1939, pp. 229*–231*.

[2] Date in parentheses is "latest"

[3] Includes urban places of under 5,000 population.

has a birth rate high enough to ensure the maintenance of its population while most rural communities do. Clearly if this difference persists the very life of the nation may depend upon the urban-rural distribution of our population.

7. Racial Composition

In the United States the racial composition of the population is also a matter of prime importance. As Table 18 shows, 9.8 per cent of the

Table 18.—Racial Composition of the Population, United States and Selected States, 1940 and 1880

Area	1940			1880		
	White	Negro	Other races	White	Negro	Other races
United States	89.8	9.8	0.4	86.5	13.1	0.4
Vermont	99.9	0.1	...	99.7	0.3	....
Massachusetts	98.6	1.3	0.1	98.9	1.0	0.1
Ohio	95.1	4.9	...	97.5	2.5	....
Kansas	96.3	3.6	0.1	95.6	4.3	0.1
North Carolina	71.9	27.5	0.6	62.0	38.0	....
Mississippi	50.7	49.2	0.1	42.3	57.5	0.2
Texas	85.6	14.4	...	75.2	24.7	0.1
Washington	97.8	0.4	1.8	89.5	0.4	10.1
California	95.5	1.8	*2.7	88.7	0.7	10.6

total population (1940) of the United States is Negro. There is little need to point out that the racial composition of the population in different parts of this country—Vermont and Mississippi, for example—is of the most profound importance in explaining the social and economic differences between these communities. Although not now counted separately we know that about 10 per cent of the white population of Texas is of Mexican (Indian) origin so that not over three-fourths of the population is really white, and the proportion of Indian blood in the populations of New Mexico and Arizona is much higher than in Texas. On the Pacific Coast the nonwhite consist largely of Japanese and Chinese, although there are also considerable numbers of Indians. There is scarcely any aspect of life in those states having large Negro and other colored populations which is not affected by the presence of those groups. Politically, economically, and socially differences in racial composition have far-reaching effects. This is a fact, even though most people are loath to acknowledge it. The influence of racial differences is so subtle that frequently people are not aware of the extent to which race consciousness is part and parcel of their mental life. Just because these influences are

so subtle and because they have aroused such deep-seated prejudices, it is difficult, if not impossible, for us to appraise them at their just value. But there are certain rather definite ways in which the effects of differences in racial composition may be measured with fair accuracy. Everywhere death rates are so greatly affected by racial composition that the races are generally listed separately in those localities where there is any appreciable proportion of Negroes or other colored people. The failure to do this for Mexicans in our southwestern states makes both the death rates and the birth rates in those states quite useless for comparison with the rates of the white population in other states where there are few Mexicans. The death rates from specific diseases, for example, tuberculosis, diarrhea and enteritis, vary greatly for the different races, so greatly that it is hard to believe different racial groups can live in the same community and be affected so differently. This does not necessarily mean that susceptibility to particular diseases is a racial characteristic—although this may be true for certain diseases, for example, whites do seem somewhat less susceptible to tuberculosis than Negroes—since the colored races in this country are generally of low economic status and live in the worst conditions. This is shown by the occupational status of the colored population as well as by its income. There is no social problem which is not made more difficult of solution by the presence of diverse racial elements; and, besides, the racial problem itself becomes so overshadowing that all other problems, social and economic, are neglected in the effort to establish and maintain a *modus vivendi* between the races.

8. Nationality and Language Composition

Although racial composition is not of importance in most of Europe, the Nazis to the contrary notwithstanding, it is of great importance for many European countries to know the nationality, or language composition, of their people. In Europe several nations have within their borders very considerable groups of people who speak languages different from that of the politically dominant group. Frequently, far from feeling any common loyalty, each group feels that it belongs to another people or should be treated as a separate nationality. It then becomes a matter of pride, as well as of custom, for each group to maintain its language and its distinctive differences. Under these circumstances, it is of great importance to know the nationality and the language affiliations of the peoples living within given areas (Table 19). I would not give the impression that differences in language or nationality mean inevitable or permanent conflict between groups. The Soviet Union has shown that many of the conflicts arising from these differences can be avoided by the more intelligent treatment of minority groups; but, even so, many social problems remain more difficult of solution by reason of these differences in language and nationality. Their existence cannot be ignored.

TABLE 19.—PERCENTAGE DISTRIBUTION OF THE POPULATION BY LANGUAGE, SELECTED COUNTRIES[1]

Country and language	Percentage	Country and language	Percentage
Bulgaria (1934)	100.0	Poland (1931)	100.0
Bulgarian	86.8	Polish	68.9
Turkish	10.2	Ukrainian	10.1
Hungarian	1.3	German Jewish	7.8
German Jewish	0.4	Slavic (little Russia)	3.8
Armenian	0.4	Belorusse	3.1
Rumanian	0.3	German	2.3
Other	0.6	Other	4.0
Czechoslovakia (1930)	100.0	Rumania (1930)	100.0
Czechoslovak	66.2	Rumanian	73.0
German	22.5	Hungarian	8.6
Magyar	4.9	German	4.2
Russian	3.9	Slavic-Ukrainian	3.6
Other	2.5	German Jewish	2.9
		Russian	2.5
Hungary (1930)	100.0	Bulgarian	2.0
Hungarian	92.1	Turkish	1.6
German	5.5	Other	1.6
Slovak	1.2		
Croatian	0.3		
Other	0.9		

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde, 1929–1936," The Hague, 1939, pp. 149–150.

Not only are there political problems arising from the language composition of the population; there are also many social and economic ones arising from the same source. Each language group has many customs and traditions to which it adheres tenaciously. It may be almost impossible, for example, to develop any general health program because of these customs and because of the difficulties of language; or it may be that a school system cannot be extended very rapidly because of difficulties of language or differences of social organization in these various groups. Wherever there is difficulty of communication, as there always is where there are several languages in use within a country, all kinds of social and economic movements are retarded in their development. The language composition[1] of a population is, therefore, a very important thing to know.

While language and nationality are not so important in this country as in certain European countries, yet we have a foreign-born element in

[1] I have spoken of language composition because nationality is closely associated with language in Europe, and language, indeed, rather than close genetic relationship, is often, if not generally, accepted as the badge of nationality.

our population which few other countries have (2). This immigrant group and their children are a very considerable proportion of our total population, as Table 20 shows, but with each passing year this group

TABLE 20.—PERCENTAGE DISTRIBUTION OF THE WHITE POPULATION BY NATIVITY, UNITED STATES AND SELECTED STATES, 1930

Area	Native white			Foreign-born white
	Native parentage	Foreign parentage	Mixed parentage	
United States	64.4	15.6	7.7	12.3
Vermont	65.2	11.4	11.4	12.0
Massachusetts	34.1	28.7	12.1	25.2
Ohio	68.3	14.6	6.9	10.2
Kansas	81.1	8.1	7.0	3.9
North Carolina	98.8	0.4	0.4	0.4
Texas	90.0	4.1	3.6	2.3
California	58.1	15.5	10.3	16.1

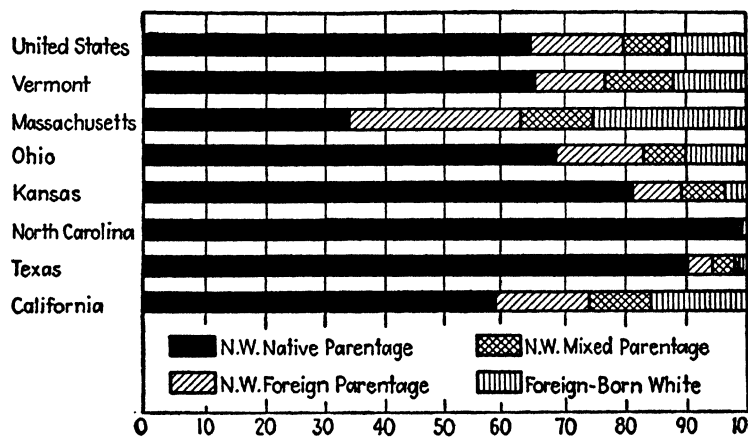

FIG. 9.—Percentage distribution of the white population, by nativity, United States and selected states, 1930. (Based on Table 20.)

declines, and, if immigration remains at the low level of recent years, we shall have no foreign-born problem of any consequence within three or four decades. However, we cannot overlook the fact that each foreign-born group brings with it certain customs and traditions which tend to prevent its mixing freely with the people already here. Furthermore, every group but that from the British Isles and the British part of Canada speaks a language other than English. Hence, there is inevitably a very definite line of cleavage between the native and most of our immigrants which not infrequently extends to the children of immigrants

and prevents these groups from working together harmoniously in communities where there are any considerable numbers of immigrants. Table 21 shows something of the heterogeneity of our foreign-born population.

TABLE 21.—PERCENTAGE DISTRIBUTION BY COUNTRY OF BIRTH OF FOREIGN-BORN WHITE POPULATION, UNITED STATES, 1940

Country of birth	Percentage	Country of birth	Percentage
Total	100.0	Hungary	2.6
		Jugoslavia	1.4
Northwestern Europe	24.8	Eastern Europe	12.9
England and Wales	5.8	Russia	9.1
Irish Free State	5.0	All other	3.8
Scotland	2.5		
Norway	2.3	Southern Europe	16.6
Sweden	3.9	Italy	14.2
All other	5.3	All other	2.4
Central Europe	30.5	Canada and Newfoundland	9.3
Germany	10.8		
Poland	8.7	All other	5.9
Czechoslovakia	2.8		
Austria	4.2		

The mere statement of the facts is sufficient to convince anyone that the nativity of a population is an important factor in any country where there has been a large immigration movement. If the proportion of foreign born in our population is compared with that of European countries, as in Table 22, we can see at once that we are bound to have numer-

TABLE 22.—PERCENTAGE DISTRIBUTION OF POPULATION BY NATIVITY, SELECTED COUNTRIES[1]

Country of birth	Year	Native	Foreign born
United States	1940	91.2	8.8
France	1931	92.5	7.5
Bulgaria	1934	94.2	5.8
Germany	1933	98.8	1.2
Australia	1933	99.1	0.9
Sweden	1930	99.7	0.3
England and Wales	1931	99.6	0.4
Italy	1936	99.7	0.3

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde, 1929–1936," The Hague, 1939, pp. 140–144.

ous social problems which do not arise in most of these countries. Nor are the problems arising from immigration closely analogous to those

arising from the presence of large language or nationality groups different from the dominant group but native to the country. In the main, our immigrants want to become Americans, and their children are generally extremely eager to eradicate any marks that smack of the Old World. This is not true of the minorities of European countries. They ardently desire to remain as they are and are often encouraged in this attitude, not only by people having the same language living elsewhere but by powerful institutions—such as the Church—that are well established among them.

9. Religious Composition

Still another factor of much importance in the composition of populations is the religious adherence of the people. Since our regular decennial census does not ask for the religion of the people, we have no comprehensive data on this point. The following data, however, will serve as an indication of the proportions of our population belonging to different religious groups.

Table 23.—Church Affiliation by Principal Religious Bodies, United States, 1936[1]

Denomination	Number	Per cent of total population
All denominations	55,807,366	43.3
Baptist bodies (principal):		
Northern and Southern Baptist Convention	4,029,199	3.1
Colored Baptists	3,782,464	2.9
Church of Christ, Scientist	268,915	0.2
Churches of Christ	309,551	0.2
Congregational and Christian Churches	976,388	0 8
Disciples of Christ	1,196,315	0.9
Evangelical and Reformed Church	723,877	0.6
Jewish Congregations	4,641,184	3 6
Latter-day Saints	774,169	0.6
Lutheran bodies	4,244,890	3.3
Methodist bodies (principal):		
Methodist Episcopal Church, North and South	5,571,446	4.3
Methodist Episcopal Church, Colored	1,177,516	0.9
Presbyterian bodies	2,513,653	2.0
Protestant Episcopal Church	1,735,335	1.4
Reformed bodies (principal)	299,694	0.2
Roman Catholic Church	19,914,937	15.5
United Brethern bodies (principal)	392,897	0.3
Other smaller bodies	3,254,936	2.5

[1] U. S. Bureau of the Census, "Census of Religious Bodies, 1936," Government Printing Office, Washington, D. C., 1941, pp. 10–20.

It appears from these data that a very large proportion of the population does not hold membership in any definite religious organization. Whether the large proportion of the people who do not affiliate with any religious organization should be interpreted to mean that religion plays a less important role in the lives of our people than in the lives of people in countries where practically everyone affiliates with some religious group need not concern us here. The fact is that where people can be identified by religious affiliation, those belonging to certain groups display certain mental attitudes and habits of life which are different from those belonging to other groups. Since this is the case, it is of importance to know the religious make-up of different populations.

Some of the ways in which religious composition may affect population problems may be mentioned before leaving this subject, although the proof of these effects will not be presented until later. There are very distinct differences in some countries in the birth rates of different religious

TABLE 24.—PERCENTAGE DISTRIBUTION OF POPULATION BY BROAD RELIGIOUS GROUPS, SELECTED COUNTRIES[1]

Country	Roman Catholic	Greek Catholic	Protestant	Jewish	Mohammedan	Other
Bulgaria (1934)	0.8	84.4	0.1	0.8	13.5	0.4
Czechoslovakia (1930)	73.5	10.4	7.7	2.4	....	6.0
Germany (1933)	32.5	....	62.7	0.8	....	4.0
Hungary (1930)	64.9	2.8	27.2	5.1	....	...
Jugoslavia (1931)	37.4	48.7	1.7	0.5	11.2	0.5
Poland (1931)	64.8	22.2	2.6	9.8	....	0.6

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde, 1929–1936," The Hague, 1939, pp. 136–137.

groups; there are also differences in death rates. Both of these differences, however, are probably due much less to religious differences than to differences in the economic and social status of the adherents of the several religious bodies. Differences in religion in some countries are also closely associated with differences in language and nationality. For all these reasons it is difficult, if not impossible, to attribute certain definite types and amounts of influence to religion apart from these other factors.

10. EDUCATIONAL COMPOSITION

Until quite recently little has been known by any people regarding the extent of its education. Most countries know how many of their people are illiterate, that is, how many cannot read and write or can do only one of these. They also know how many are in schools of different types and grades, but they do not know the amount of schooling that each person has had, that is, what proportions of their people have spent different

lengths of time in school and what types of schools they have attended. Table 25 shows the extent of illiteracy[1] in the United States and certain

TABLE 25.—PERCENTAGE OF ILLITERACY IN THE UNITED STATES AND SELECTED STATES (10 YEARS OF AGE AND OVER), 1930 AND 1880

Area	1930				1880			
	All classes	Negro	Foreign-born white	Native white	All classes	Negro[1]	Foreign-born white	Native white
United States...	4.3	16.3	9.9	1.5	17.0	70.0	12.0	8.7
Vermont.....	2.2	4.9	7.2	1.3	6.0	19.3	26.6	2.4
Massachusetts..	3.5	5.4	10.7	0.4	6.5	15.1	19.6	0.7
Ohio.....	2.3	6.4	11.6	0.7	5.5	27.3	8.4	4.3
Kansas.....	1.2	5.9	5.9	0.5	5.6	46.8	6.7	3.1
North Carolina.	10.0	20.6	5.2	5.6	48.3	77.4	3.3	31.7
Texas.....	6.8	13.4	7.3	1.4	29.7	75.4	24.7	13.9
Washington.....	1.0	2.9	2.9	0.3	7.0	38.1	4.5	2.4
California.....	2.6	3.1	5.7	0.3	7.8	29.8	8.6	2.0

[1] Includes "other races."

states in 1880 and 1930. In the 1940 census a question regarding the grade of school completed was substituted for the question on illiteracy. The amount of schooling for the population aged twenty-five and over in certain selected states is shown in Table 26.

One would naturally expect that, with the differences in illiteracy and schooling shown here, many of the social problems of different communities would take on widely different forms. Iowa and Mississippi do have very different social and economic problems, and some of these differences no doubt arise from the fact that the proportions of those having different amounts of schooling in the two states are very different, although other differences, for example, racial, are probably of more importance. It requires no argument to prove that people who are illiterate, or have had but little schooling, will have many mental attitudes different from those of people who have had more schooling. There would be difficulties in working out a health program, or an economic or political program, or an educational program, among the former which would not be present among the latter. The mere existence of large classes having widely different educational attainments cannot fail to complicate the social problems of a democratic society. Such educational differences would create far less trouble in a society where rigid class lines are generally accepted.

[1] "The Census Bureau defines as illiterate any person ten years of age or over who is not able to read and write, either in English or in some other language." *Fifteenth Census of the United States*, 2 (1930), 1219.

TABLE 26.—PERCENTAGE OF PERSONS 25 YEARS OLD AND OVER WHO HAVE COMPLETED A GIVEN GRADE OF SCHOOL, URBAN AND FARM, BY SEX, SELECTED STATES, 1940

State and grade of school completed	Native white				Negro			
	Urban		Rural-farm		Urban		Rural-farm	
	Male	Female	Male	Female	Male	Female	Male	Female
West Virginia:								
None	1.2	1.0	4.2	3.1	7.6	5.4	16.7	10.0
1–4	6.1	4.7	18.0	13.8	22.6	17.0	30.0	26.2
5 and 6	11.1	10.7	22.3	22.4	18.4	16.4	21.9	21.2
7 and 8	34.8	34.1	43.1	45.9	25.1	26.9	20.8	28.4
9–11	13.4	14.9	4.2	5.1	10.3	13.9	3.9	6.0
12	15.5	18.8	3.4	4.0	6.9	9.8	1.9	3.5
13–15	8.0	9.2	2.5	3.5	3.7	5.2	1.7	2.3
16 or more	8.2	5.4	1.0	1.0	4.1	4.3	1.7	2.3
Not reported	1.5	1.1	1.4	1.1	1.3	1.1	1.3	0.1
Mississippi:								
None	1.4	1.0	3.0	1.8	9.6	7.5	14.5	10.7
1–4	4.8	3.3	13 3	8.6	35.5	28.0	49.3	39.9
5 and 6	7.5	6.2	16.3	14.4	25.6	25.1	21.0	26.9
7 and 8	20.0	16.6	35.5	35 4	16.9	21.9	10.3	15.6
9–11	20.6	21.7	17.7	21 2	6.3	10.1	2.2	3.8
12	20.7	26.3	7.5	10.7	2.7	4.4	0.6	1.2
13–15	12.4	14.2	3.2	4.3	1.1	1.6	0.2	0.4
16 or more	11.2	9.8	1.5	1.9	1.1	0.8	0.1	0.1
Not reported	1.4	0.8	2.0	1.8	1.1	0.8	1.8	1.6
Iowa:								
None	0.4	0.2	0.4	0.2	5.1	3.4	6.9	11.1
1–4	3.3	2.0	3.8	2.0	15.2	11.0	14.9	5.6
5 and 6	6.8	5.2	8.5	5.8	14.3	13.8	14.9	13.5
7 and 8	36.6	32.3	58.8	49.4	32.3	32.4	43.7	41.3
9–11	17.4	18.1	12.3	14.4	14.6	20.1	10.9	11.9
12	18.1	25.4	10.8	19.4	9.1	12.0	5.2	8.7
13–15	8.0	10.0	3.2	6.5	3.4	3.3	1.1	5.6
16 or more	7.8	5.5	1.0	1.4	1.9	1.4	....	0.8
Not reported	1.5	1.3	1.1	0.8	4.1	2.8	2.3	1.6

After glancing over Table 27 it is not difficult to believe that many of the political, economic, and social problems of different countries are related to their varying degrees of literacy. One might wonder whether the postwar dictatorships in the first five of the countries given in this table had any connection with the great amount of illiteracy in them were it not for the fact that Germany, the most literate of countries, has also developed the most thoroughgoing dictatorship. In any event we can

see that the extent of education in any community certainly cannot be a matter of indifference to those who would understand its life and who are responsible for its welfare.

TABLE 27.—PERCENTAGE OF ILLITERACY (15 YEARS OF AGE AND OVER), BY SEX, SELECTED COUNTRIES[1]

Country	Male	Female	Country	Male	Female
Russia (1926)	25.34	60.83	Hungary (1930)	7.52	10.52
Bulgaria (1934)	21.17	49.01	Belgium (1930)	5.46	6.38
Spain (1920)[2]	33.77	50.98	United States (1930)	4.82	4.73
Poland (1931)	19.53	30.44	France (1931)[3]	4.60	5.52
Italy (1931)	18.92	26.88	Czechoslovakia (1930)[3]	3.29	4.79
Rumania (1930)	32.24	58.08	Finland (1930)	.91	.75
Egypt (1927)	76.44	96.04	Sweden (1930)	.14	.11
Mexico (1930)	56.02	65.95		.03	
Chile (1930)	21.88	26.91	Germany (1925)		

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde, 1929–1936, The Hague, 1939, pp. 28–29.
[2] Age sixteen and over.
[3] Age ten and over.

11. ECONOMIC COMPOSITION

In recent years there has been an increasing interest in the economic status of the population. This point will not be elaborated upon here, since it will come up in other connections from time to time, but because of the very great importance of economic status in the understanding of many social problems (3) it will be of interest to present some data on the distribution of incomes in the United States and several other countries.[1]

Although the difference in the distribution of income in the United States in 1929 and in 1935 to 1936 is due chiefly to the differences in economic conditions in the two years, a part of it is also due to the different bases on which the data were gathered. It is not necessary to judge which is the more satisfactory base for the purposes of our discussion here (Table 28).

The year 1929 probably witnessed the highest level of family incomes we have ever had in this country, with the possible exception of 1941, and yet it will be noted that approximately 60 per cent of the families in the nation received less than $2,000, over 42 per cent received less than $1,500, and over 21 per cent received less than $1,000, while only about 29 per cent received over $2,500. There was also a wide variation in per capita income in the different geographic divisions, as Table 29 shows.

[1] In the following discussion, where foreign countries are referred to, their monies will be translated into dollars at the rates of exchange at the given dates. It is realized that in most cases this procedure will give the impression that the purchasing power of these incomes was somewhat less than was actually the case, but this cannot be helped.

TABLE 28.—NUMBER AND PERCENTAGE OF FAMILIES BY INCOME CLASSES, UNITED STATES

Income class	1935–1936[1]			1929[2]		
	Number (thousands)	Per cent	Cumulative percentage	Number (thousands)	Per cent	Cumulative percentage
All classes	29,400	100.00	100.00	27,474	100.000	100.000
Under $500	4,178	14.21	14.21	2,102	7.651	7.651
$500– $1,000	8,076	27.47	41.68	3,797	13.820	21.471
1,000– 1,500	6,748	22.95	64.63	5,754	20.943	42.414
1,500– 2,000	4,240	14.42	79.05	4,701	17.111	59.525
2,000– 2,500	2,465	8.38	87.43	3,204	11.662	71.187
2,500– 3,000	1,314	4.47	91.90	1,988	7.236	78.423
3,000– 5,000	1,585	5.39	97.29	3,672	13.365	91.788
5,000– 10,000	510	1.74	99.03	1,625	5.914	97.702
10,000– 20,000	190	.65	99.68	412	1.500	99.202
20,000– 50,000	79	.27	99.95	156	.568	99.770
50,000–100,000	11	.04	99.99	39	.142	99.912
100,000 and over	4	.01	100.00	24	.088	100.000

[1] U. S. National Resources Committee, "Consumer Incomes in the United States," Government Printing Office, Washington, D.C., 1938, p. 18.

[2] LEVEN, MAURICE, HAROLD G. MOULTON, and CLARK WARBURTON, "America's Capacity to Consume," The Brookings Institution, Washington, D.C., 1934, p. 54.

The Middle Atlantic states had a per capita income of $1,107 while in the East South Central states it was only $344. When per capita incomes of the farm and nonfarm populations are compared it is found that the former averaged $273 and the latter $908. This difference is not a satisfactory measure of the differences in level of living in these two groups because of the differences in their conditions of living; but even so, there is not the least doubt that the nonfarm population was much better off economically than the farm population, and the data for 1935 to 1936 indicate that the disparity in family incomes between these two groups was still greater at that time.

In Sweden in 1931 almost 40 per cent of the employed *persons*, not *families*, reporting incomes received less than $250 annually, and 70.7 per cent got less than $500, or almost the same percentage as that of families in the United States that got $2,500 or less. On the other hand there are very few Swedish workers that get over $2,500—about 1.4 per cent as compared with about 21.5 per cent of the families in the United States. In the higher brackets the differences in the proportion of individuals in Sweden and of families in the United States receiving given incomes are also very great. Even if it is assumed that family incomes average twice as high as individual incomes it is still clear that the eco-

nomic status of the average family is considerably higher in the United States than in Sweden. It is worth noticing, however, that there appears to be a more even distribution of income in Sweden than in the United States, and one wonders whether this more even distribution of incomes

TABLE 29.—INCOME OF INDIVIDUALS, UNITED STATES AND DIVISIONS, 1929[1]

Area	Population July 1 (thousands)	Aggregate income (millions)	Percentage of total income	Per capita income
United States	121,832	$91,385	100.00	$ 750
New England	8,130	7,377	8.07	907
Middle Atlantic	26,037	28,817	31.54	1,107
East North Central	25,082	20,831	22.79	831
West North Central	13,274	7,464	8.17	562
South Atlantic	15,700	7,314	8.00	466
East South Central	9,838	3,383	3.70	344
West South Central	12,065	5,738	6.28	476
Mountain	3,683	2,444	2.68	664
Pacific	8,023	8,017	8.77	999

[1] LEVEN, MAURICE, HAROLD G. MOULTON, and CLARK WARBURTON, "America's Capacity to Consume," The Brookings Institution, Washington, D.C., 1934, p. 38.

in Sweden is in any way connected with the fact that that country has on the whole a more favorable death rate than the United States.

In 1934 the great majority of income earners in France were receiving too little to be subject to the income tax (less than $400), but of those taxed over 84 per cent received between $400 and $1,200, while only 0.51 per cent received over $8,000.

The income data for Germany (1934) show that the proportion of Germans receiving under $300 is considerably higher than that of Swedes receiving under $250—enough higher to make one willing to hazard the guess that there is a somewhat smaller proportion of Swedes than of Germans in the lowest income classes. This guess is rendered somewhat more probable if the break in income groups is made at $750. It then appears that, while 85.35 per cent of the Swedes had incomes below that level, 91.94 per cent of the Germans fell below it; conversely, a larger proportion of Swedes than of Germans had middle- and upper-class incomes.

However, the purpose of giving these data is not to make comparisons between countries but to show something of the distribution of income within different countries. There is a very wide distribution of income in all these countries, but differences appear to be greater in the United States than elsewhere. The significance of this pattern of the distribution of income will not be discussed here.

12. Miscellaneous Elements in the Composition of a Population

The elements to which attention has been directed above are by no means all those which enter into the composition of a population. Practically every community of more than a few hundred people has a prison population, and it also has some of its members in the various county, state or national institutions for those who are in some way abnormal and cannot fit into the life of the home and the community—the insane, the feeble-minded, the paupers, the deaf, the blind, and so forth. Altogether, these people are quite numerous and are a great expense to the community that must care for them. They absorb a disproportionate amount of both the economic means and the mental resources of the community. In some cases they so monopolize attention that very little thought is given to the far more important task of keeping those who are normal from becoming charges on the community. Certainly, it cannot be assumed that any community is adequately analyzed if it is not known how many people compose the groups which need special care of a custodial nature.

13. Conclusion

Care should be taken not to infer, because a population can be separated statistically into its component elements, that these elements can be treated as entities—as groups apart from other groups. The character used to classify the population into groups for a particular purpose is never an independent one. Thus, one may speak of the rural population as though living in the country were its only characteristic; but obviously people who live in the country will follow different occupations from those who live in cities. Then, too, the fact that they do follow different occupations leads inevitably to differences in sex ratios; for farming is primarily a man's job, and but comparatively few women in this country are employed in it directly. The sex-ratio characteristic of a rural community, in turn, being different from that in an urban community, leads to differences in death rates and in proportion of married women, which later issues in a different birth rate. Thus it is with every characteristic which is used for classifying the population into groups; it is both a consequence of certain other characteristics of the population and produces certain other effects. It is practically impossible to say of any particular condition in any population that it is due to or is caused by a certain characteristic of its composition; but it can often be said that such and such a condition usually follows or is accompanied by such and such peculiarities in the composition of the population. It is extremely useful, therefore, in studying not only population problems but all other social problems to know the make-up of the population in which these problems occur. As more and more is known of the relations between

the composition of the population and other conditions, it will be easier to understand the differences between communities and the peculiarities which they exhibit.

One may even say that studying social problems without knowing the composition or make-up of the population in which they occur is like trying to study chemistry without knowing the characteristics of the various elements which must be used in making chemical compounds. The reactions of communities to various social stimuli will vary as their composition varies, just as the chemical reaction varies with different elements used. The composition of the population is an underlying condition which must be taken account of when any social situation is studied. It should never be assumed that populations are alike until their make-up is known in detail. It will frequently be found that what appear to be large differences between populations entirely disappear when their composition is analyzed; and, conversely, that what appear to be strong likenesses between them will often become marked differences when their composition is fully known.

References

1. BOOKWALTER, JOHN W. "Rural versus Urban," 292 pp., Knickerbocker Press, New York, 1910.
2. CARPENTER, NILES: "Immigrants and Their Children, 1920; a Study Based on Census Statistics Relative to the Foreign Born and the Native White of Foreign or Mixed Parentage," 431 pp., Government Printing Office, Washington, D.C., 1927. (U. S. Bur. Census, *Census Mon.* 7.)
3. COLLINS, SELWYN D.: "Economic Status and Health; a Review and Study of the Relevant Morbidity and Mortality," 74 pp., Government Printing Office, Washington, D.C., 1927. (U. S. Pub. Health Service, *Pub. Health Bull.* 165.)
4. DUBLIN, LOUIS I.: "Causes of Death by Occupation: Occupational Mortality Experiences of the Metropolitan Life Insurance Co., Industrial Department, 1911–1913," 88 pp., Government Printing Office, Washington, D.C., 1917. (U. S. Bur. Labor Statistics, *Bull.* 207, Industrial Accidents and Hygiene Ser., No. 11.)
5. OGBURN, WILLIAM FIELDING: "The Relationship of Marital Condition to Death, Crime, Insanity, and Pauperism," *Bull. de l'institut international de statistique*, 22 (1926), 441–454.
6. THOMAS, DOROTHY SWAINE: "Social and Economic Aspects of Swedish Population Movements, 1750–1933," 487 pp., The Macmillan Company, New York, 1941.
7. THOMPSON, WARREN S., and P. K. WHELPTON: "A Nation of Elders in the Making," *Amer. Mercury*, 19 (1930), 385–397.
8. ———: "The Population of the Nation," in "Recent Social Trends in the United States," McGraw-Hill Book Company, Inc., New York, 1933, Vol. 1, Chap. 1.
9. ———: "Population Trends in the United States," 415 pp., McGraw-Hill Book Company, Inc., New York, 1933.
10. U. S. National Resources Committee: "The Problems of a Changing Population," 306 pp., Government Printing Office, Washington, D.C., 1938.
11. WHELPTON, P. K.: "Occupational Groups in the United States, 1820–1920," *Amer. Stat. Assoc. Jour.*, 21 (1926), 335–343.

Questions

1. What is meant by "composition of population"? Why is it important to know the composition of a population when studying its social problems?
2. Describe the various elements entering into the composition of the population of the United States.
3. How does the sex composition of the population affect social problems?
4. What are the most important differences in occupational status in a community? Why?
5. In what ways are the marital differences between populations of significance? Illustrate.
6. How does the age composition of the population affect the social and economic problems connected with dependency, the schools, labor force, and so forth?
7. Discuss the ways in which rural communities differ from urban communities in their population make-up. How can you explain these differences?
8. How does a mixed racial composition affect the life of a community? Give examples from your own knowledge, if possible.
9. Contrast the significance of diversity of nationality and language groups in the populations of Europe and the United States.
10. Do you believe that it is of any importance to know the religious composition of a population? Why? Can you give any reasons based on personal experience?
11. How does literacy affect the social and economic problems of a community? Illustrate your answer.
12. Do you see any value in knowing the economic classes in a population? Why?
13. Enumerate the different elements and make-up of the population of your home community, and give their characteristics.
14. Compare the composition of the population in your home locality with some other community that you know, and explain the differences that you find. How do these differences affect the life of the community?
15. Give an example of some community or group with which you are familiar having an abnormal composition, and show the problems arising from this condition.
16. Look up the occupational distribution in a steel city, a textile city, and a mining county.

CHAPTER IX

THE NEGRO IN THE UNITED STATES[1]

In our discussion of the Negro in the United States we shall content ourselves with a very brief statistical presentation of the demographic facts which are essential to an understanding of the more obvious aspects of the Negro's life among us.

1. Population Movement

The Negro was first brought to this country about the time that the Pilgrims were settling at Plymouth. It appears, however, that it was not until about 1700 that the value of the Negro as a laborer in the cotton and tobacco fields was fully realized and the importation of slaves on the grand scale began. By 1790 there were 757,208 Negroes in the United States, and they constituted 19.3 per cent of our total population. The very rapid increase in Negroes during the eighteenth century must be attributed largely to the direct importation of slaves to work in the cotton and tobacco fields and for domestic service. Since 1800, however, the increase in Negroes has come largely from the excess of births over deaths and has averaged about three-fourths the rate of increase of the whites. From 1790 to 1940 the Negroes increased about seventeen fold, while the whites increased about thirty-seven fold. Furthermore, until 1930 it appears reasonably certain that the rate of natural increase of the whites exceeded that of the Negroes even in the South. This makes due allowance for the fact that there was much white immigration during the greater part of this time. As a consequence of the practical cessation of Negro immigration by about 1800 and a lower rate of natural increase, the proportion of Negroes in our total population decreased almost steadily until 1930. It is important to fix this fact firmly in mind, inasmuch as there is a very widespread belief that the Negroes have always increased more rapidly than the whites. Since 1930, however, it appears that a change has taken place and the Negroes now have a somewhat higher natural increase than the whites in the same region, except in certain city and nonfarm groups.

It will be noted that it is in the rural-farm population that the net reproduction rate of nonwhites is most in excess of that for whites. Since the Negroes are not being urbanized quite as fast as the whites, it is reasonable to expect that a larger proportion of them than of the whites

[1] General references: 3, 5, 6, 10, 13, 18, 20, 21.

TABLE 30.—NET REPRODUCTION RATES OF THE WHITE AND NONWHITE POPULATION, URBAN AND RURAL, SELECTED DIVISIONS, 1940 AND 1930[1]

Division	1940				1930			
	Total	Urban	Rural-non-farm	Rural-farm	Total	Urban	Rural-non-farm	Rural-farm
White:								
East North Central....	92	78	119	134	106	92	132	148
South Atlantic.....	105	71	119	144	130	91	149	170
East South Central....	121	79	128	150	142	93	152	174
West South Central....	108	81	115	142	126	92	133	164
Nonwhite:								
East North Central....	86	84	[2]	[2]	87	84	[2]	[2]
South Atlantic.....	112	73	118	159	119	74	124	164
East South Central....	118	70	101	163	113	70	105	145
West South Central....	110	68	109	158	109	67	106	146

[1] U. S. Bureau of the Census, preliminary release, Aug. 23, 1941.

[2] Rates not shown for population groups which, in 1940, had fewer than 20,000 females under five years old.

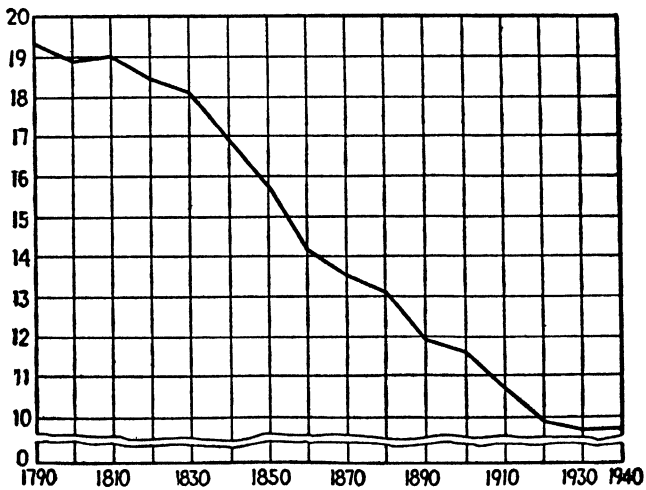

FIG. 10.—Percentage of Negro population in the United States, 1790 to 1940. (Based on Table 31.)

will continue to have the birth rates characteristic of rural people for several decades. Moreover, even in the farm population it appears that the birth rate is declining faster among the whites than the Negroes. But, even though it appears probable that the Negroes will have a higher rate of reproduction than the whites for the next two or three decades, it is not at all likely that it will remain higher indefinitely. There is

nothing to indicate that urban Negroes either in the North or in the South consistently have rates of reproduction significantly different from those of the urban whites. In such communities Negro reproductive practices seem to follow those of the whites rather closely. The higher rate for the group as a whole comes from the greater proportion of the Negroes living in rural communities, particularly on farms in the South.

TABLE 31.—NEGRO POPULATION OF THE UNITED STATES, 1790 TO 1940

Year	Number	Percentage of Negro population	Percentage increase
1940	12,865,518	9.8	8.2
1930	11,891,143	9.7	13.6
1920	10,463,131	9.9	6.5
1910	9,827,763	10.7	11.2
1900	8,833,994	11.6	18.0
1890	7,488,676	11.9	13.8
1880	6,580,793	13.1	22.0
1870	5,392,172	13.5	21.4
1860	4,441,830	14.1	22.1
1850	3,638,808	15.7	26.6
1840	2,873,648	16.8	23.4
1830	2,328,642	18.1	31.4
1820	1,771,656	18.4	28.6
1810	1,377,808	19.0	37.5
1800	1,002,037	18.9	32.3
1790	757,208	19.3	

2. GEOGRAPHIC DISTRIBUTION

The Negroes have always been concentrated largely in the richer agricultural regions of the South (19, Plates 172–183). In this region the soil was good and the climate was favorable for the growing of certain commercial crops, chiefly cotton and tobacco. Negro labor has long been used in these areas. The following table shows this concentration in the South, but it also shows that a considerable change in the distribution of Negroes has been going on since 1900, most of which has taken place since the stoppage of immigration during World War I.

The changing distribution of the Negroes is also indicated by the proportion found in the better agricultural counties in the black-earth region of the South. In 1890 there were 529 counties in the Southern states having more than 30 per cent Negroes in their populations. These 529 counties contained 81.3 per cent of the total Negro population in the United States. In 1930 there were only 490 such counties and they had but 49.9 per cent of all the Negroes. By 1940 the number of counties with over 30 per cent Negroes had fallen to 466 and they held only 49.3

TABLE 32.—URBAN AND RURAL NEGRO POPULATION, BY DIVISIONS, 1940

Division	Urban		Rural	
	Number	Per cent	Number	Per cent
United States	6,253,588	48.6	6,611,930	51.4
New England	87,631	86.3	13,878	13.7
Middle Atlantic	1,146,580	90.4	121,786	9.6
East North Central	979,300	91.6	90,026	8.4
West North Central	282,126	80.4	68,866	19.6
South Atlantic	1,804,272	38.4	2,894,591	61.6
East South Central	893,102	32.1	1,887,533	67.9
West South Central	918,744	37.9	1,506,377	62.1
Mountain	25,904	71.1	10,507	28.9
Pacific	115,929	86.3	18,366	13.7
The West	141,833	83.1	28,873	16.9
The South	3,616,118	36.5	6,288,501	63.5
The North	2,495,637	89.4	294,556	10.6

TABLE 33.—NUMBER AND PERCENTAGE DISTRIBUTION OF THE NEGRO POPULATION. GEOGRAPHIC DIVISIONS, 1940, 1900, AND 1860

Division	1940		1900		1860	
	Number	Per-cent-age	Number	Per-cent-age	Number	Per-cent-age
United States	12,865,518	100.0	8,833,994	100.0	4,441,830	100.0
The South	9,904,619	77.0	7,922,969	89.7	4,097,111	92.2
South Atlantic	4,698,863	36.5	3,729,017	42.2	2,058,198	46.3
East South Central	2,780,635	21.6	2,499,886	28.3	1,394,360	31.4
West South Central	2,425,121	18.9	1,694,066	19.2	644,553	14.5
The North	2,790,193	21.7	880,771	10.0	340,240	7.7
New England	101,509	0.8	59,099	0.7	24,711	0.6
Middle Atlantic	1,268,366	9.9	325,921	3.7	131,290	3.0
East North Central	1,069,326	8.3	257,842	2.9	63,699	1.4
West North Central	350,992	2.7	237,909	2.7	120,540	2.7
The West	170,706	1.3	30,254	0.3	4,479	0.1
Mountain	36,411	0.3	15,590	0.2	235	...
Pacific	134,295	1.0	14,664	0.2	4,244	0.1

per cent of all Negroes. Until quite recently over four-fifths of all Negroes were found in a rather small area, stretching from southern Virginia around to eastern Texas, and known as the "black belt." During the last 30 years the chief migration movement of Negroes has been

from the farms of this "black belt" into the cities both North and South. In 1890 the Northern cities having over 100,000 population contained but 2.6 per cent of all the Negroes of the country, but by 1940 such cities contained 15.0 per cent of all our Negroes. The Negroes, like the whites, are becoming urban people (Table 34).

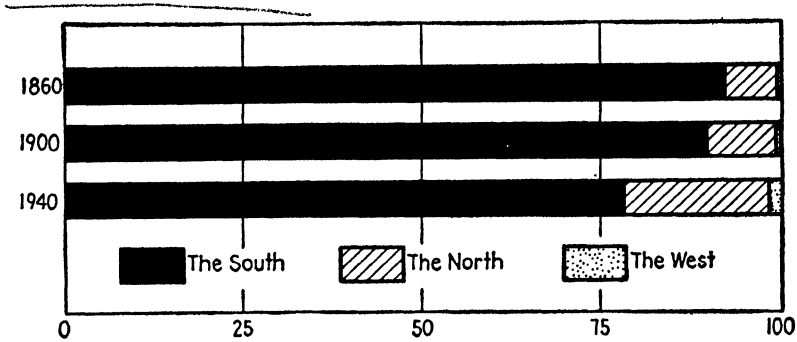

FIG. 11.—Per cent distribution of the Negro by geographic divisions, 1940, 1900, and 1860. (Based on Table 33.)

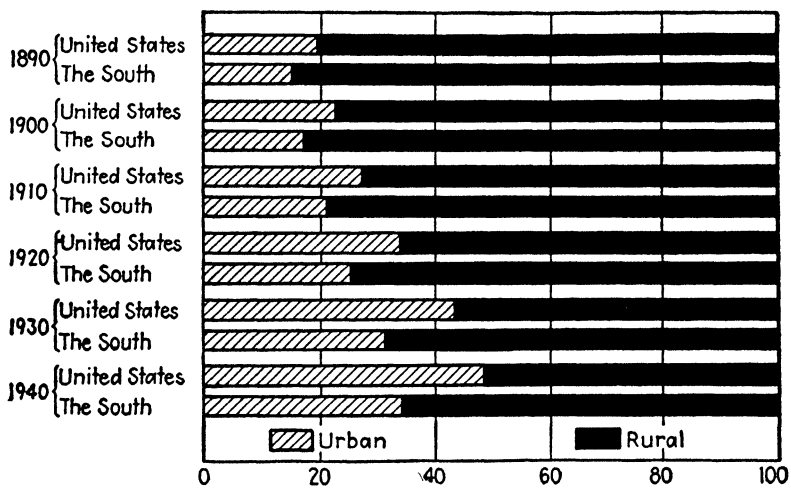

FIG. 12.—Urban and rural distribution of Negroes, 1890 to 1940. (Based on Table 34.)

The same factors which have been making for the increased urbanization of the whites have also been operative among the Negroes, but in addition, with the decline of European immigration, Negroes have been recruited to take the jobs which the immigrants would have filled. The net result has been an extremely rapid movement to the cities and into the North since 1914 (2; 16). There can be little doubt that this city-ward movement will be resumed with the passing of the depression and that each succeeding census will show a larger proportion of our Negroes

living in cities and in the North. The invention of more laborsaving machinery for the raising of cotton and tobacco and the continued industrialization of our population can be counted on to assure the continuation of this movement; for the Negro, like the white man, goes where he finds the most attractive economic opportunities.

TABLE 34.—PERCENTAGE URBAN AND RURAL DISTRIBUTION OF NEGROES, UNITED STATES AND THE SOUTH, 1890 TO 1940

Year	United States		The South	
	Urban	Rural	Urban	Rural
1940	48.6	51.4	36.5	63.5
1930	43.7	56.3	31.7	68.3
1920	34.0	66.0	25.3	74.7
1910	27.4	72.6	21.2	78.8
1900	22.7	77.3	17.2	82.8
1890	19.4	80.6	15.3	84.7

3. SEX AND AGE COMPOSITION

It has been pointed out above how important it is to know the sex and age composition of a population if we would understand its social

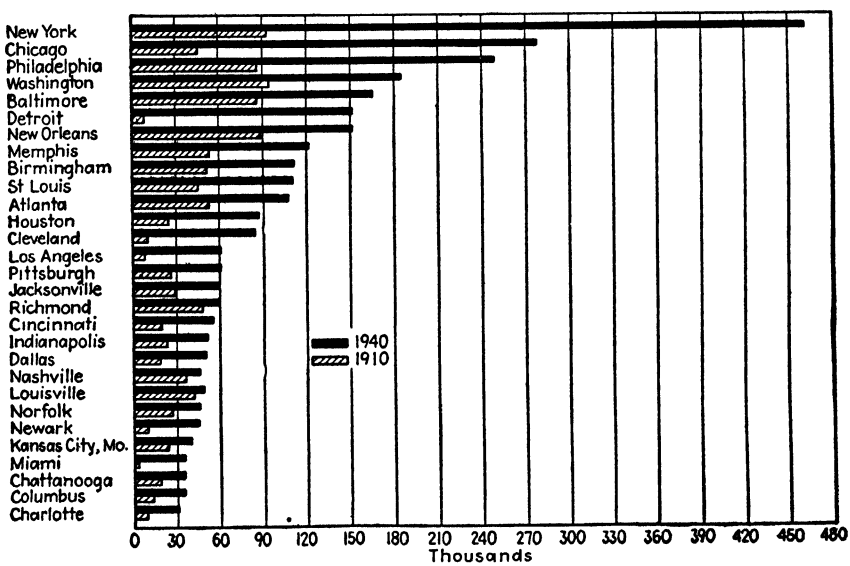

FIG. 13.—Negro population for 1940 and 1910 in cities having 100,000 or more inhabitants and at least 30,000 Negroes in 1940.

and economic problems. This is particularly true of population groups which are as different as the Negro population groups in various parts of

the United States because migration has been an important factor in the growth of Negro population in many localities. A comparison of the sex and age groups in different communities with one another and with those of the whites will show marked variations and will help us to understand some of the differences in community problems in these areas.

There are very great differences between New York City and North Carolina in the proportions found in the different age groups. In New York City the highest proportion of males is found in the age group thirty-five to thirty-nine and of females in the age group twenty-five to twenty-nine; for males the proportion thirty-five to thirty-nine is over one-half greater than at ages under five and for females twenty-five to twenty-nine it is over twice as great as that under five. In North Carolina, on the other hand, the largest proportion is at ages fifteen to nineteen, owing probably to underenumeration in the zero-to-four group.

TABLE 35.—PERCENTAGE DISTRIBUTION BY AGE OF NEGRO POPULATION, UNITED STATES AND SELECTED STATES AND CITIES, 1940

Age	United States				New York City, Negro		Chicago, Negro		North Carolina, Negro		Louisiana, Negro	
	White		Negro									
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0– 4.....	7.9	7.7	9.9	9.5	7.1	5.9	7.4	6.6	11.7	11.3	11.1	10.4
5– 9.....	8.0	7.8	10.3	9.9	8.0	6.6	7.8	7.0	11.9	11.6	10.8	10.3
10–14.....	8.8	8.7	10.5	10.1	8.4	7.3	8.1	7.5	12.2	11.9	10.9	10.4
15–19.....	9.3	9.3	10.0	10.2	7.6	7.6	7.3	7.4	12.2	12.0	10.1	10.4
20–24.....	8.6	8.9	8.8	9.8	7.4	10.2	6.6	8.3	10.4	10.8	8.7	9.6
25–29.....	8.2	8.5	8.4	9.3	9.7	12.3	8.4	10.1	8.6	9.0	8.2	9.1
30–34.....	7.7	7.9	7.5	8.0	10.7	11.6	9.0	10.7	6.6	6.7	7.2	7.7
35–39.....	7.2	7.2	7.4	7.9	11.4	11.4	10.9	11.5	5.9	6.4	7.0	7.7
40–44.....	6.7	6.7	6.4	6.3	9.9	8.5	10.2	9.1	4.7	4.9	5.9	5.8
45–49.....	6.5	6.3	5.6	5.2	7.2	6.2	8.2	6.9	3.8	4.0	5.3	5.0
50–54.....	5.8	5.5	4.5	4.1	5.0	4.4	5.9	4.9	3.5	3.4	4.2	3.7
55–59.....	4.7	4.5	3.3	2.9	3.2	3.0	4.1	3.4	2.6	2.3	3.3	2.8
60–64.....	3.7	3.7	2.5	2.1	2.1	2.0	2.5	2.3	2.0	1.8	2.3	2.1
65 and over.	6.9	7.3	4.9	4.7	2.3	3.0	3.6	4.3	3.9	3.9	5.0	5.0

Among males the fifteen-to-nineteen group is almost one-half greater than the proportion at ages twenty-five to twenty-nine; among females, on the other hand, it is only about one-third greater. In New York City and Chicago almost three-fifths of the Negroes are between twenty and fifty years of age, while in North Carolina less than two-fifths are found in these same age groups. In New York and Chicago only about 22 per cent of the population is under fifteen years of age, but in North Carolina

about 34 per cent is of this age. Among older people the differences are also large; the cities have relatively few old people. It is not surprising, therefore, that the economic and social problems of the Negroes in New York City and Chicago are quite different from those of the

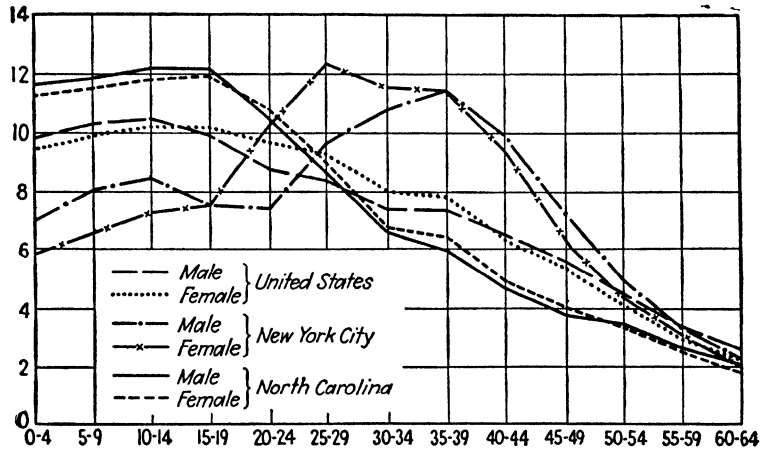

FIG. 14.—Per cent distribution by age of Negro population in the United States, New York City, and North Carolina, male and female, 1940. (Based on Table 35.)

Negroes in North Carolina or Louisiana. One may call attention to a few of the more obvious differences in the problems confronting these different communities arising from these differences in age composition by asking some questions. Are the differences in proportions of children likely to affect the problem of providing adequate schools? Are the differences in age likely to have any effects upon family incomes? Will these differences affect the amount and kind of delinquency? Will family problems be the same in New York City and Chicago as in North Carolina and Louisiana? Will the problems of sex be the same in such differently constituted populations? Will the crime problem be the same? One might continue such questions indefinitely but need not because we all know that these age differences do help to give a distinctive character to the social and economic problems of such heterogeneous communities.

We find not only that the age distribution is quite different among Negroes in different localities but also that sex distribution is different. This is shown quite clearly in Table 36. Here we find large differences in sex ratios if we compare the Negroes living in different communities. Whereas in New York City the females predominate to the extent that there are only about 81 males to 100 females, in Chicago the females still predominate but only to the extent of 89 males to each 100 females, while in the whole Negro population there are 95 males to 100 females.

But this is not all. There are considerable differences in sex ratios in different age groups in the same population. Thus in New York City there are only 62.1 males to 100 females aged twenty to twenty-nine. In Chicago the difference is less in the twenty-to-twenty-nine group but

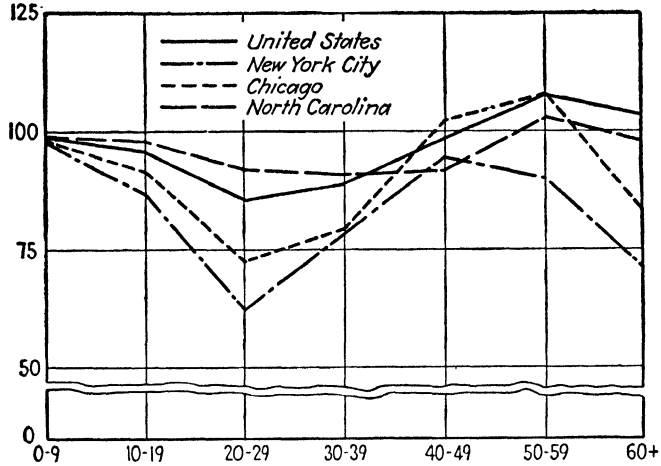

FIG. 15.—Males per 100 females by age for the Negro population in the United States, North Carolina, New York City, and Chicago, 1940. (Based on Table 36.)

TABLE 36.—MALES PER 100 FEMALES FOR THE NEGRO POPULATION BY AGE COMPARED WITH TOTAL WHITE AND NEGRO POPULATION IN THE UNITED STATES, SELECTED STATES AND CITIES, 1940

Age	United States		New York City, Negro	Chicago, Negro	North Carolina, Negro	Louisiana, Negro
	White	Negro				
Total	101.2	95.0	81.4	88.7	95.7	94.8
0–9	103.7	99.0	98.3	98.5	98.8	99.9
10–19	102.2	96.1	87.3	91.4	97.8	95.7
20–29	97.7	85.7	62.1	72.5	91.9	85.7
30–39	99.2	88.8	78.1	79.5	90.7	87.9
40–49	102.7	98.6	94.7	102.2	91.6	98.4
50–59	106.4	107.2	90.1	107.7	102.5	108.1
60 and over	97.4	103.2	71.6	82.5	98.2	98.4

much greater in the fifty-to-fifty-nine group. It is impossible to say just how much these differences are enhanced by errors in reporting age, but, even if considerable allowance is made for this, it appears reasonably certain that there are significant differences in sex ratios, both in different locality groups and in the same locality at different ages. Can anyone doubt that these differences have an influence upon marriage and the

family or that they are of importance in determining sex mores in different groups?

4. Race Amalgamation

There is still one other aspect of the composition of the Negro population in this country to which attention should be called. It is the mixture of the whites and Negroes. This has gone on from the earliest times, but we have no means of measuring it. The census information available on this point is wholly unreliable, and, as Reuter well says (14), even if the data were accurate they would not tell us how much white blood is to be found among the Negroes. Nor is there any means of knowing whether the infiltration of white blood is greater or less now than formerly. Estimates as to the proportion of Negroes having some white blood in them vary greatly. According to Reuter some persons believe that three-fourths of the Negroes have some white blood in them and that the proportion of white blood in the entire group is on the increase. On the other hand, it is maintained that the proportion of Negroes with white blood is far smaller and also that there is less race mixture now than formerly. In support of this contention it is asserted that those people with only a trace of Negro blood in them are constantly passing into the white population, thus decreasing the amount of white blood in the Negro population; also that the fertility of the Negro is adversely affected by the admixture of white blood—witness the lower birth rates in the North, where the proportion of mulattoes and quadroons is higher. However, it must be recognized that there is little reliable evidence on any of these points. We simply do not know much about what is happening in the field of race mixture (8).

5. Health

It has long been known that the Negroes have a higher death rate than the whites among whom they live (4; 7; 17). This has not seemed to bother the whites a great deal, probably because they did not see any organic connection between their own health and that of their servants. Indeed, even today many white people, particularly in the South, do not appear to realize that any considerable improvement of their own health waits, in large measure, upon the improvement of the health of the Negroes who live among them. It is not surprising that this attitude should have been common in the days before the nature of disease was so generally understood, but it does seem rather surprising that there is still so much indifference to the health of the Negroes in those areas where they constitute any considerable part of the population.

The following table shows the death rates of whites and Negroes at different ages and at two periods in time. The most significant feature is the large difference between whites and Negroes at most ages, although

this difference tends to decrease at ages of sixty and over. The net result is that during 1930 to 1939 the expectation of life at time of birth was 60.6 years for white males but only 50.1 years for nonwhite males

TABLE 37.—DEATH RATES AT GIVEN AGES OF WHITES AND NEGROES IN THE REGISTRATION AREA, UNITED STATES, 1920 TO 1929 AND 1930 TO 1939[1]

Age	Whites				Negroes			
	Males		Females		Males		Females	
	1930–1939	1920–1929[2]	1930–1939	1920–1929[2]	1930–1939[3]	1920–1929[2]	1930–1939[3]	1920–1929[2]
0–1	57.0	71.54	45.0	56.93	83.5	98.84	68.6	82.11
5–6	2.0	3.14	1.7	2.73	2.5	3.67	2.3	3.62
10–11	1.4	1.79	1.0	1.39	1.8	2.37	1.5	2.12
15–16	1.8	2.39	1.3	2.01	3.6	4.74	4.0	5.61
20–21	2.7	3.50	2.2	3.39	7.1	9.55	7.1	10.27
25–26	3.1	4.09	2.7	4.16	9.1	11.90	8.4	11.85
30–31	3.5	4.48	3.1	4.41	10.2	11.93	8.9	11.56
40–41	6.1	7.07	4.6	6.01	16.0	16.84	13.8	16.30
50–51	12.4	12.55	8.9	10.44	26.9	24.98	24.2	26.06
60–61	25.7	25.80	19.0	21.45	35.8	36.74	35.1	39.46
70–71	56.3	56.95	45.8	50.37	62.9	64.21	55.8	62.67

[1] U. S. Bureau of the Census, "United States Life Tables," Government Printing Office, Washington, D.C., 1936, pp. 20–27; U. S. Bureau of the Census, United States Preliminary Life Tables, 1930–1939, July 21, 1941.

[2] Registration area of 1920.

[3] Nonwhites of continental United States.

TABLE 38.—WHITE AND COLORED DEATHS PER 1,000 PERSONS, ADJUSTED FOR AGE, FOR URBAN AND RURAL AREAS OF SELECTED STATES, 1930

State	Total		Urban[1]		Rural	
	White	Colored	White	Colored	White	Colored
Illinois	10.5	19.5	11.4	18.8	9.1	22.9
Louisiana	10.9	17.9	15.3	28.4	8.3	14.3
Maryland	11.4	20.6	12.7	22.8	9.7	18.2
Mississippi	9.8	17.0	16.9	30.5	8.6	15.5
Missouri	10.0	20.6	12.3	22.6	8.5	17.2
New York	11.5	20.4	12.0	20.8	9.9	17.9
North Carolina	11.1	18.8	15.5	25.1	10.2	17.0
Ohio	10.2	20.9	11.5	21.7	8.7	18.3
Pennsylvania	11.3	20.3	12.4	20.5	10.1	19.8
South Carolina	11.6	20.8	18.6	34.4	10.3	19.0
Virginia	10.7	20.1	12.8	23.7	9.9	18.5

[1] All places with a population over 10,000.

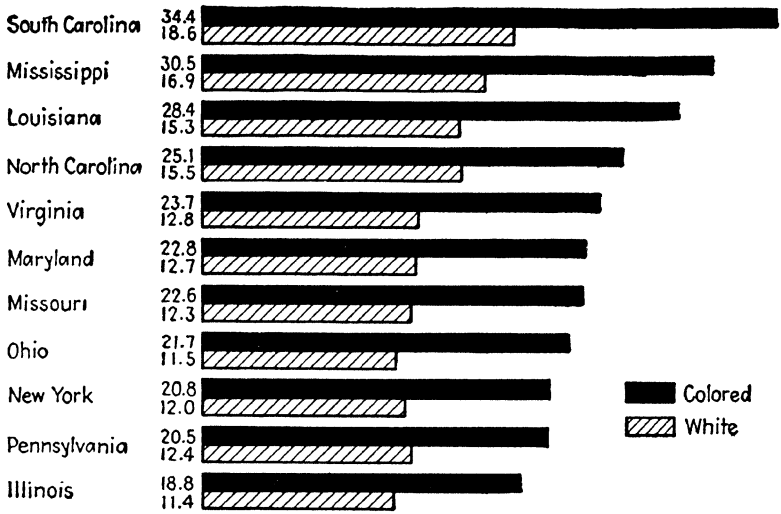

FIG. 16.—White and colored deaths per 1,000 persons, adjusted for age, for urban areas of selected states, 1930. (Based on Table 38.)

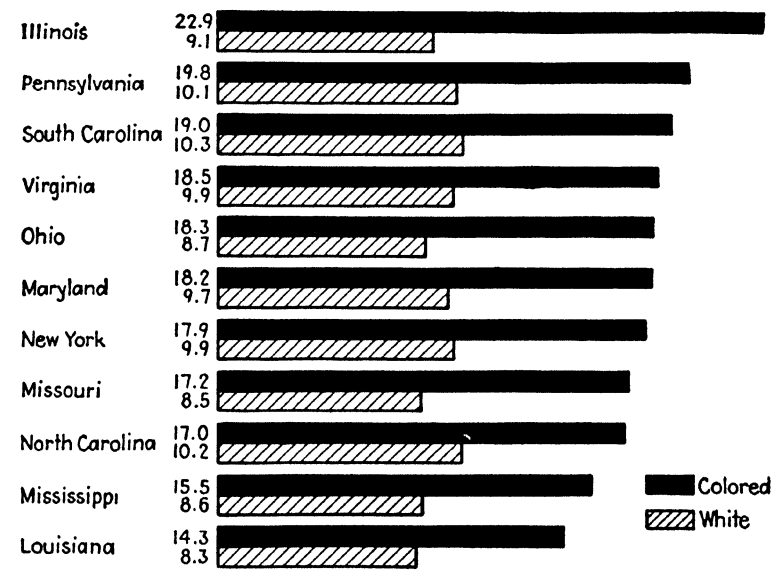

FIG. 17.—White and colored deaths per 1,000 persons, adjusted for age, for rural areas of selected states, 1930. (Based on Table 38.)

(at least nine-tenths of these are Negroes); the figures for females are 64.5 years and 52.6 years, respectively.

The adjusted death rates in Table 38 show that there is not a great deal of difference between northern and southern states in the ratio

TABLE 39.—WHITE AND COLORED DEATHS PER 1,000 PERSONS, ADJUSTED FOR AGE, FOR URBAN AND RURAL AREAS OF SELECTED STATES, 1930[1]

Area	White	Colored	Ratio of colored to white rate
Urban[2]	12.0	22.8	1.9
Rural	9.5	17.0	1.8

[1] Florida, Illinois, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia.
[2] All places with a population over 10,000.

of the white death rate to the Negro death rate, that of the Negroes generally being about 80 to 90 per cent higher than that of the whites. This ratio also holds for both urban and rural rates, although the rural rate is generally lower for both. It is not unlikely that the rates shown here for the southern states are somewhat too low for purposes of comparison with the northern states, since registration is less complete in the former than in the latter. As between the races, however, it probably understates the difference because registration is more complete among the whites than among the Negroes.

There is also a striking difference between whites and Negroes in the death rates from particular diseases. But this difference is not greater than might be expected where public health work is much better developed in one group than in another. Thus typhoid, pneumonia, whooping cough, tuberculosis, influenza, nephritis, and diseases of the puerperal state take a far heavier toll from the Negroes than the whites, while the Negroes show lower rates for measles, scarlet fever, and diphtheria and for certain of the degenerative diseases, cancer, and diabetes (9). But it is of interest to note that the life-table death rates in Table 37 indicate that up to about age forty almost as much progress was made in lowering the Negro death rates between 1920 and 1929 and 1930 and 1939 as in lowering the white death rates. Beyond forty years of age the advantage seems to lie almost entirely with the whites.

6. INFANT MORTALITY

Infant mortality is still very much higher among the Negroes than among the whites, but very substantial reductions have been effected in recent years—about one-sixth between 1920–1929 and 1930–1939. In the latter period it had fallen to about what it was for whites in 1920. This is truly a noteworthy achievement, but there is still much to be done. More attention must be paid to removing the basic causes of infant and child mortality, which are no different among Negroes from among whites. These have been discussed above but may be recapitulated very briefly. They are poverty; employment of the mother away from home during pregnancy and immediately after the birth of the child; bad hous-

TABLE 40.—WHITE AND COLORED DEATHS PER 100,000 PERSONS BY CAUSE, 1920 TO 1940[1]

Cause	Year	Total	White	Colored
All causes (exclusive of stillbirths)	1940	1,076.4	1,041.5	1,382.8
	1930	1,143.2	1,093.6	1,658.4
	1920	1,297.4	1,254.8	1,763.8
Typhoid and paratyphoid fever	1940	1.1	0.9	3.2
	1930	3.9	3.0	12.4
	1920	7.6	6.6	19.5
Scarlet fever	1940	0.5	0.5	0.3
	1930	2.0	2.1	0.7
	1920	4.6	5.0	0.8
Whooping cough	1940	2.2	1.8	5.9
	1930	4.4	3.8	11.0
	1920	12.5	11.7	20.5
Diphtheria	1940	1.1	1.0	1.8
	1930	4.8	4.7	5.2
	1920	15.3	15.9	8.6
Influenza	1940	15.3	13.3	32.7
	1930	17.9	16.2	35.5
	1920	70.4	67.1	107.3
Tuberculosis (all forms)	1940	45.9	36.6	128.0
	1930	70.9	58.2	202.1
	1920	113.0	99.4	261.9
Cancer and other malignant tumors	1940	120.3	125.0	78.4
	1930	103.0	107.1	60.5
	1920	83.3	86.4	48.4
Diabetes mellitus	1940	26.6	27.6	17.9
	1930	20.2	20.8	13.7
	1920	16.1	16.9	7.9
Diseases of the heart	1940[2]	292.5	297.6	248.5
	1930	226.9	225.8	238.4
	1920	159.4	159.3	160.4
Pneumonia (all forms)	1940	54.9	50.7	92.6
	1930	83.5	77.4	147.1
	1920	136.6	131.2	196.5
Acute and chronic nephritis	1940[2]	81.5	76.6	124.7
	1930	93.4	88.7	141.8
	1920	88.7	86.6	110.9
Puerperal septicemia	1940	2.8	2.4	6.3
	1930	4.4	3.9	8.6
	1920	6.5	6.1	11.3
Violent deaths (suicide excepted)	1940	79.8	76.3	111.3
	1930	89.3	85.9	125.5
	1920	77.6	75.1	106.5

[1] The death rates shown for 1920 and 1930 are for the 1920 Death Registration States; those shown for 1940 are for the United States.

[2] Not comparable with previous years owing to change in classification.

ing; poor food; too frequent births; and all other conditions which make it difficult or impossible for a mother to give her baby good care. Figure 18 shows that a number of diseases which are preventable take a far higher toll among colored than among white infants. The essential measures to the lowering of these rates are the same as those which have been used among the whites, namely, better economic conditions, better sanitary conditions, better health education, and better medical care.

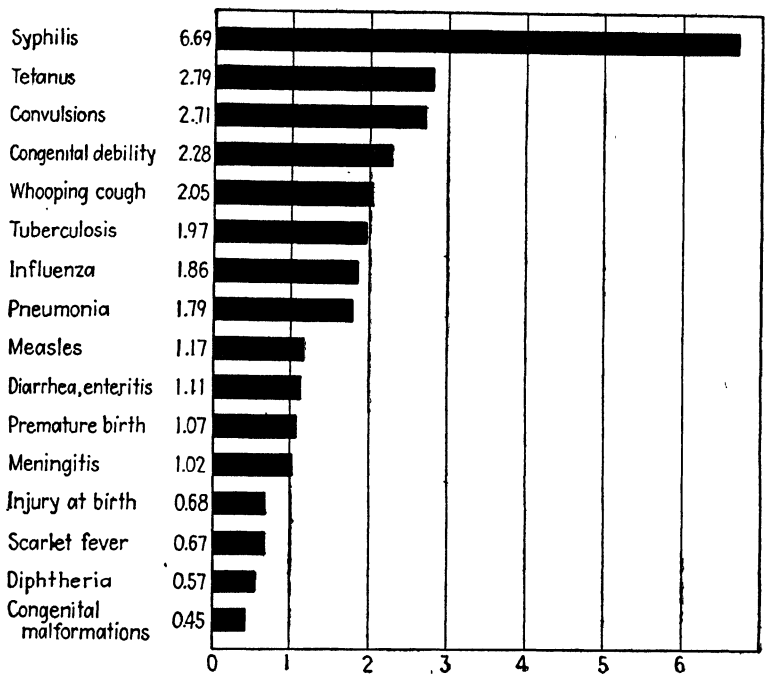

FIG. 18.—Ratio of colored to white infant mortality rates, by cause, southern states (excluding West Virginia and Delaware), 1939.

7. OCCUPATIONAL STATUS (22)

It will be recalled that all but a small proportion, 11.0 per cent, of our Negroes were slaves in 1860. Most of the slaves were plantation hands. There were, of course, a good many house servants and a considerable number plying the trades necessary to the life of the large plantation. Perhaps most of the freedmen and slaves in the towns and cities had attained a somewhat better social and economic status than the plantation Negroes. But the number of nonplantation Negroes was small. No one thing will show more clearly the changes now taking place in the life of the Negro than the alterations going on in his occupational status.

TABLE 41.—TOTAL NUMBER OF NEGROES 10 YEARS OF AGE AND OVER EMPLOYED IN EACH OCCUPATIONAL GROUP, AND PERCENTAGE THAT THEY ARE OF THE TOTAL NEGRO POPULATION, UNITED STATES, 1930 AND 1910

Occupation	Number			Percentage occupied		
	Total	Male	Female	Total	Male	Female
All occupations, 1930	5,503,535	3,662,893	1,840,642	46.3	62.6	30.5
Agriculture	1,987,839	1,492,555	495,284	16.7	25.5	8.2
Forestry and fishing	31,732	31,652	80	0.3	0.5	[1]
Extraction of minerals	74,972	74,919	53	0.6	1.3	[1]
Manufacturing and industry	1,024,656	923,586	101,070	8.6	15.8	1.7
Transportation and communication	397,645	395,437	2,208	3.3	6.8	[1]
Trade	183,809	169,241	14,568	1.5	2.9	0.2
Public service	50,203	49,273	930	0.4	0.8	[1]
Professional service	135,925	72,898	63,027	1.1	1.2	1.0
Domestic and personal service	1,576,205	423,645	1,152,560	13.3	7 2	19.1
Clerical occupations	40,549	29,687	10,862	0.3	0.5	0.2
All occupations, 1910	5,192,535	3,178,554	2,013,981	52.8	65 1	40.8
Agriculture	2,834,969	1,784,259	1,050,710	28 8	36.5	21.3
Forestry and fishing	33,776	33,634	142	0 3	0 7	[1]
Extraction of minerals	61,129	61,048	81	0.6	1 2	[1]
Manufacturing and industry	655,906	587,684	68,222	6.7	12.0	1.4
Transportation and communication	256,098	254,763	1,335	2.6	5.2	[1]
Trade	119,775	112,630	7,145	1.2	2.3	0.1
Public service	22,229	21,929	300	0.2	0.4	[1]
Professional service	68,350	38,620	29,730	0.7	0.8	0.6
Domestic and personal service	1,121,251	267,949	853,302	11.4	5.5	17.3
Clerical occupations	19,052	16,038	3,014	0.2	0.3	0.1

[1] Less than one-tenth of 1 per cent.

Obviously the Negro has traveled a long way since slave days. We now find almost one-fifth (Table 42) of all the Negro men engaged in manufacturing and mechanical industries. This is considerably fewer than among the white population, but still it is a great gain over slave days. The proportion engaged in transportation and communication is almost the same for the Negro as for the population at large, and the number found in trade and professional service is increasing steadily. The proportions engaged in agriculture and domestic and personal service are, of course, still much higher than in the white population.

The changes in occupational status between 1910 and 1930 are very significant because they are closely associated with the northward and cityward movement of Negroes. Negroes are leaving the cotton fields

to take up urban occupations. This is shown very clearly in Tables 43 and 44. The increase in number of teachers, textile workers, clothing

TABLE 42.—PERCENTAGE DISTRIBUTION OF THE GAINFULLY OCCUPIED NEGRO POPULATION 10 YEARS OF AGE AND OVER, BY OCCUPATION, UNITED STATES, 1910 TO 1930

Occupation	1930	1920	1910
All occupations	100.0	100.0	100.0
Agriculture	36.1	44.2	54.6
Forestry and fishing	0.6	0.7	0.7
Extraction of minerals	1.4	1.5	1.2
Manufacturing and mechanical industries	18.6	18.7	12.6
Transportation and communication	7.2	6.5	4.9
Trade	3.3	2.9	2.3
Public service	0.9	1.0	0.4
Professional service	2.5	1.7	1.3
Domestic and personal service	28.6	22.0	21.6
Clerical occupations	0.7	0.8	0.4

TABLE 43.—NEGROES IN SELECTED OCCUPATIONS AND NUMBER PER 100,000 OF THE TOTAL NEGRO POPULATION, UNITED STATES, 1910 TO 1930

Occupation	1930		1920		1910	
	Total number	Number per 100,000	Total number	Number per 100,000	Total number	Number per 100,000
Real estate agents and officials	4,050	34	1,369	13	762	8
Retail dealers	28,213	237	23,526	225	20,653	210
Butchers and meat dealers	3,496	29	3,009	29	2,957	30
Grocers	7,547	63	6,339	61	5,550	56
Clergymen	25,034	211	19,571	187	17,495	178
Lawyers, judges, justices	1,247	10	950	9	798	8
Physicians and surgeons	3,805	32	3,495	33	3,077	31
Teachers (school)	54,439	458	35,442	339	29,432	299
Barbers, hairdressers, etc.[1]	34,263	288	31,352	300	23,228	236
Janitors and sextons	78,415	659	44,110	422	20,089	204
Cooks	279,621	2,352	202,435	1,935	233,912	2,380
Waiters	57,378	483	45,836	438	40,053	408

[1] There was an increase of female workers in this occupation from 1910 to 1920, the increase being 77 per 100,000 to 241 per 100,000.

workers, tobacco workers, hairdressers, and of those in the professions and in many other city occupations is very noticeable, while the decline in the number and the proportion engaged in agriculture is equally marked. All this merely means that the Negro is passing through an industrial revolution just as the whites are, albeit somewhat more slowly.

But it will no doubt be a long while before he attains an equal status with the whites (1). For example, the Negroes are making only slow headway in entering the skilled occupations in industry, and they will no doubt continue to make slow progress in this direction because these jobs are now in the hands of the whites and the mingling of Negroes and whites

TABLE 44.—NEGROES EMPLOYED IN SELECTED FACTORIES, UNITED STATES, 1910 TO 1930

Occupation	1930	1920	1910
Chemical and allied industries	42,092	19,739	10,228
Clay, glass, and stone industries[1]	25,949	22,349	27,410
Clothing industries	24,025	15,295	10,661
Food industries	44,594	43,522	14,559
Iron and steel industries	131,661	129,257	35,493
Other metal industries (not iron and steel)	6,534	5,230	1,666
Bakers	4,527	3,164	2,125
Cotton mills	13,961	16,465	6,496

[1] Includes glass blowers.

on the job, as well as the promotion of Negroes to better positions where they compete with the whites, presents many social difficulties as well as the difficulties encountered by any unskilled group in acquiring new skills. Hence, Negroes will for some time be employed in industrial undertakings only where they can be kept clearly subordinate to the whites. The fact that they are found in such jobs does not, of course, mean that they are not capable of doing more highly skilled industrial work. It simply means that under present conditions the less skilled tasks are almost the only jobs open to them, just as they were the jobs available to our peasant immigrants from Europe and Mexico.

8. ECONOMIC STATUS

The number of Negroes in the southern states owning their homes is shown in Table 45 and the number of Negro farm operators in these states in Table 46. No definite conclusion regarding the economic progress of the southern Negro can be drawn from these data. Home ownership is increasing faster than population, but because of the movement from farm to city the importance that can be attached to this fact is highly uncertain. Many Negroes settle on the outskirts of cities, where they put up for themselves shanty shelters which they own, but this signifies little if any real economic progress over their tenant status on the plantations. Likewise the decrease in Negro farm operators (Table 46) may reflect merely the cityward movement of population rather than any economic retrogression. The occupational data given above seem to indicate that an improvement is taking place in the eco-

TABLE 45.—TENURE OF HOMES OF COLORED FAMILIES, SOUTHERN STATES, 1900 to 1930

Year	Number		Percentage increase		Percentage increase in population
	Owned	Rented	Owned	Rented	
1930[1]	545,895	1,603,338	15.6	6.0	5.5
1920	472,226	1,512,683	6.9	6.4	1.7
1910	441,918	1,421,186	30.8	23.8	10.5
1900	337,790	1,197,661			

[1] Mexican included with colored except in Texas, where only Negroes were used.

TABLE 46.—NUMBER AND ACREAGE OF FARMS OPERATED BY COLORED FARMERS, SOUTHERN STATES, 1900 TO 1940

Year	Number of farms	All land in farms, acres	Average size of farm, acres
1940	680,266	30,924,796	45.5
1930	881,687	37,805,765	42.9
1920	922,914	41,318,496	44.8
1910	890,141	42,609,117	47.9
1900	740,670	38,612,046	52.1

nomic status of the Negroes who have gone to the cities, but as yet the evidence on this point is inconclusive as regards the mass of the migrants, although there can be no doubt that a few have attained a much improved status.

9. SUMMARY AND CONCLUSIONS

As was said in the beginning of this chapter the more fundamental controversial problems of the Negro in this country will not be discussed here. It may not be out of place, however, to point out that the statistical data relating to the position of the Negro in this country do not seem to justify the very general belief in his essential inferiority (11). In matters of health the Negro is clearly in the position of almost all poor people. He lives under relatively harsh environmental conditions. The very natural consequence of this is that he has a high death rate and suffers greatly from debilitating illnesses, as hookworm and malaria, which greatly reduce his economic and social efficiency. But as has been pointed out elsewhere, there is a very marked difference between groups of the white population in the extent to which they suffer from ill health. It is quite possible that the Negro is more subject to certain diseases than the white man—for example, diseases of the respiratory tract—but we cannot say that this is a fact until the housing conditions of the two races approximate one another far more closely than they now do and

until the Negro also has access to equally good medical and hospital care. On the other hand the Negro apparently is rather immune to scarlet fever and perhaps to diabetes. Under present conditions the only reasonable assumption is that differences in death rates between whites and Negroes are due to differences in the environmental conditions under which they live.

In the matter of natural increase the Negro seems to show the same general tendencies as the whites. He does not breed well in the captivity of urban life, but neither does the white man. In the country the Negro until quite recently had a somewhat slower rate of increase than the whites in the same area, probably because of his higher death rate. But on the whole he seems to feel the pressure of the same conditions which lead the white man to restrict the size of his family, although there is a lag in the control of the size of the family similar to that found among the whites of the southern Appalachians. There is absolutely nothing in any way peculiar about the reproductive life of the Negro which sets him apart from the white man.

As regards his economic status it should be increasingly apparent that where opportunity is present the Negro is not content to remain a mere hewer of wood and drawer of water. In all cities with any considerable Negro population there are numerous individuals who show marked business ability and ability to get ahead in the professions. We must not forget that it is only recently that occupations involving more than the use of the hoe, the pick, and the shovel, or the performance of household tasks under close supervision were opened to the Negro; and even yet only a comparatively few can enter the better paid occupations requiring more skill and training. Surely the progress that the Negroes have made in this respect in the last three or four decades does not indicate that their ability to adjust themselves to the complex industrial order we are developing today is fundamentally less than that of the whites.

In many other lines of activity also it appears that Negroes are beginning to display an ability which we have been accustomed to deny them in the past (12). Reuter points out that good education is only very slowly being extended to them (15, Chap. 11) but that in spite of this fact they are making fairly rapid progress in many lines. It seems only reasonable to assume that it is the lack of educational, social, and economic opportunities rather than the lack of ability that keeps the Negroes from going ahead much more rapidly than is actually happening.

In art and literature the Negro has done better than in education, in business, and in industry, and Reuter's explanation of this difference, which is to the effect that opportunity in these fields is more open to the Negro than in fields where careful scientific and business training are needed, is convincing. The Negro musician or poet receives far more encouragement than the Negro doctor, scientist, or businessman. Artis-

tic achievement encounters less racial discrimination than educational or economic achievement; hence a larger proportion of such ability among Negroes is developed than of the ability they may possess to compete with the whites in other lines.

In conclusion we may say that the time has come when we should cast aside the multitude of prejudices and prepossessions regarding the Negro which we have absorbed from our past and begin to study him simply as a human being. We are steadily accumulating a body of knowledge regarding Negroes and their modes of life which, if we will make use of it, should very materially assist us in making a truer evaluation of the Negro than we have been able to make in the past. It was inevitable that slavery and its associations should leave us many beliefs regarding the Negro which rest on no solid foundation. We have just recently witnessed the tendency in the case of our newer immigrants to hold that the actual position people occupy in the community is the measure of their ability. This is exactly the position that we have been accustomed to assume with regard to the Negroes, and it is no more justified in the one case than in the other. Today we must open our minds to the facts regarding the Negro which are becoming available and must accept them for what they are. If we do this, it is difficult to see how we can fail to accept the general position taken by Reuter in his "American Race Problem; a Study of the Negro" and regard the Negroes as a disadvantaged group whose adjustments to American life have been greatly retarded by social and economic handicaps. When once we become scientific-minded regarding the Negro we shall probably have made the most important step that has ever been made toward a solution of many of the vexed questions of race relations. This does not mean that, once we adopt a scientific attitude in studying the Negro, we shall immediately lose race prejudice and be ready to act justly and rationally toward him, but we shall have taken a long first step in this direction. A generation which has been brought up in this scientific attitude of mind should be in a position to make progress in the solution of our race problems which cannot be reasonably expected from a generation brought up with the manifold prejudices that surround us. The accumulation of knowledge of the Negro by the scientific-minded must certainly precede the application of wisdom to the solution of race problems in this country.

References

1. Cella, Raymond: "Negro Employment Opportunities," 30 pp., Kentucky Unemployment Compensation Commission, Frankfort, Ky., 1940.
2. Donald, Henderson H.: "The Negro Migration of 1916–1918," 116 pp., Association for the Study of Negro Life and History, Washington, D.C., 1921. Reprinted from *Jour. Negro History*, 6 (1921).
3. Doyle, Bertram Wilbur: "The Etiquette of Race Relations in the South," 249 pp., University of Chicago Press, Chicago, 1937.

4. DUBLIN, LOUIS I.: "Recent Changes in Negro Mortality," 10 pp. An address before the National Conference on Social Work, Toronto, July 2, 1924. Metropolitan Life Insurance Company, New York, 1924.
5. FRAZIER, E. FRANKLIN: "The Negro Family in Chicago," 294 pp., University of Chicago Press, Chicago, 1932.
6. GARNETT, WILLIAM EDWARD, and JOHN MALCUS ELLISON: "Negro Life in Rural Virginia, 1865–1934," 59 pp., Virginia Agricultural Experiment Station, Blacksburg, Va., *Bull.* 295, June, 1934.
7. GOVER, MARY, and EDGAR SYDENSTRICKER: "Mortality among Negroes in the United States," 63 pp., Government Printing Office, Washington, D.C., 1928. (U. S. Treas. Dept., Pub. Health Service, *Pub. Health Bull.* 174, June, 1927.)
8. HERSKOVITS, MELVILLE J.: "The American Negro; a Study in Racial Crossing," 92 pp., Alfred A. Knopf, New York, 1928.
9. HOLMES, SAMUEL JACKSON: "Will the Negro Survive in the North?" *Sci. Monthly*, 27 (1928), 557–561.
10. JOHNSON, CHARLES S.: "Shadow of the Plantation," 215 pp., University of Chicago Press, Chicago, 1934.
11. KLINEBERG, OTTO: "Negro Intelligence and Selective Migration," 66 pp., Columbia University Press, New York, 1935.
12. LOCKE, ALAIN: "A Decade of Negro Self-expression," 20 pp., John F. Slater Fund, Charlottesville, Va., 1928. (*Occasional Papers* 26.)
13. REID, IRA DEA.: "In a Minor Key," 134 pp., American Council on Education, Washington, D.C., 1940.
14. REUTER, EDWARD BYRON: "The American Mulatto," *Ann. Amer. Acad. Polit. Social Sci., Publ.* 2174, 8 pp., November, 1928.
15. ———: "The American Race Problem; a Study of the Negro," 448 pp., Thomas Y. Crowell Company, New York, 1927. (Crowell's Social Science Series.)
16. ROSS, FRANK ALEXANDER, and LOUIS VENABLE KENNEDY: "A Bibliography of Negro Migration," Columbia University Press, New York, 1934.
17. SYDENSTRICKER, EDGAR: "Health and Environment," 217 pp., McGraw-Hill Book Company, Inc., New York, 1933.
18. THOMPSON, EDGAR T., ed.: "Race Relations and the Race Problem," 338 pp., Duke University Press, Durham, N.C., 1939.
19. U. S. Bureau of the Census: "Statistical Atlas of the United States," 476 pp., Government Printing Office, Washington, D.C., 1925.
20. WOOFTER, T. J.: "Negro Problems in Cities," 284 pp., Doubleday, Doran & Company, Inc., Garden City, N.Y., 1928.
21. ———: "Races and Ethnic Groups in American Life," 247 pp., McGraw-Hill Book Company, Inc., New York, 1933.
22. ———: "A Study of the Economic Status of the Negro," the Author, 1930.

Questions

1. Discuss the increase in Negro population since their introduction into this country. How does it compare with the increase of the white population, and what are the reasons for the differences?

2. What are the probable trends in the increase of the Negro population? Illustrate from the situation in your own community if possible; if not, use census data to prove your points.

3. Discuss the changes taking place in the geographic distribution of the Negro. Illustrate from personal experience or observation or from the study of census materials.

4. How does the age composition of certain Negro groups affect their social and economic problems? Marriage, labor force, birth rates, and death rates? Give illustrations from your own community if possible.

5. Discuss the sex composition of Negroes in various localities. Do these differences seem important to you? Why?

6. In general how do the health conditions of Negroes in the South compare with those in the North, and why? New York and New Orleans?

7. Compare the Negro death rate with the white death rate from all causes and from particular causes. Study the death rates among Negroes in some community that you know, and compare them with the death rates for the whites. Point out the differences, and explain them. Are they inevitable?

8. Discuss infant mortality in the Negro population, and give its chief causes. How does it differ from infant mortality among the whites? How can it be lowered?

9. What changes are taking place in the occupational status of Negroes? Give reasons for them. What occupations do the Negroes in your community follow? Ask your father or some other person who knows your community well whether there is any change going on in their occupational groups. If so, what are the reasons for it?

10. Are there any indications that the economic status of the Negro is on the upgrade? Is this true in your locality? Give facts which support your answer.

11. Do you believe in the essential inferiority of the Negro as compared with the white man? Give reasons for your answer. Is there any other possible explanation of the facts you have cited? If so, give it.

CHAPTER X

THE BIRTH RATE[1]

Birth rates are usually given in terms of the number of births per thousand of the population without any refinements for age, sex, occupation, income, or any other of the characteristics in which populations may differ. Such rates are called crude birth rates (4). The information on crude birth rates in Table 47 is fairly complete. If it seems meager, it is because only recently have we become interested in such matters and even now this interest is confined to the more industrialized parts of the earth or to the colonies controlled by industrialized countries. Hence, for a large part of the world there is no information at all on birth rates. Furthermore, for a number of the countries for which data are given there are significant omissions in registration. For example, even now in the United States, according to a recent investigation by the Division of Vital Statistics (3; 7), only 21 states and the District of Columbia register over 95 per cent of the births that occur while 18 register less than 90 per cent; 7 others register between 90 to 95 per cent; and 2 have not yet been reported on at the time of writing. Most of the other American countries have still less accurate records. The result is that, aside from the countries of western Europe and some of the British Dominions, the recorded birth rates must be used with caution. Hence, accurate comparisons between countries are often impossible because of the incompleteness of the data in one or more of them. Moreover, over a period of time the data for the same country are often of little value because of the improvement of registration from year to year, because the population on which the rate is based is counted more or less accurately than formerly, or indeed, has only recently been counted at all, or because the new population brought into the registration area has a different composition and birth rate from that already in it. As an example of the difficulties arising from the fact that the country has only recently taken a genuine census the case of Japan may be cited. The first real count of population in Japan was made in 1920. All rates for prior years are based on estimates, which it now appears were probably in excess of the actual population. This would make the rates prior to 1920 too low if all births were registered. It should also be noted that rates for all countries become increasingly questionable as the time from the census increases, although, where birth and death registration are good and emigration and immigration are carefully recorded, the error

[1] General references: 4, 5, 6, 9.

TABLE 47.—AVERAGE CRUDE BIRTH RATES OF THE WORLD, 1808 TO 1939[1]

Year	Austria	Belgium	Bulgaria	Denmark	England and Wales	Finland	France	Germany	Hungary	Ireland
1935–1939	14.8	15.3	24.2	17.9	15.0	20.0[2]	14.9	19.3	20.2	19.4
1928–1932	16.4	18.2	30.6	18.6	16.1	20.2	17.7	17.0	24.8	19.6[3]
1918–1922	21.9[2]	18.4	34.9	23.7	20.9	23.2	17.3	21.7	27.6	20.6
1908–1912	26.5	23.6	40.9	27.5	25.2	30.0	19.4	30.0	....	23.3
1898–1902	31.4	28.8	39.6	29.7	28.8	32.6	21.7	35.7	....	23.0
1888–1892	31.7	29.1	36.7	30.8	30.9	33.4	22.6	36.3	....	22.7
1878–1882	33.2	31.4	....	31.9	34.4	36.2	24.9	38.0	....	24.8
1868–1872	....	32.1	....	30.2	35.3	33.7	25.3	37.4	....	27.4
1858–1862	....	31.3	....	32.4	34.5	36.8	26.8	36.3		
1848–1852	....	29.8	....	31.3	33.4	36.6	27.0	36.1		
1838–1842	....	33.9	....	29.8	31.6	34.3	28.3			
1828–1832	....	....	....	29.1	....	36.9	29.9			
1818–1822	....	....	....	32.4	....	37.6	31.7			
1808–1812	....	....	....	30.1	....	35.0	31.4			

Year	Italy	Netherlands	Norway	Poland	Rumania	Russia	Scotland	Yugoslavia	Spain	Sweden
1935–1939	23.2	20.3	15.1	25.4[2]	30.2	44.2[2]	17.7	28.3[2]	22.2[2]	14.5
1928–1932	25.5	22.7	17.0	31.3	34.8	43.8[2]	19.1	....	28.2	15.2
1918–1922	26.4	26.1	24.2	32.7[2]	36.4[2]	40.9[2]	23.9	....	29.7	21.0
1908–1912	32.7	28.7	26.0	38.2	41.5	45.6[2]	26.6	38.2[2]	32.7	24.7
1898–1902	33.3	31.9	29.8	43.7	39.2	48.8	29.7	38.5	34.3	26.8
1888–1892	37.0	33.1	30.2	....	40.6	48.6	30.9	43.5	35.7	27.9
1878–1882	36.7	35.7	31.0	....	37.6	48.4[2]	34.0	41.7	36.7	29.6
1868–1872	36.9	35.3	29.4	....	33.5	48.9[2]	34.7	43.6	....	29.0
1858–1862	....	33.6	32.9	....	....	....	34.9	....	....	34.1
1848–1852	....	....	31.1	....	....	....	....	....	....	31.5
1838–1842	....	....	28.5	....	....	....	....	....	....	30.5
1828–1832	....	....	31.7	....	....	....	....	....	....	32.5
1818–1822	....	....	32.7	....	....	....	....	....	....	34.2
1808–1812	....	....	....	....	....	....	....	....	....	31.8

Year	Switzerland	Argentina	Canada	Chile	Guatemala	Honduras (British)	Jamaica	Puerto Rico	United States	Ceylon
1935–1939	15.4	24.3	20.2	34 2	32.2	34.6[2]	32.4[2]	39.2	17.1	35.6
1928–1932	17.0	29.4	23.4	38.8	45.0	37.4	34.8	38.3	18.6	38.7
1918–1922	19.7	33.9[2]	25.0[2]	39.5	41.0	38.5[2]	....	38.3[2]	23.4	38.4
1908–1912	25.1	37.3[2]	26.1[2]	39.5	38.7	41.4[2]	37.4[2]	....	....	37.8
1898–1902	28.7	36.3[2]	20.2	38.4	42.8	....	39.2	26.4[2]	....	38.4
1888–1892	27.6	....	21.6	35.5	44.3	....	37.7	30.0	....	30.7
1878–1882	30.1	....	....	40.0	....	....	....	....	....	25.6
1868–1872	....	....	....	42 3	....	....	....	....	....	25.2
1858–1862	....	....	....	42.2						

Year	India	Japan	Philippine Islands	Algeria[4]	Egypt[5]	Union of South Africa[4]	Australia	New Zealand
1935–1939	34.7[2]	29.7[2]	31.7[2]	22.8[2]	43.2[2]	24.8	17.3	18.8
1928–1932	33.6	33.0	35.4	23.7	44.3	25.6	19.3	18.6
1918–1922	32.5	33.9	33.6	22.9	41.1	28.1	24.7	23.3
1908–1912	38.3	33.8	32.4	29.7	45.0	31.8[2]	27.2	26.7
1898–1902	37.4	32.1	30.8[2]	30.0[2]	45.2[2]	....	27.1	25.7
1888–1892	34.8	28.8	46.6	30.9[2]	43.4[2]	....	34.7	29.5
1878–1882	....	24.7	....	33.9[2]	....	....	35.2	39.7
1868–1872	....	....	....	32.1[2]	....	....	38.6	41.4
1858–1862	....	....	....	38.7[2]				
1848–1852	....	....	....	39.0[2]				
1838–1842	....	....	....	29.9[2]				
1828–1832	....	....	....	19.8[2]				

[1] For the current data on birth rates the reader is referred to "Population Index."

[2] Austria, 1919 to 1922; Finland, 1935 to 1938; Poland, 1935 to 1938, 1919 to 1922; Rumania, 1920 to 1922; Russia, 1933 to 1935, 1928, 1920 to 1924, 1906 to 1909, 1876 to 1880, 1866 to 1870; Yugoslavia, 1935 to 1938, 1909 to 1912; Spain, 1935 to 1938; Argentina, 1915 to 1919, 1909 to 1913, 1899 to 1902; Canada, 1920 to 1924, 1911 to 1913; Honduras (British), 1935 to 1937, 1922 to 1924, 1909 to 1911; Jamaica, 1935 to 1938, 1906 to 1910; Puerto Rico, 1921 to 1925, 1894 to 1898; India, 1935 to 1938; Japan, 1935 to 1938; Philippine Islands, 1935 to 1937, 1903 to 1907; Algeria, 1931 and 1933 to 1935, 1901 to 1905, 1891 to 1895, 1881 to 1885, 1872 to 1876, 1861 to 1865, 1851 to 1855, 1841 to 1845, 1831 to 1835; Egypt, 1935 to 1938, 1905 to 1909, 1901 to 1904; Union of South Africa, 1910 to 1914.

[3] Irish Free State.

[4] Europeans only.

[5] Before 1917, Bedouins were not included in population estimates.

in rates for the entire country even eight or nine years after a census due to uncertainty as to the population base is not serious. But in a country like India, where influenza may have killed 15,000,000 to 20,000,000 in a few months at the end of 1918 and early in 1919, the population base must remain very uncertain until another census is taken.

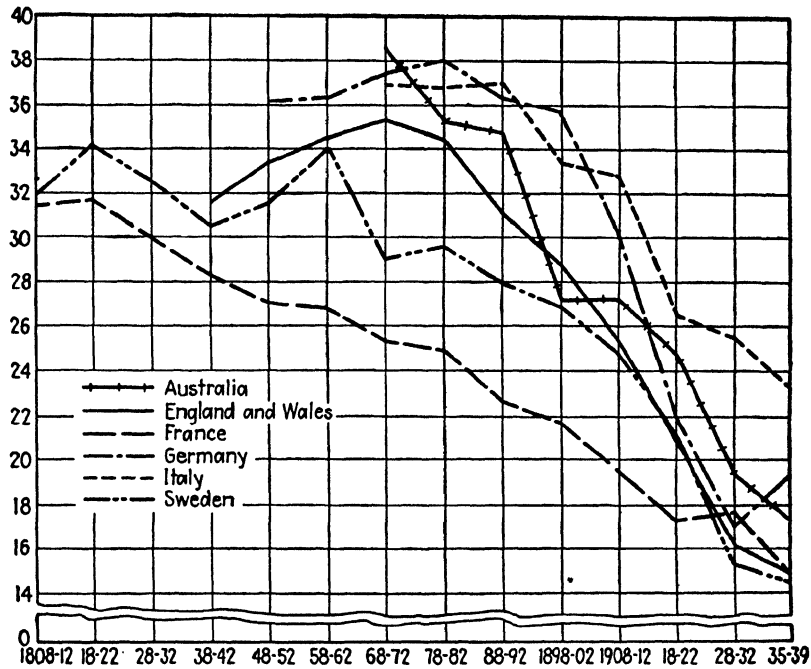

FIG. 19.—Crude birth rates of selected countries, 1808 to 1939. (Based on Table 47.)

In spite of the unsatisfactory state of information on births the rates available are useful for many purposes. In general it may be assumed that over rather short periods the data of a country are useful for purposes of comparison within the country itself even where they are seriously lacking in completeness. Care must be used, however, in making comparisons between countries where the data are of unequal accuracy and also where the composition of the population shows considerable differences. Bearing in mind these precautions, let us examine these birth rates with a view of ascertaining the most important trends within countries, or areas, and also the significant differences between them during the last few decades.

1. THE TREND OF THE BIRTH RATE

The most significant trend shown by these data is the steady decline in the birth rate in most European nations and in those lands peopled by

the descendants of Europeans. This decline is clearly marked in countries as different in many other respects as Sweden and Spain, Great Britain and Hungary, and France and Australia. Japan also appears to have a declining birth rate since 1920 (IV, 16, Chap. 2). The decline of the birth rate in Europe is especially marked since about 1878 and everywhere seems to have been hastened or accentuated by World War I. Most of the nations having vital statistics have recorded new low levels in the birth rate almost steadily since 1921 or 1922. Germany, since 1933, is the outstanding exception, although several other countries have shown small increases within the last two or three years.

It has often been assumed, in consequence of the apparent decline in the birth rate in western Europe about the year 1875, that this year, or thereabouts, represented the end of an era of increasing birth rates in this part of the world and that the decline in the birth rate really dates from that time. British writers, in particular, have been prone to date a definite decline in the birth rate, not only for Great Britain but for other countries also, from the famous Bradlaugh-Besant trial (1877). Yule (12, p. 127), for example, plots the course of the birth rate from about 1855 to 1905 in a number of European countries and thinks that he sees a high point in 1875 or thereabouts, with rather a steady decline since that time. There is no question regarding the decline since that time, but I am unable to accept the view that there had been any significant rise in the few preceding decades.

There are several reasons for my doubt that 1875 marks a definite change from an upward to a downward movement in the birth rate of western Europe or the Western world as a whole. The first of these is that for Sweden, which has a continuous record of births since 1749, the facts do not seem to justify the belief that 1875 or thereabouts marks the end of one period and the beginning of another. There have been rather large fluctuations in Sweden's birth rate ever since births were first recorded. Between the years 1749 and 1875 (126 years) there were 30 years that had a lower birth rate than 1875 (VI, 7, 1939, pp. 52–67). If we use five-year averages, there were three periods that had a lower birth rate than 1871 to 1875. But these low periods generally followed rather prolonged crop failures and can be accounted for on this basis. Moreover, the fluctuations in the birth rates between 1749 and 1870 are such that it is very difficult to discover any general trend during all this period, and most certainly there is no upward trend. This can be seen very clearly in Table 48. The birth rate in Sweden was considerably higher during the fifties than during the seventies, but it was also higher in the fifties than during the thirties and forties. During the twenties it was higher than at any time since Sweden's data have been gathered, except during the fifties of the eighteenth century. If we assume that Sweden's data have become progressively more accurate, it is quite

likely that some of the irregularities here noted would disappear, but the data would still contain irregularities which make it appear extremely doubtful whether there was any definite trend in Sweden's birth rate until the 1860's, since which time there has been a rather steady decline.

TABLE 48.—AVERAGE CRUDE BIRTH RATES, SWEDEN AND FRANCE, 1751 TO 1938

Date	Birth rate	
	Sweden[1]	France[2]
1931–1938	14.3	15.8
1921–1930	17.5	18.8
1911–1920	22.1	15.3
1901–1910	25.8	20.6
1891–1900	27.2	22.2
1881–1890	29.1	23.9
1871–1880	30.5	25.4
1861–1870	31.4	26.3
1851–1860	32.8	26.3
1841–1850	31.1	27.4
1831–1840	31.5	29.0
1821–1830	34.7	31.0
1811–1820	33.3	31.8
1801–1810	30.9	32.4
1791–1800	33.3	
1781–1790	32.0	
1771–1780	33.0	
1761–1770	34.2	
1751–1760	35.7	

[1] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok for Sverige," 1940, Stockholm, 1940, pp. 52–67.

[2] France, Bureau de la statistique générale, "Annuaire statistique de la France," 1938, Imprimerie nationale, Paris, 1939, pp. 12*, 13*.

In the second place, in France, where we have data for as early as 1800, the birth rate shows a practically continuous decline since that time, if averages over rather long periods are considered. There have, of course, been a number of minor fluctuations in the rates—for example, the declines during the Franco-Prussian War and World War I, and the rises immediately following them—but, excepting such minor and readily explainable fluctuations, the tendency has been downward for more than a century. Even sixty years or more ago much was written about the decadence of the population of France due to the decline in its birth rate.

We have no birth statistics for the United States as a whole until after 1933, as was noted above, but we have age data given in the censuses in some detail since 1800, and we find that the ratio of children under five to women sixteen to forty-four (Table 97), who were likely to be their

mothers, has fallen steadily since 1810, with the exception of 1860, when there was a slight rise, probably due to the great influx of young immigrants during the preceding decade (10).

Still another reason for doubt regarding the accuracy of considering 1875 the definite point at which an increasing birth rate turned into a declining birth rate for western Europe is that, even though the data for several countries show that this was a high point, the data are open to question. In England and Wales, for example, an examination of the age data in the various censuses shows that there must have been numerous omissions in the earlier years of birth registration. I have made the calculations for the year 1841, and I find that there must have been omissions amounting to four or five births per 1,000 of the population in the birth registration of this period, if the age data in the later censuses are reasonably accurate. As the years proceed, the omissions become less, and in 1881 they amount to only about 0.8 of a birth per 1,000 of the population. When the birth rate is corrected for these omissions, it appears rather improbable that there was much change in the rate, except for hard years and good years, from 1821 to 1876. Such change as there was, however, was probably downward rather than upward. The increase shown by the official data is, therefore, probably due to the increasing accuracy of the registration rather than to any real increase in the birth rate, and the situation turns out to be much the same there as in Sweden.

I have been unable to check the data for Prussia and Austria in the same way as those for England and Wales, but it also seems rather doubtful that 1875 marks a change from an increasing to a declining birth rate in these countries. It is more reasonable to suppose that these countries, like England and Wales, found it impossible to gather their vital statistics with accuracy during the early decades of registration. It appears, therefore, that 1875 can be regarded as a turning point in the birth rate of Europe only in the sense that a rather constant rate or even a slight downward movement of the rate became more marked for certain countries at about that time.

2. Refined and Specific Birth Rates

For many purposes the crude birth rate is entirely inadequate. It gives but a very rough notion of the actual fertility of different populations. In order to get birth rates which are comparable for different communities, we must "refine," "correct," "standardize," or "adjust" them to make due allowance for the differences in the composition of the population to which attention has been called in Chap. VIII. If we do not thus adjust them, we cannot be at all certain what the actual situation is as regards the rates and tendencies of growth in different communities. It will be well, therefore, to point out some of the facts needed in order to

determine the true birth rates of different communities and how, with these data, comparisons which are reasonably accurate may be made.

As an example of the ways crude birth rates may be refined the rates of England and Wales and New Zealand in 1911 may be used. Their crude rates were 24.4 and 26.0 respectively. The crude rate in New Zealand was, therefore, 6 per cent in excess of that of England and Wales. If, however, we express the rates of the two countries in terms of births per 1,000 of the female population, we find that the rates were 47.3 and 55.3, respectively; that is, New Zealand's rate was about 17 per cent higher than the rate of England and Wales. If we refine the rates still further and base them on the number of births per 1,000 women aged fifteen to forty-four, we get 98.0 for England and Wales and 109.5 for New Zealand, or but 12 per cent difference. We may refine still further and calculate the rate based on births per 1,000 married women aged fifteen to forty-four. In this case the rates are 196.7 for England and Wales and 211.8 for New Zealand, or 8 per cent greater in the latter country. Even this may not be sufficiently accurate, however, if we are interested primarily in the actual fertility of women in these different countries. In this case, we must go still further and refine the rate on the basis of the number of children borne by each 1,000 women of a given age —for example, fifteen to nineteen, twenty to twenty-four, and so forth. If, on the other hand, we are interested chiefly in the fertility of married women, we shall want a rate based on the number of legitimate births to each 1,000 married women of each age. Thus when populations differ from one another in the proportions of the sexes as in the example given

TABLE 49.—PERCENTAGE DISTRIBUTION BY AGE OF FEMALES, SELECTED AREAS[1]

Area	Year	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–49	45 and over
United States	1940	7.9	8.0	8.8	9.4	9.0	8.6	7.9	7.3	6.7	26.4
Massachusetts	1940	6.2	6.8	7.9	8.7	8.6	8.1	7.6	7.2	7.2	31.7
Kansas	1940	7.6	7.9	8.7	9.3	8.2	7.7	7.5	7.0	6.5	29.6
North Carolina	1940	10.4	10.6	11.0	11.3	10.2	8.9	7.4	6.5	5.3	18.4
Bulgaria	1934	11.6	11.7	11.7	7.2	9.3	8.8	7.7	6.4	5.1	20.5
England and Wales	1931	7.1	7.9	7.6	8.3	8.6	8.3	7.8	7.3	6.9	30.2
France	1931	8.3	8.2	5.4	7.1	7.8	8.0	7.7	7.2	6.8	33.5
Germany	1933	6.9	7.8	8.4	6.0	9.1	9.2	8.7	8.0	7.1	28.8
Italy	1936	9.8	9.8	10.0	7.0	9.0	8.4	7.3	6.7	6.0	26.0
Spain	1920	10.2	10.5	12.5	9.8	8.3	7.9	6.4	6.6	5.4	22.4
Sweden	1935	6.4	7.0	8.1	8.4	8.6	8.6	8.0	7.4	6.7	30.8
Australia	1933	8.6	9.5	9.4	9.3	8.8	7.8	7.3	7.3	6.9	25.1
New Zealand	1936	7.7	8.6	9.0	8.8	9.0	8.3	7.3	7.0	6.5	27.8

[1] League of Nations, "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940.

or as in Massachusetts and Washington state (Table 5, p. 99); in their age composition as in France and Australia (Table 49, p. 157); in the age at marriage (Table 54, p. 162); or in proportion married, proportion of women employed, and so forth, crude birth rates give but little notion of the actual fertility of different populations. It is, therefore, very important to take account of the differences between female populations at the childbearing ages, particularly at ages twenty to twenty-nine, for it is during this ten-year period that most women bear a large proportion of their children.

3. The Nuptial Birth Rate

Since there are very marked differences between populations in the proportion of women of given ages who are married, nuptial birth rates are often needed if accurate comparisons are to be made between the fertility of women in these populations. Thus in the United States and Bulgaria the proportion of women under twenty who are married, although small, is about 12 times as great as in Sweden, and the proportion of women aged twenty to twenty-four who are married is about 2½ times as great in the United States as in Sweden and in Bulgaria it is over 3 times as great. Clearly, since fertility of married women is highest in the early twenties the United States and Bulgaria should have higher total crude birth rates than Sweden if the rates per 1,000 married women at each age were the same in all three countries. In North Carolina

Table 50.—Percentage of Women of Specified Ages in the Childbearing Period Who Are Married, Selected Areas[1]

Area	Year	15–44	15–19	20–24	25–29	30–34	35–39	40–44
United States	1930	61.1	12 6	51.7	74.4	81.6	82.3	80.7
Massachusetts	1930	52.7	4.4	32.5	61.1	74.1	76.9	75.5
Kansas	1930	63.1	12.3	54.1	77.8	84.7	85.4	84.1
North Carolina	1930	59.0	15.7	55.9	75.6	82.3	82.5	80.3
Bulgaria	1934	73.0	16.6	64.6	87.5	92.5	92.6	89.5
England and Wales	1931	50.1	1.8	25.7	58.7	73.3	75.5	74.9
France	1931	60.3	7.2	48.7	73.6	78.8	77.5	74.2
Germany	1933	52.0	1.2	20.4	56.0	72.8	77.2	76.8
Italy	1936	52.2	3.7	30.4	60.6	73.5	77.0	75.9
Spain[2]	1920	51.5	4.0	36.7	65.8	76.6	77.9	78.2
Sweden	1935	44.7	1.2	21.5	50.6	64.4	69.4	70.3
Australia	1933	51.7	3.9	30.8	61.2	75.0	78.8	78.3
New Zealand[3]	1936	53.3	3.3	28.0	61.2	75.3	79.4	79.4

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939.

[2] Age groups are as follows: sixteen to twenty, twenty-one to twenty-five, twenty-six to thirty, thirty-one to thirty-five, thirty-six to forty, forty-one to forty-five, and sixteen to forty-five.

[3] Age groups sixteen to forty-four, and sixteen to nineteen.

TABLE 51.—AVERAGE ANNUAL NUMBER OF LEGITIMATE BIRTHS PER 1,000 MARRIED WHITE WOMEN BY AGE, SELECTED AREAS

Area	Year	Under 20	20–24	25–29	30–34	35–39	40–44
Massachusetts[1]	1929–31	557.2	300.8	188.0	121.4	68.3	22.2
Kansas[1]	1929–31	401.2	253.9	173.4	113.9	72.0	28.8
North Carolina[1]	1929–31	367.7	283.8	209.5	160.0	118.6	53.1
Bulgaria[2]	1932	307.2	322.5	231.8	150.0	93.2	49.3
France[3]	1931	313.6	242.3	164.9	105.9	63.5	22.2
Sweden[4]	1938	528.8	264.6	170.6	119.1	73.5	29.5
	1892–95	424	304	257	185	118	50
	1896–00	391	319	248	172	114	48
France	1901–05	289	294	234	156	101	44
	1906–10	281	283	210	145	87	37
	1911–13	282	269	193	127	84	32

[1] U. S. National Resources Committee, "Population Statistics, State Data," Government Printing Office, Washington, D.C., 1937, p. 4. Native-born white women only. Includes illegitimate births.

[2] Bulgaria, Direction générale de la statistique: "Annuaire statistique du royaume de Bulgarie," 1934, Sophia, p. 54; Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939, p. 84.

[3] France, Bureau de la statistique générale, "Annuaire statistique de la France," 1934, Imprimerie nationale, Paris, 1935, p. 22; "Aperçu de la démographie des divers pays du monde," 1929–1936, p. 89.

[4] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1941, Stockholm, 1941, p. 61.

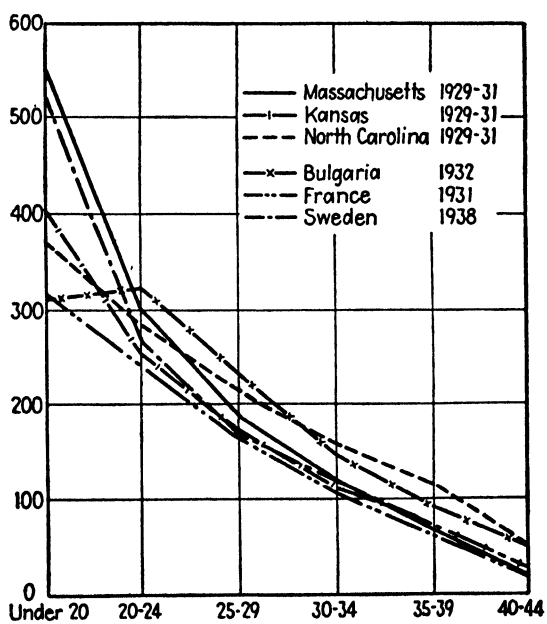

FIG. 20.—Average annual number of legitimate births per 1,000 married women, by age, selected areas. (Based on Table 51.)

the proportion of women under twenty-five who are married is well above the average for the United States, and this is undoubtedly one factor in keeping North Carolina's crude birth rate one of the highest in the country. Differences in the proportion of women married at different ages are, therefore, very important in determining the total fertility of populations.

If Table 51 is studied in conjunction with the preceding table, it will be clear why those countries having large proportions of women marrying under twenty-five generally have higher birth rates than those with low proportions of women under twenty-five who are married.

Ireland is a good example of the effects of late marriage on the birth rate. In 1909 to 1912 the crude birth rate was 23.2, one of the lowest in Europe, but the nuptial rate, the number of births per 1,000 married women fifteen to forty-four, was about 290, which was one of the highest in Europe.[1] For years the number of marriages in the Irish Free State has been very low—about the lowest of any European country. In the period 1936 to 1938 it averaged about 5.0 per 1,000 of the population, while it was 8.75 per 1,000 in England and Wales. Since the rate in England and Wales is about the average for most European countries, it can be seen that the rate in the Irish Free State, if continued for many years, would result in a very low proportion of married women, particularly in the younger age groups, and naturally the crude birth rate would be very low even though the nuptial birth rate were high. Thus, it is clear that the age at marriage may have a very marked effect on the crude birth rate and the fertility of the average woman, that is, on the number of children the average woman will actually bear. In order to understand fully the birth rate of any community it is necessary, therefore, to know the age at which its women marry. Thus the differences in crude birth rates between the Irish Free State and Italy are largely explained by the differences between them in the ages at which women marry rather than by the differences in nuptial birth rates. This is shown by the comparison of nuptial birth rates, crude birth rates, and the proportion of the women married in different countries (Table 52). Thus Bulgaria (1934), with a crude rate over one-fifth higher than Italy (1936), has a slightly lower nuptial rate but a much higher proportion of married women. The position of France in respect to these differences is most interesting. France stands well toward the bottom in nuptial rate and well down in crude rate but next to Bulgaria in proportion of married women fifteen to forty-four. The explanation of this rather unusual condition is not certain, but it seems not improbable that the greater degree of voluntary control of the size of the family in France as compared with most other

[1] The nuptial rate given here for Ireland is calculated from data in the Australian Year Book, 1925, p. 960. The rate given there (250) is based on married women fifteen to forty-nine, hence is lower than that given here by almost one-sixth.

TABLE 52.—NUMBER OF LEGITIMATE BIRTHS PER 1,000 MARRIED WOMEN 15 TO 44, SELECTED COUNTRIES[1]

Country and year	Legitimate births per 1,000 married women 15–44				Crude birth rate, 1932–1936	Percentage of females 15–44, married, latest year
	Latest year[2]	1900–1902	1890–1892	1880–1882		
Italy (1936)	181.6	269.4	.....	276.2	23.3	52.2
Netherlands (1930)	195.5	314.6	338.8	347.5	20.8	49.5
Bulgaria (1934)	180.5	.. ..	.....	.....	28.5	73.0
Spain (1920–1922)	231.6	258.7	263.9	257.7	26.9[3]	....
Scotland (1931)	168.3	271.8	296.4	311.5	18.0	44.0
Denmark (1935)	125.6	259.1	278.1	287.1	17.7	52.5
Switzerland (1930)	149.3	265.9	274.0	284.1	16.2	44.0
Norway (1930)	162.4	302.8	306.8	314.5	14.9	41.2
Belgium (1930)	128.3	250.7	285.1	312.7	16.3	59.0
Australia (1933)	133.0	235.8	332.0	321.0	16.8	51.7
New Zealand (1936)	134.6[4]	243.2	277.5	322.1	16.6	53.3[4]
England and Wales (1931)	122.8	235.5	263.8	286.0	14.8	50.1
France (1931)	117.8	157.5	173.5	196.2	16.0	60.3
Sweden (1935)	109.4	269.0	280.0	293.0	14.0	44.7
Germany (1933)	101.6	284.2	300.9	310.2	17.1	52.0
Japan (1930)	222.1	.....	.....	.....	31.2	64.3
India (1931)[5]	190.7	.....	.....	.....	34.8	80.7

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939, pp. 80–135, 230–247.

[2] Date in parenthesis is "latest." [3] 1932 to 1935.

[4] Married women aged sixteen to forty-four.

[5] I, 7, 1931, Vol. 1, Part 2, 120.

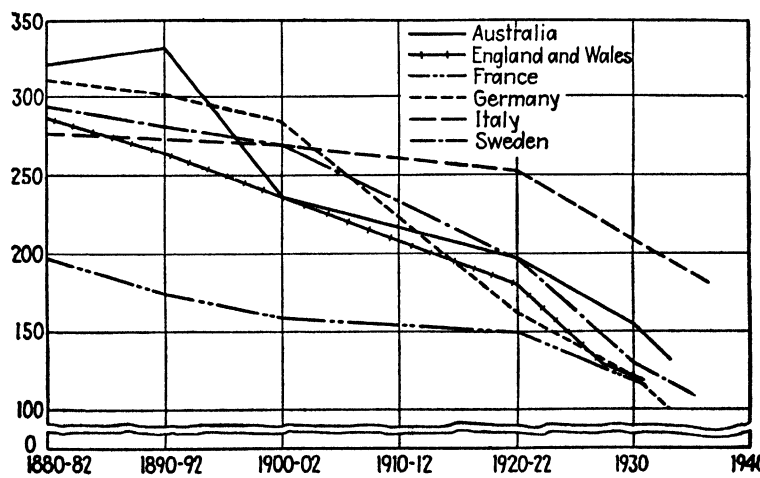

FIG. 21.—Number of legitimate births per 1,000 married women 15 to 44, selected countries. (Based on Table 52.)

TABLE 53.—PERCENTAGE DISTRIBUTION OF SINGLE WOMEN MARRYING, BY AGE, SELECTED COUNTRIES

Country	Year	Under 20	20–24	25–29	30–39	40–49
Bulgaria[1]	1937	43.3	40.0	13.0	3.5	0.2
England and Wales[1]	1936	8.6	48.5	29.2	11.7	2.0
France[1]	1936	16.5	49.5	22.1	9.8	2.1
Germany[1]	1936	5.7	44.9	33.3	14.2	1.9
Hungary[2]	1939	34.3	27.7	20.8	13.2	4.0
Italy[1]	1937	19.8	40.9	27.2	10.4	1.7
Spain[1]	1930	9.2	62.0	21.0	6.6	1.2
Sweden[3]	1931–1935	6.7	39.3	31.9	18.5	3.6
Australia[4]	1938	14.5	46.8	25.5	11.2	2.0
New Zealand[5]	1939	12.3	48.7	26.7	10.5	1.8

[1] Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939, pp. 214–217.

[2] Hungary, Statisztkal Hivatal, "Annuaire statistique Hongrois," 1939, Budapest, 1940, p. 29. Data for all brides.

[3] Sweden, statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1939, Stockholm, 1939, p. 62.

[4] Australia, Bureau of the Census and Statistics, "Official Year book of the Commonwealth of Australia," 1939, Melbourne, 1940, p. 304.

[5] New Zealand, Census and Statistics Office, "Report on the Vital Statistics of the Dominion of New Zealand," 1939, Government Printer, Wellington, 1941, p. 13.

TABLE 54.—AVERAGE AGE AT MARRIAGE OF BACHELORS AND SPINSTERS, SELECTED COUNTRIES, 1881 TO DATE[1]

Year	England and Wales[2,7]		France[3,7]		Italy[4,6,7]		Sweden[5]	
	Male	Female	Male	Female	Male	Female	Male	Female
Latest	27.4	25.6	26.7	23.5	27.3	24.0	29.4	26.5
1921	27.5	25.5	27.1	23.8	27.8	24 4	29.4	26.6
1911–1920	27.7	25.8	27.9	23.7	28.2	24.6	29.1	26.4
1901–1910	27.0	25.5	27.9	23.7	27.2	23.7	28.7	26.4
1891–1900	26.6	25.1	27.9	23.6	27.5	23.8	28.8	26.8
1881–1890	26.1	24.6	27.9	23.3	....	....	28.5	26.8

[1] England and Wales, 1927, 1920; France, 1934, 1921 to 1925, 1911 to 1913, 1906 to 1910; Italy, 1931 to 1933, 1896 to 1900; Sweden, 1938, 1921 to 1925.

[2] Great Britain, Registrar General, "The Registrar-general's Statistical Review of England and Wales," 1927, n.s., No. 7, His Majesty's Stationery Office, London, 1929, p. 110.

[3] France, Statistique générale de la France, "Mouvement de la population," 1907–1910, Imprimerie nationale, Paris, 1912, p. xlii; "Mouvement de la population," 1911–1913, Imprimerie nationale, Paris, 1917, p. xviii; "Mouvement de la population," 1934, Imprimerie nationale, Paris, 1936, p. xix.

[4] Italy, Istituto centrale di statistica del regno d'Italia, "Annuario statistico italiano," 1935, Rome, 1935, p. 28.

[5] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1941, Stockholm, 1941, p. 57.

[6] Italy, Ministero dell'economia nazionale, "Movimento della popolazione," 1919–1923, Rome, 1925, p. li.

[7] France, Statistique générale de la France, "Statistique internationale de mouvement de la population," 1905, Imprimerie nationale, Paris, 1907, p. 131.

countries of western Europe leads to somewhat earlier marriages (Table 53). If this is the correct explanation, we may expect that, with the increase in the voluntary control of conception, the postponement of marriage for prudential reasons will become less common than at present and a larger proportion of the women in other countries will marry younger, as they now do in France. As yet, however, there is little evidence of any significant change in age at marriage in recent years (Table 54).

Because of the shortcomings of crude birth rates and particularly because of their inadequacy as a measure of population growth new methods of measuring it have been devised. Dublin and Lotka (1) have worked out a formula for "the true rate of natural increase," in which they make use of specific birth rates and death rates and project these to the time when they shall have resulted in stabilized age groups. Kuczynski (2, Vol. 1) has popularized a method for measuring the balance of births and deaths which yields a "net reproduction rate," showing how many daughters a birth cohort of 100 females will have during their lifetime at the age specific birth rates and death rates of a given time. These studies will be referred to in more detail in Chap. XIV, but it may be said here that they show a much lower natural increase in most countries (8) than that shown by the use of crude rates because the age composition is rapidly becoming less favorable to the maintenance of a natural increase.

It is clear from what has been said above that crude birth rates are of very limited usefulness if we want to compare the fertility of one population with that of another. They are also of little value if we want to know the probable growth of population in the future. But they are useful to indicate the general trend of births in any given country over relatively short periods of time and to compare births in populations which have much the same composition and in which the accuracy of birth registration is much the same. Their very simplicity and ease of calculation make them useful but at the same time seriously limit their value.

References

1. DUBLIN, LOUIS I., and ALFRED J. LOTKA: "On the True Rate of Natural Increase as Exemplified by the Population of the United States, 1920," *Amer. Stat. Assoc., Jour.* (1925), 305–339, rev. in *Metron*, 8 (1930), 107–119.
2. KUCZYNSKI, ROBERT R.: "The Balance of Births and Deaths," 2 vols., The Macmillan Company, New York, 1928–1931. (The Brookings Institution, Institute of Economics.)
3. LENHART, ROBERT F.: Paper read before American Public Health Association in October, 1941. Not published at time of writing.
4. NEWSHOLME, ARTHUR: "The Elements of Vital Statistics in Their Bearing on Social and Public Health Problems," rev. ed., 623 pp., George Allen & Unwin, Ltd., London, 1923.

5. PEARL, RAYMOND: "The Biology of Population Growth," 260 pp., Alfred A. Knopf, New York, 1925.
6. SPENGLER, JOSEPH J.: "France Faces Depopulation," 313 pp., Duke University Press, Durham, N. C., 1938.
7. WHELPTON, P. K.: "The Completeness of Birth Registration in the United States," *Amer. Stat. Assoc., Jour.*, 29 (1934), 125–136.
8. ———: "Differentials in True Natural Increase," *Amer. Stat. Assoc., Jour.*, 24, n.s. (1929), 233–249.
9. WHIPPLE, GEORGE CHANDLER: "Vital Statistics; an Introduction on the Science of Demography," 2d ed., 579 pp., John Wiley & Sons, Inc., 1923.
10. WILLCOX, WALTER F.: "The Change in the Proportion of Children in the United States and in the Birth Rate in France during the Nineteenth Century," *Amer. Stat. Assoc., Pub.*, 12, n.s. (1911), 490–499.
11. ———: "Studies in American Demography," 556 pp., Cornell University Press, Ithaca, N. Y., 1940.
12. YULE, G. UDNY: "On the Changes in the Marriage- and Birth-rates in England and Wales during the Past Half Century; with an Inquiry as to Their Probable Causes," *Jour. Roy. Stat. Soc.*, 69 (1906), 88–132.

Questions

1. Define crude birth rates. Of what value are they? What is the rate in your community? Compare it with some other community. Can you account for the difference?

2. In general, what trend is most noticeable in the birth rate? Is the same trend present in your community? Does it appear universal? Give exceptions.

3. What evidence is there against believing that 1875 marks the peak of a high and increasing birth rate in western Europe?

4. Define: adjusted birth rate, specific birth rate, nuptial birth rate, and occupational fertility.

5. What facts about the composition of the population should you know in order to understand the meaning of birth rates? Why?

CHAPTER XI

THE DIFFERENTIAL BIRTH RATE

The decline in the birth rate in the Western world, to which attention has been called, may not at first appear to be a matter of great importance. It may be said, for example, that the decline in the birth rate, far from creating a problem, provides the solution to the problem of overpopulation and thus lays to rest the specter of perpetual human misery conjured up by Malthus and his followers. This position in the main seems reasonable, and the decline in the birth rate may be looked upon as an adaptation that man is making to the conditions of life today, which may prove to be one of the great forward steps in his search for a higher degree of individual and social welfare. But this view does not mean that a great change of this kind—a change affecting man in all his social relations and in his most intimate personal life, as well as the relations between nations arising out of differential rates of growth—may not create some serious problems for him to solve. At least, he should watch most carefully what is happening and be prepared to make whatever adjustments seem necessary if this change appears to be producing effects inimical to racial, national, and personal welfare.

1. The Problem of Differential Fertility

This chapter will present some of the more pertinent facts regarding the differences between the birth rates in different groups and classes. National differences in crude birth rates have already been shown in Table 47 and will be presented in more detail in Chap. XVI. The significance of these differences in birth rates will be discussed for the most part in connection with the particular problems to which they give rise, but it will not be out of place here to point out that three rather distinct problems—eugenic, cultural, and political—arise out of the differential character of the birth rate in Western lands today. The first has to do with the varying birth rates in different classes within the community and deals with the maintenance and improvement of the biological heritage of a people; the second deals with the development and transmission of a desirable social heritage and is very closely associated with, if not a part of, the first; while the third arises from the fact that different nations have different rates of growth and that, as these rates change, the economic, political, and military equilibrium between nations is likely to be upset. How these problems arise as a result of the differential birth rate will become clear as the facts are set forth.

One of the earliest studies of differential fertility known to the writer is that of Bertillon (2), in which he showed that fecundity varied inversely with the degree of ease of the population in four of the largest cities of Europe. His results are given below:

TABLE 55.—BIRTHS PER 1,000 WOMEN 15 TO 50 IN SECTIONS OF CITIES RATED ACCORDING TO ECONOMIC CIRCUMSTANCES[1]

Condition	All women				Married women	
	Paris, 1889–1893	Berlin, 1886–1894	Vienna, 1890–1894	London, 1881–1890	Paris, 1889–1893	Berlin, 1886–1894
Very rich	54	47	71	63	65	121
Rich	83	63	107	87	94	145
Very Comfortable	95	96	153	107	96	172
Comfortable	72	114	155	107	109	192
Poor	95	129	164	140	128	198
Very poor	108	157	200	147	143	214

[1] Data furnished by Bertillon to Sir Arthur Newsholme and T. H. C. Stevenson for an article on "The Decline in Human Fertility as Shown by Corrected Birth Rates," *Jour. Roy. Stat. Soc.*, Vol. 69 (March, 1906), 66 (12).

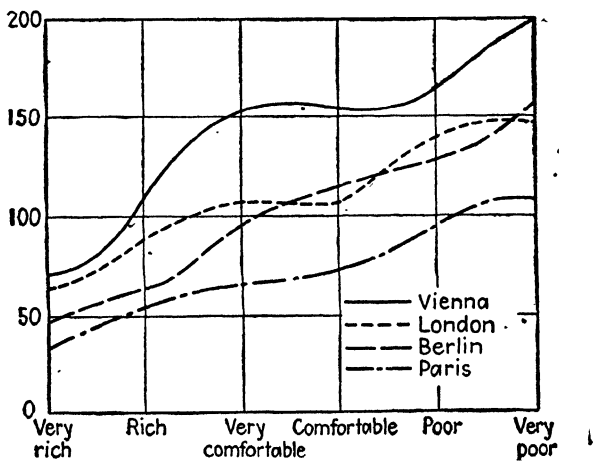

FIG. 22.—Births per 1,000 women 15 to 50 in sections of cities rated according to economic circumstances. (Based on Table 55.)

There is a marked difference between these cities, but the steady increase in births from the very rich to the very poor quarters is present in all of them. Even when due allowance is made for the fact that the death rate is greater among the poor than among the rich, it is still clear that the poor are furnishing a disproportionately large part of the succeeding generation in these cities. Since Bertillon, many other studies of differential fertility have been made. The results of some of them

will be of interest and will show us just what is happening in different classes and among different peoples.

2. Differential Fertility in the United States

Since birth registration has only recently become general with us, and since the information gathered heretofore has been more or less fragmentary, we do not have such complete knowledge of differential fertility in this country as we should like. For historical comparisons and also for certain types of contemporary comparisons we are compelled to use census data relating to the ratio of children to women in order to get some notion of the relative fertility of different groups in our population.

Whelpton (22, p. 462) has shown that there was a marked difference in different communities in the number of children per thousand women of childbearing ages as long ago as 1800. Briefly, he found that, when the states were classified as agricultural, semi-industrial, and industrial, the ratios of children to women showed a large decline as the degree of industrialization increased. The following table summarizes his findings and brings the table up to date:

Table 56.—Children 0 to 4 per 1,000 Women 16 to 44 in the United States and Selected States (White Population Only) (22)[1]

Year	United States	Agricultural states	Semi-industrial states	Industrial states
1940	336	431	392	306
1930	402	526	454	370
1920	489	629	534	458
1880	611	759	640	500
1840	835	966	773	697
1800	1,000	1,043	962	786

[1] In 1930 Mexicans are included with whites. No change has been made in the classification of the states since 1920.

A differential birth rate is, therefore, no new thing in this country. As just noted, there has long been a difference between city and rural populations. No doubt there were also differences within these groups, although there are no data that will enable us to say just where the higher birth rate was nor how much it varied from group to group.

The Bureau of the Census for several years published data, by age of the mother and occupation of the father, on the size of the families of the women giving birth to children each year. These data show that birth rates vary greatly from occupation to occupation. Of women aged thirty-five to forty-four who became mothers during 1929, coal miners' wives had borne the largest number of children (8.0); close after them came farmers' wives (7.1). At the other extreme we find that the wives

of bankers, brokers, lawyers, judges, physicians, and bookkeepers had borne the fewest children (3.4 to 3.7). On the whole, manual laborers' wives have more children than the wives of men in the white-collar jobs. Among the white-collar workers the wives of men in the professions have fewer children than have other groups, although the difference between them and the wives of clerical workers is very small. A part of the difference between these groups may be due to differences in the age composition of the women, but this has been largely eliminated by taking only

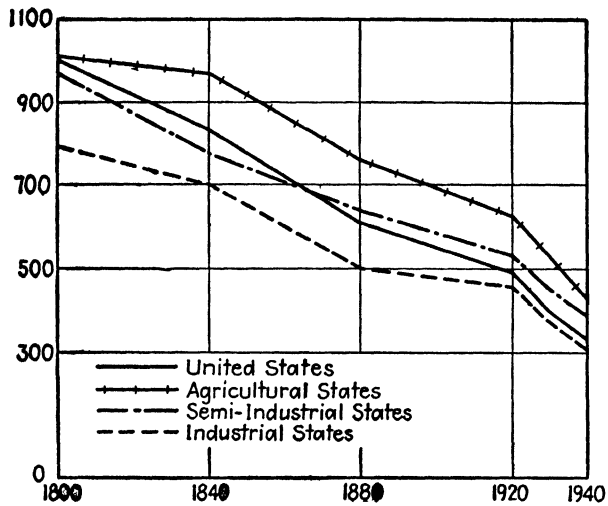

FIG. 23.—Children 0 to 4 per 1,000 women 16 to 44 in the United States and selected states (white population only). (Based on Table 56.)

those women aged thirty-five to forty-four who became mothers during this year. There can be no doubt, therefore, that a differential birth rate exists in the United States or that it is still following somewhat the same lines indicated above. Agriculture and living in small communities appear more favorable to a large number of births than the more sedentary occupations which are carried on in larger communities.

In several studies the author (16; 18) has shown that the differentials in ratios of children to women in different communities are very great and that the size of the community seems to be quite closely connected with the size of the ratio—the smaller the community the larger the ratio. This appears to be true for the foreign born as well as the native born and for the Negroes as well as the whites (Tables 57, 58, and 59).

Part of the variation in ratios in the total white population between 1930 and 1940 is due to differences in the age composition of the populations of different communities, but the ratios for native white and

foreign-born white, 1920 and 1930, are standardized to allow for age differences. The use of ratios of children to women to measure the differences in fertility in different communities is of more importance in the United States than in many other countries, because until quite

TABLE 57.—STANDARDIZED NUMBER OF CHILDREN 0 TO 4 PER 1,000 NATIVE WHITE WOMEN 20 TO 44 FOR URBAN GROUPS AND RURAL AREAS, UNITED STATES AND DIVISIONS, 1930 AND 1920[1]

Area	United States		New England		Middle Atlantic		East North Central		West North Central	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
Total	499	555	419	407	417	442	473	509	510	569
Urban	380	399	383	368	366	386	400	413	374	392
Places of:										
100,000 and over	337	350	345	330	331	350	364	367	332	336
25,000–100,000	390	403	386	360	375	395	413	426	381	396
10,000–25,000	430	449	419	399	429	448	462	467	409	437
2,500–10,000	462	495	445	430	450	483	476	497	440	469
Rural	683	745	552	553	603	614	634	664	633	697
Farm	752	815	622	608	649	641	670	702	696	763
Nonfarm	609	647	532	528	587	600	600	613	529	578

Area	South Atlantic		East South Central		West South Central		Mountain		Pacific	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
Total	620	738	681	759	585	699	575	647	350	404
Urban	414	452	430	453	396	442	421	448	292	320
Places of:										
100,000 and over	348	420	394	389	354	379	371	369	257	279
25,000–100,000	422	473	416	421	386	385	375	404	305	330
10,000–25,000	463	511	456	480	419	478	412	434	358	381
2,500–10,000	505	571	490	537	458	527	507	549	391	424
Rural	773	878	811	873	731	837	708	792	502	584
Farm	839	940	858	917	803	909	787	885	541	625
Nonfarm	707	785	724	765	618	690	640	686	480	553

[1] U. S. National Resources Committee, "Population Statistics, National Data," Government Printing Office, Washington, D.C., 1937, pp. 40–41.

recently (1935) births have been recorded by place of occurrence rather than by place of residence of the mother. Hence, with the increase of hospitalization in maternity cases the birth rates of different communities have been of little value for comparative purposes. As an example of

the way in which recording births by residence of mother instead of place of occurrence affected birth rates in urban and rural communities, Beck's study of Ohio births in 1930 may be cited (1). As recorded by place of occurrence the rural population of Ohio had a birth rate of 16.0, which was raised to 17.6 when recorded by place of residence of the

TABLE 58.—STANDARDIZED NUMBER OF CHILDREN 0 TO 4 PER 1,000 FOREIGN-BORN WHITE WOMEN 20 TO 44 FOR URBAN GROUPS AND RURAL AREAS, UNITED STATES AND DIVISIONS, 1930 AND 1920[1]

Area	United States		New England		Middle Atlantic		East North Central		West North Central	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
Total	548	838	601	802	535	841	542	873	677	953
Urban	513	778	588	786	510	792	514	828	507	736
Places of:										
100,000 and over	479	725	570	751	470	715	499	797	485	692
25,000–100,000	550	819	576	760	576	915	529	891	501	736
10,000–25,000	630	928	634	874	688	1,100	597	923	555	786
2,500–10,000	631	946	647	869	683	1,107	581	930	593	869
Rural	770	1,100	690	947	787	1,207	783	1,110	924	1,190
Farm	925	1,168	847	1,016	910	1,109	950	1,179	1,048	1,304
Nonfarm	690	1,059	649	926	761	1,223	677	1,057	665	966

Area	South Atlantic		East South Central		West South Central		Mountain		Pacific	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
Total	580	894	542	788	620	806	696	920	408	638
Urban	526	771	499	689	495	635	534	728	355	543
Places of:										
100,000 and over	507	828	478	696	431	617	482	644	331	489
25,000–100,000	538	730	475	597	571	631	486	711	385	589
10,000–25,000	598	773	546	679	561	612	528	703	398	619
2,500–10,000	619	905	603	793	649	716	646	827	462	730
Rural	758	1,107	679	1,019	900	995	860	1,062	584	873
Farm	775	952	825	1,167	1,070	1,093	1,029	1,189	687	978
Nonfarm	755	1,138	596	954	654	866	716	980	505	785

[1] U. S. National Resources Committee, "Population Statistics, National Data," Government Printing Office, Washington, D.C., 1937, pp. 40–41.

mother. For the urban population the rates were 18.5 and 17.7, respectively. Thus what appeared to be a significantly higher crude rate for the urban population than for the rural becomes practically the same rate for both when births are recorded by place of residence. When births were adjusted for age differences between urban and rural women

TABLE 59.—CHILDREN 0 TO 4 PER 1,000 WHITE WOMEN 20 TO 44 FOR URBAN AND RURAL AREAS, UNITED STATES AND DIVISIONS, 1940 AND 1930[1]

[redacted]	United States		New England		Middle Atlantic		East North Central		West North Central	
	1940	1930	1940	1930	1940	1930	1940	1930	1940	1930
Total	423	510	365	463	338	445	412	481	452	520
Urban	329	407	338	438	303	405	345	420	343	383
Rural	583	691	467	568	479	620	570	636	561	645
Farm	651	758	523	640	535	654	604	666	620	709
Nonfarm	525	625	452	547	463	609	542	606	478	538

Area	South Atlantic		East South Central		West South Central		Mountain		Pacific	
	1940	1930	1940	1930	1940	1930	1940	1930	1940	1930
Total	486	623	569	688	503	613	565	611	360	378
Urban	317	421	352	435	365	430	432	450	301	321
Rural	628	782	682	820	625	759	691	748	495	532
Farm	700	843	728	864	685	825	748	811	521	570
Nonfarm	566	721	609	739	544	651	653	696	484	511

[1] U. S. Bureau of the Census, special release based on 5 per cent sample of 1940 census. Urban groups not available for 1940. Age group zero to four increased by 5 per cent to allow for underenumeration of children by the census.

TABLE 60.—BIRTH RATES OF RURAL AND URBAN MARRIED WOMEN, BY AGE, 1930 (1, p. 24)

Age	Rural	Urban	Per cent rural rate exceeds urban
15–19	443.8	420.3	5.6
20–24	267.2	230.4	16.0
25–29	170.6	141.2	20.8
30–34	116.8	90.1	29.6
35–39	78.5	52.5	49.5
40–44	33.6	19.1	75.9
45–49	3.4	1.9	78.9
50–54	0.1	.....	....

the rural rate was 43.6 per 1,000 females while the urban rate was only 32.9. In terms of the contribution of 100 women to the future population 100 rural women contributed 236 children while 100 urban women contributed only 176 children. The births to rural and urban married women in Ohio, by age, are shown in Table 60. (At every age rural women were more fertile than urban women, the difference increasing as the age of the women increased.)

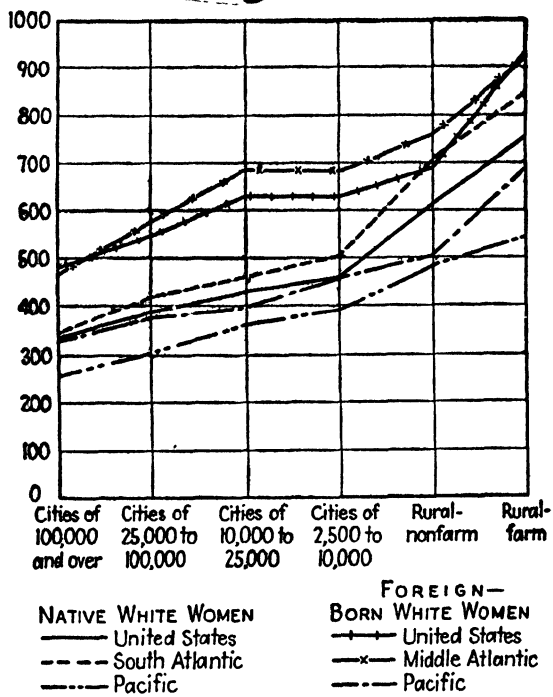

FIG. 24.—Standardized number of children 0 to 4 per 1,000 native white women 20 to 44, and standardized number of children 0 to 4 per 1,000 foreign-born white women 20 to 44, for urban groups and rural areas, United States and selected divisions, 1930. (Based on Tables 57 and 58.)

(Notestein (13; 15) has shown that there were large differences in size of family as between different social and economic classes (Table 61). The proportion of women who had zero, one, and two children is significantly higher in the business and professional classes than in the farmer, unskilled-laborer, and skilled-laborer classes, while the proportion of women in these latter classes who had three or more children is correspondingly higher. It is of special interest that these differences are greater for women forty to forty-four at the time of the 1910 census than for women sixty to sixty-four. Although, even among women whose families were complete about 1890, a significantly larger proportion

TABLE 61.—PERCENTAGE OF WIVES AGED 40–44 AND 60–64 IN SELECTED SOCIAL CLASSES WHO HAD BORNE SPECIFIC NUMBERS OF CHILDREN, UNITED STATES, 1910[1]

Total children born	Professional		Business		Skilled		Unskilled		Farm owner	
	60–64	40–44	60–64	40–44	60–64	40–44	60–64	40–44	60–64	40–44
Total	100.0	100.1	99.9	100.0	100.1	100.1	99.9	100.0	100.3	100.0
0	14.7	19.8	9.6	17.9	8.8	17.4	4.4	16.3	9.0	10.6
1	13.3	19.6	14.0	21.5	13.3	17.0	12.4	14.9	8.8	10.1
2	19.8	24.5	21.1	22.9	16.7	18.0	12.4	16.1	11.8	16.6
3	15.5	18.4	16.7	17.1	15.5	16.2	16.8	14.4	14 8	16.4
4	14.1	9.6	13.0	9.7	12.2	11.0	13.1	9.9	12.7	13.2
5	8.8	4.0	9.8	5.0	9.9	7.2	9.5	6.9	12.5	9.6
6	6.5	2.5	6.8	3.0	7.9	5.2	10.2	5.9	7.9	7.8
7	4.2	0.5	4.2	1.4	5.2	3.0	5.8	4.7	6.3	5.0
8	2.0	0.8	1.8	0.8	4.3	2.3	4.4	4.0	4.9	3.7
9	0.6	0.2	1.7	0.3	2.7	1.9	4.4	2.6	3.9	3.0
10	0.6	0.2	0.8	0.3	1.8	0.5	3.6	2.4	3.9	1.9
11	.....	.....	....	0.1	1.4	0.2	....	1.2	1.8	1.2
12	.....	.....	0.4	.....	0.2	0.1	1.5	0.5	1.1	0.5
13	.....	.....	....	.....	0.2	.....	0.7	0.2	0.4	0.2
14	.....	.....	....	.....	.....	0.1	0.7	.....	0.3	0.1
15	.....	.....	....	.....	.....	.....	....	.....	0.1	0.1
16	.....	.....	....	.....	.....	.....	....	.....	0.1	.....

[1] For exact description of data see 13, p. 184.

of the wives of business and professional men than of hand workers were having small families.

Using 1930 census data for the East North Central states, Notestein (14) has found the same strong inverse relation between size of community and number of children under ten living at home as was shown in the ratio of children zero to four to women fifteen to forty-four in Table 57. There was also a direct association between size of community and the percentage of homes with no children. When the number of children per native white wife was classified by value of the home, there was an inverse relationship until the value of the home exceeded $10,000, that is, the lower the value of the home the higher the number of children. When the home was valued at over $10,000, the number of children was slightly higher than in homes valued at $5,000 to $9,999 but smaller than in homes valued under $5,000. Notestein is disposed to believe that the slightly larger number of children in the more expensive homes may represent a reversal of the inverse relation between economic status and size of family which has prevailed in the past.

Kiser, using data collected in the National Health Survey, found that the standardized birth rate per 1,000 wives was 93 for the business

class, 101 for the professional, 112 for the skilled and semiskilled, and 137 for the unskilled (11). He also found that the standardized birth rate was largest (154) in the relief class, declined to 137 in the class with income under $1,000 but not on relief, to 94 where the income was $1,000 to $1,499, to 77 with income of $1,500 to $1,999, and to 73 with income of $2,000 to $2,999, but rose to 88 when income was $3,000 or over. This is again an indication of a reversal of the inverse relation between economic status and birth rate which Notestein found in the study cited above. Kiser was also able to calculate a standardized birth rate for wives having different amounts of education. There was almost no difference between

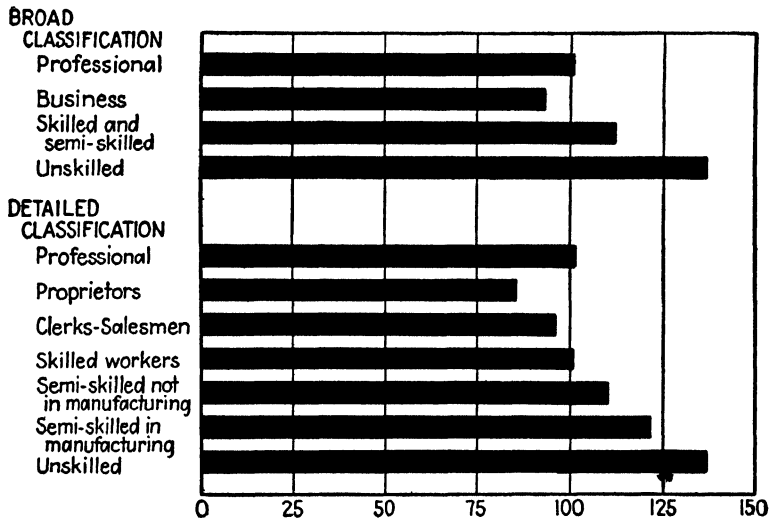

FIG. 25.—Standardized birth rates in 1935, according to usual occupational class of the household-head. [*Used by courtesy of C. V. Kiser* (11).]

the birth rate of women who had attended college and those who had gone only to high school, 97 and 98, respectively. On the other hand, those who reported attending grammar school had a rate of 119 and those who quit before reaching the seventh grade a rate of 140. Other studies confirm these data in showing that there is no substantial difference between the birth rates of college and high-school wives but rather large differences between these wives and wives of less than high-school education.

In a detailed study of differential fertility in an Ohio county (16), the writer found an inverse relation between the average number of children under five per married woman fifteen to forty-nine and economic status as measured by rent up to a rental of $40. From this point there was little change in the average number of children, but there is no suggestion of larger families at higher rentals. Here, too, it was found

that the lower occupational status was associated with the higher average number of children. Thus among native white north born women there was a very marked increase in average number of children as one passed from the white-collar groups to the hand-working groups, the latter having averages from 20 to 30 per cent higher than the former. When these occupational groups were divided by economic status the group with the higher economic status invariably had the lower average number of children, although the difference was not significant within the professional group.

In a study of fertility in the census tracts (19) of eight large cities, the writer found the following relations: (*a*) the lower the average rental in the tract the higher the ratio of children (zero to four) to women (fifteen to forty-four); (*b*) the lower the proportion of employed women the higher the ratio of children; (*c*) the larger the proportion of the employed population that was engaged in manufacturing the higher the ratio of children; and (*d*) the higher the proportion of married women the higher the ratio of children.

TABLE 62.—NATIVE WHITE REPLACEMENT INDEXES FOR URBAN GROUPS AND RURAL AREAS, UNITED STATES AND DIVISIONS, 1930[1]

Area	United States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Total	112	95	94	107	116	140	152	130	126	79
Urban	86	87	83	90	85	93	96	88	93	66
Places of:										
100,000 and over	76	78	75	82	76	78	88	79	82	58
25,000–100,000	88	88	85	93	87	95	93	86	82	69
10,000–25,000	97	95	97	104	93	104	102	93	91	81
2,500–10,000	104	101	102	107	100	114	109	102	111	88
Rural	154	125	136	143	144	174	181	163	156	113
Farm	169	141	147	151	159	189	191	179	173	122
Nonfarm	137	121	133	135	121	159	161	138	141	108

[1] U. S. National Resources Committee, "Population Statistics, Urban Data," Government Printing Office, Washington, D.C., 1937, p. 24.

The replacement index is merely the actual ratio of children zero to four per 1,000 women fifteen to forty-four (or twenty to forty-four, or fifteen to forty-nine) in a group divided by the ratio of children zero to four per 1,000 women of the same age found in a life table population. Thus, if the ratio of children to women in a group did not change and if the death rates on which the life table is based did not change, the number of children in this group would be sufficient to add to (indexes of over 100) or to reduce (indexes of less than 100) the population by the amount of this variation from 100, in a generation.

This study also showed that in none of these cities did over 41.3 per cent (Pittsburgh) of the women live in tracts where the ratio of children was high enough to replace the existing population, while in Chicago only 10.9 per cent of the women lived in such tracts. Thus it appears that there are large differences in fertility within cities and these differences

are closely associated with social and economic status—the better the status the lower the fertility.

Finally attention may be called to the different rates at which people in certain segments of our population are replacing themselves. In Table 62, 100 signifies that the group indicated is having just enough children to maintain its numbers. Anything less than 100 means that this group is failing to reproduce itself, while an index in excess of 100 indicates that it is adding to the population (see note to Table 62).

It is impossible to go into more detail regarding the differential birth rate in the United States, but we may very briefly summarize the findings of the various studies as follows: The most fertile group of any considerable size in this country is probably that engaged in the extraction of minerals. Although information on this point is not wholly satisfactory, the coal counties in the Appalachians show extremely high ratios of children to women (21). Next in order comes the group engaged in agriculture and, since this is ten times as large as the mining group and has a high rate of increase, a considerable part of the total natural increase of the United States is coming from this group. Nearly all the rest is coming from hand workers—unskilled, semiskilled, and skilled—in descending order of importance. Finally the white-collar workers—tradesmen, professional workers, clerical workers, and others—have a very low fertility and are failing to reproduce themselves by a large margin.

3. Differential Fertility in England and Wales (8)

In the author's judgment the most satisfactory study of fertility made until quite recently is that of England and Wales, based on information collected at the census of 1911. In this study the age at marriage for women as well as the number of children ever born and the number surviving was obtained for every woman in the country. This information, when used in conjunction with the other information on the census schedule, made possible an exhaustive study on the fertility of the women of England and Wales as it was 30 years ago. The findings of this study were not startling but they gave a more exact picture of differential fertility in a large population than we had had previously. Some of the more significant facts are given in the tables on pages 177 and 178.

Two tables showing (*a*) the fertility of completed families in different social classes and (*b*) the fertility of women according to age at marriage are given here. There is a very marked difference in number of children born in the different classes. One hundred women married in 1881 to 1886 and past forty-five years of age in 1911 had borne only 422 children if they belonged to the upper and middle classes, while 100 women of the unskilled class had borne 609 children, 100 miners' wives had borne 684 children, and 100 farmers' wives had borne 632 children. The differ-

TABLE 63.—NUMBER OF CHILDREN BORN PER 100 COUPLES WHERE THE WIFE WAS 45 OR OVER AT TIME OF CENSUS, ENGLAND AND WALES, 1911 (8, PART 2, P. XCVIII, TABLE 44)

Date of marriage	Duration of marriage in years	Total population	Occupied only	Social class[1]							
				I	II	III	IV	V	VI	VII	VIII
1881–1886.....	25–30	551	554	422	493	556	562	609	513	684	632
1871–1881.....	30–40	605	611	497	567	615	616	652	567	717	667
1861–1871.....	40–50	662	673	593	650	679	673	698	633	760	702
1851–1861.....	50–60	690	701	625	700	707	700	718	654	759	738
1851 or earlier....	Over 60	697	700	605[2]	728	681	740[2]	698[2]	[3]	[3]	746

[1] Class I, upper and middle classes; Class II, retired and unoccupied, living on private means; Class III, skilled artisans; Class IV, intermediate between classes III and V; Class V, unskilled workers; Class VI, textile workers; Class VII, miners; Class VIII, agricultural laborers.

[2] Rates based on less than 100 couples.

[3] Less than 10 couples.

TABLE 64.—NUMBER OF CHILDREN BORN PER 100 COUPLES WHERE THE WIFE WAS 45 OR OVER AT TIME OF CENSUS, BY AGE AT MARRIAGE, ENGLAND AND WALES, 1911 (8, PART 2, P. XCVIII)

Age of wife at marriage	Total population	Occupied only	Social class[1]							
			I	II	III	IV	V	VI	VII	VIII
15–19.....	799	801	637	734	801	804	834	757	904	845
20–24.....	620	619	488	567	622	628	676	566	747	704
25–29.....	428	426	351	404	432	431	470	380	527	510
30–34.....	281	281	230	270	280	283	307	244	349	344
35–44.....	106	107	83	99	106	108	120	97	134	135
45 and over.....	3	3	2	3	3	3	4	4	5	3
All ages (crude).....	487	489	365	435	504	498	533	457	626	572
All ages (standardized)[2]...	487	487	389	451	489	492	528	444	585	556

[1] See footnote 1 of Table 63.

[2] Standardized on all families in England and Wales (wives over forty-five years at census) at each marriage age of wife.

ences are much the same if we take the standardized rates for all women over forty-five and for all ages and dates of marriage (Table 64, last line). This is exactly the same situation that we found in the United States. Fortunately, we can also measure something of the effect of this differential birth rate upon the growth of the population of England and Wales from the data shown in Table 65.

Here we see that the least fertile 25 per cent of marriages of completed fertility produced only 2.1 per cent of all births, while the most fertile

TABLE 65.—PERCENTAGE DISTRIBUTION OF ALL LEGITIMATE BIRTHS TO ALL MARRIAGES AND TO MARRIAGES OF COMPLETED FERTILITY, ENGLAND AND WALES, 1911 (8, PART 2, P. XLVII, TABLE 18)[1]

Percentage of marriages arranged in order of increasing fertility	Percentage of all births resulting from marriages of all durations	Percentage of all births resulting from marriages of completed fertility
10		
20	1.0	0.8
25	2.4	2.1
30	3.8	4.2
40	8.7	9.8
50	15.1	17.7
60	23.7	27.9
70	35.3	40.7
75	42.4	48.0
80	50.5	56.2
90	70.5	75.2
100	100.0	100.0

[1] This table is to be read as follows: The least fertile 10 per cent of marriages of all durations produced no births, the least fertile 20 per cent produced 1 per cent of all births; conversely, the most fertile 10 per cent of marriages produced 29.5 per cent of all children.

25 per cent produced 52 per cent of the births. Since there can be no doubt that a larger proportion of the women in the upper and middle classes than of the women in the laboring classes belonged to the least fertile 25 per cent of the population and that just the opposite was true of the most fertile 25 per cent, we can see that the upper and middle classes were contributing comparatively little to the next generation.

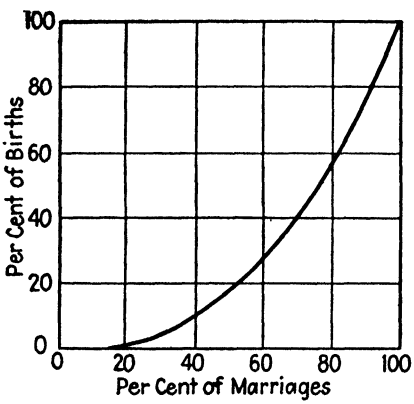

FIG. 26.—Percentage distribution of all legitimate births to marriages of completed fertility, England and Wales, 1911. (Based on Table 65.)

Innes (10), on the basis of London data, is disposed to doubt that these class differentials were of much importance in 1931. On the other hand, Tietze (20) relating births in England and Wales in 1931 to the father's occupation, still finds large differentials, the "effective" paternity rate of the unskilled being about 80 per cent greater than that of professional persons. The evidence seems to indicate that there are still large class differentials in England and Wales, although they are probably not so large as formerly.

4. Differential Fertility in Other Countries

a. France.—In France the situation appears to be much the same as in the United States and in England and Wales, although a close comparison between these countries and France is impossible because of differ-

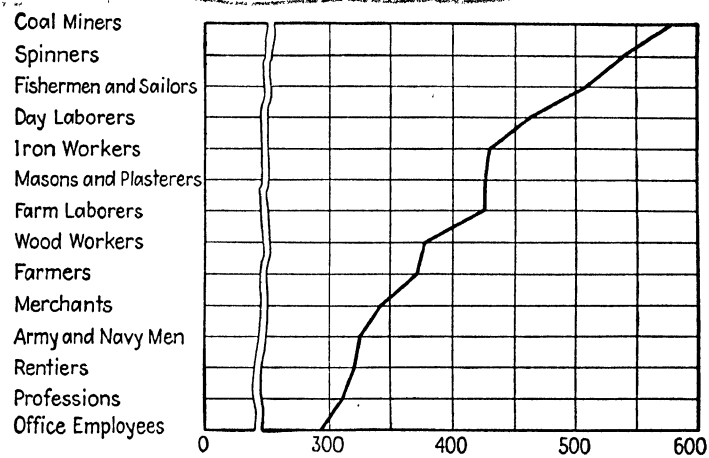

Fig. 27.—Average number of children born per 100 families where the marriage had endured 25 years or more, France, 1906. (Based on Table 66.)

ences in the form in which the data were gathered. The data given in Table 66, however, do not leave much room for doubt that essentially the same occupational differentials in the birth rate existed in France in

Table 66.—Average Number of Children Born per 100 Families Where the Marriage Had Endured 25 Years or More, France, 1906 (6, p. 115)

Occupation	Children per 100 families
Coal miners	579
Spinners	540
Fishermen and sailors	510
Day laborers	464
Workers in iron	431
Masons, plasterers	427
Farm laborers	426
Woodworkers (own account)	378
Farmers	371
Merchants	342
Army and navy men	325
Rentiers (unoccupied)	321
Professions	312
Office employees	294

1906 as in these other countries. The classes having the better incomes and the more desirable jobs were those which had the fewest children. In only one respect does France appear to have differed materially from these other countries. Farmers appear to have had relatively fewer children in France than elsewhere.

In a study of the size of families of people engaged in public service in France in 1906 it also was found that the clerks and office employees had somewhat smaller families than the hand workers and that, on the whole, the size of the family decreased with the increase of income in both groups. The only noticeable exception to this inverse relation is in the case of office workers receiving more than $1,200 a year (Table 67).

TABLE 67.—NUMBER OF CHILDREN SURVIVING PER 100 FAMILIES WHERE THE MARRIAGE HAD ENDURED 25 YEARS OR MORE ACCORDING TO THE INCOME OF THE EMPLOYEE, FRANCE, 1906 (6, PP. 171–177)

Income class	Office workers	Hand workers
Average for all incomes	213	265
Less than $100	251	271
$100–$200	223	272
$201–$300	222	259
$301–$500	202	236
$501–$800	198	219
$801–$1,200	200	165
$1,201–$2,000	210	
$2,001 and over	244	

More recent data for France, although not so detailed as those given above, show that persons engaged in agriculture, in fishing, and as hand workers had larger families than those engaged in the professions, in public service, and in trade (9). Sterile families were also less frequent in the former groups. But while there can be little doubt that there are significant differences between the birth rates of different classes in France, it seems not unlikely that these differentials are smaller than they were 25 or 30 years ago.

b. Germany.—In Germany, as in these other countries, the birth rate varies greatly from class to class and from one part of the country to another. Bertillon's data given above show how different quarters of Berlin differed from one another about 50 years ago. But these data are now of historical interest only. In connection with the 1933 census the German Statistical Office made a very comprehensive study of fertility, the results of which are of much interest (7). In the first place it showed that the differential fertility between large and small communities is still large in Germany. Thus women who lived in com-

munities of less than 2,000 and who had been married 21 to 25 years at the time of the 1933 census had borne an average of 3.95 children, while the women who lived in cities of over 100,000 had an average of only 2.41 children. In this same group of women 34.7 per cent had families of five or more children when they lived in communities of less than 2,000, but only 12.1 per cent of them had families of this size when they lived in large cities. In Berlin only 5.1 per cent of this group had borne five or more children.

When Protestant and Catholic groups in communities of the same size were compared, it was found that a larger proportion of the women in the latter group had families of five and more than in the former. There were also fewer childless marriages among the Catholics. Unfortunately the average number of children born to women of different religious faiths, married a given length of time, is not given.

The following table shows that there was still a large differential in fertility by occupation in Germany in 1933 and that in general the better the social status the higher the proportion of women with zero, one, and two children.

TABLE 68.—THE PER CENT OF MARRIED COUPLES LIVING TOGETHER AND MARRIED IN 1913 AND EARLIER THAT HAD A GIVEN NUMBER OF CHILDREN, GERMANY, 1933 (7, No. 1, p. 33)

Occupational class	Number of children					
	0	1	2	3	4	5 or more
Independent peasants	5.3	7.7	13.1	14.3	13.1	46.5
Agricultural workers	5.5	6.7	10.0	11.6	12.0	54.2
Agricultural officials	7.8	15.0	24.8	19.6	12.6	20.2
Independent workers	8.6	12.8	19.6	17.4	13.0	28.6
Independent workers in trade and commerce	12.4	16.6	22.1	17.3	11.2	20.4
Professions	13.5	17.9	24.6	18.5	10.8	14.7
Administrative officials	10.3	20.0	26.3	18.5	10.9	14.0
Laborers	7.9	11.6	16.8	15.9	12.9	34.9

There is also a close association between the ownership of land and the size of the family, even in the nonagricultural occupations, where the duration of the marriage is 20 years or more. Thus in the professions only 9.7 per cent of this group is childless if the couple owns land, while 15.2 per cent is childless if the couple does not own land. Moreover, 53.5 per cent of the owning couples have three or more children, while only 39.7 per cent of the nonowning couples have three or more children. The differences are proportionally much the same for other occupational

groups; even the laborers in agriculture have larger families when they own land than when they do not.

This study of fertility leaves no doubt that there are still large differentials between classes and area groups in Germany and that in general the lower the economic and social status the greater the fertility. Some income data given by Burgdörfer, however, lead him to believe that in the cities this pattern may be undergoing a change (3, p. 59). While the number of children per 100 families having taxable incomes decreases as the size of the community increases, it increases as the size of the taxable income increases. This increase in number of children with increase in income is not entirely uniform in cities of less than 25,000, but in all cities of over 10,000 it is consistent enough to warrant the statement that the number of children for which tax exemption can be claimed increases as income increases. But this is not the same as saying that

TABLE 69.—NUMBER OF CHILDREN TO EACH 100 PERSONS ENTITLED TO DEDUCTIONS FROM INCOME TAX FOR URBAN GROUPS AND RURAL AREAS, GERMANY, 1928 (3, p. 59)

Income group	Average for all	Under 2,000	2,000–5,000	5,000–10,000	10,000–25,000	25,000–50,000	50,000–100,000	100,000 and over	Berlin
Among those subject to the wage tax									
Under $375	106	122	111	105	101	98	98	89	77
$375–$750	115	142	132	125	120	115	117	98	75
$750–$1,250	124	158	153	146	138	132	131	104	80
$1,250 and over	123	173	151	144	138	130	130	103	83
Total 1928	114	135	128	123	119	115	116	98	78
Among those subject to income tax									
Under $375	133	157	138	122	108	103	102	78	56
$375–$750	157	204	166	147	130	122	123	93	69
$750–$1,250	153	221	172	151	134	127	128	99	73
$1,250–$2,000	141	211	165	151	136	127	130	103	77
$2,000–$3,000	130	184	158	154	143	136	132	110	90
$3,000–$4,000	127	169	158	146	138	137	134	113	94
$4,000–$6,250	128	163	154	146	139	139	135	115	99
$6,250–$12,500	131	157	158	148	144	139	140	121	106
$12,500–$25,000	134	170	153	146	144	145	148	125	110
$25,000 and over	139	174	157	147	162	143	136	132	128
Total 1928	144	182	157	141	128	122	122	96	75
Total 1927	148	183	163	147	133	126	128	100	78

the size of the family increases as income increases. Until we know the age of the people in the different income classes and the length of time they have been married, we cannot be certain that the relation between size of family and income is positive rather than negative. However, the writer is inclined to believe with Burgdörfer that the differentials in fertility between poor and well-to-do families are becoming narrower

and that they will probably disappear as voluntary control of births becomes more general in the poorer classes. Certainly the poor have more economic reason to restrict their families to one or two children than the comfortable and well-to-do, but until more conclusive evidence is available it cannot be said positively that the well-established inverse relation—the lower the economic status the larger the family—has been reversed in Germany.

c. Sweden.—In connection with the development of a national population policy a special study of fertility was made in Sweden in 1936, the results of which are summarized in Table 70 (VI, 7, 1941). This table does not show a clear inverse relation between income and size of family. The largest number of children born alive is found as a rule in the income class $250 to $375; in several social classes the maximum is reached at the next higher income level but in no case at an income level in excess of $500, except among farmers. From the maximum of these relatively modest incomes the number of children generally declines, but in several groups when the income is in excess of $2,500—the well-to-do—it rises slightly although in no case so high as in the $750 to $1,250 income group. While it cannot yet be said that there is no longer an inverse relation between income and size of family it can be said that this relation is no longer

TABLE 70.—AVERAGE NUMBER OF CHILDREN BORN ALIVE IN MARRIAGES HAVING A DURATION OF 20 TO 35 YEARS, BY OCCUPATION, SOCIAL POSITION, AND INCOME OF HUSBAND, SWEDEN, 1936 (VI, 7, 1941, PP. 32–34)[1]

Occupation	Residence	Size of income							
		Under $150	$150–$250	$250–$375	$375–$500	$500–$750	$750–$1,250	$1,250–$2,500	$2,500 & over
All classes	Country	4.12	3.85	4.33	4.31	4.01	3.60	3.12	3.32
	City	3.12	3.01	3.38	3.31	3.28	2.92	2.53	2.68
Farmers, agricultural patrons	Country	4.30	3.98	4.35	4.69	4.72	4.38	3.97	4.35
	City	4.30	3.17	3.39	3.85	3.78	3.79	....	....
Farm laborers	Country	4.92	3.83	5.04	5.39	5.08	....	....	....
	City	....	....	5.09	4.40	....	....	....	....
Other independent patrons	Country	3.73	3.62	3.86	3.76	3.55	3.33	3.16	3.14
	City	3.18	3.07	3.34	3.29	3.06	2.88	2.72	2.76
Officials and salaried employees	Country	3.63	2.86	4.07	3.38	3.21	3.27	2.75	3.04
	City	2.70	2.77	2.62	3.09	2.85	2.84	2.55	2.64
Laborers in industry	Country	4.16	3.93	4.25	3.96	3.95	3.62	3.37	....
	City	3.61	3.49	3.82	3.51	3.44	3.04	2.33	....
Other laborers	Country	4.55	4.00	4.48	4.37	3.75	3.33	2.67	....
	City	3.33	3.29	3.40	3.43	3.36	2.90	2.26	....

[1] The Swedish crown has been converted into dollars at the ratio of four to one. It should not be inferred, however, that the level of living at a given income in Sweden is the same as at this given income in the United States. Four crowns would undoubtedly buy considerably more of certain kinds of goods in Sweden in 1936 than one dollar.

altogether uniform in Sweden. These data lend some support to the contention of Edin and Hutchinson (4; 5) that in Stockholm the relation of income and fertility is direct rather than inverse, but they certainly do not prove any general reversal in Sweden of the usual inverse relation of income and social status to size of family.

There are also several other differentials in size of family in Sweden which are of great interest. (*a*) Farmers and farm laborers have considerably larger families than other classes, regardless of income; (*b*) laborers in industry and other laborers come next to farmers and farm laborers at all income levels, except at their highest level, where they belong with officials and salaried employes; (*c*) no matter what the social class or the income level, people who live in the country have larger families than those who live in cities.

5. Summary

There is no need to multiply further the facts regarding the differential birth rate. Everywhere in Europe and in the countries settled by Europeans there are still marked differences in birth rates between the different economic and social classes of the population, although it is reasonably certain that these differentials are decreasing and it is certainly not impossible that they will disappear altogether. By and large, farmers or peasants have the highest birth rates. Next to the farmers the poorer paid working classes in the cities have the largest families, except that in localities where there are large settlements of miners they appear to have the largest families of all. I have placed them with the poorly paid city laborers because the English study referred to above shows that they lose many of their children and, therefore, do not increase so rapidly as do farmers.

In a third group, with a lower birth rate than unskilled laborers and miners, come the semiskilled, and they in turn are followed by the skilled laborers and artisans who are also small employers. From this point it is difficult to grade classes by their birth rates because they overlap and cannot be separated into distinct groups. Small tradesmen and skilled workers frequently seem to belong in the same group from the standpoint of their birth rates.

In general, however, the classes of people who do not actually work with their hands for their living have distinctly lower birth rates than those who do. Within this white-collar group the evidence is not conclusive, although the weight of evidence indicates that an inverse relation between the number of children and the size of the income is the usual thing. However, attention has been called to data which indicate that this uniform inverse relation between income and fertility may be changing. If one were to hazard a guess as to the changes in the differential birth rates of the next 25 years, it would be that in the West the poorer

paid types of workers will cut their birth rates much more rapidly than the better paid types, with the result that the different income classes will contribute to future population more nearly in proportion to their numbers than in the recent past. It is highly probable, however, that the farmers will continue to furnish more than their proportional share to the next generation. The reasons for this prediction will be given in the discussion of the causes of the decline in the birth rate, where a partial explanation of the present differences will be attempted.

The differential birth rate is by no means a new phenomenon in human experience. In Chap. XVI certain aspects of this matter will be discussed in some detail, but I should like to say here that it is not unlikely that the powerful and privileged of all ages have had a tendency to die out quite rapidly, owing to greater exposure to violent death on the one hand and to greater debauchery on the other. The former has tended to offset any survival advantages that these people possessed in a higher standard of living, while the latter has tended to reduce their birth rate. Thus, childless marriages or marriages with only one or two children seem to have been quite common among the Roman nobility from before the time of Augustus onward to the fall of the Empire. Newsholme and Stevenson (12, p. 70) say in this connection that "there has always been a great difference between the two [that is, between the birth rates of the upper and lower classes]; and it is notorious that branches of the aristocracy have only been kept alive by engrafting from other social strata."

If the differential birth rate is a more important problem today than in former times, it may be that this is due to the very great increase in the proportion of the white-collar workers in our modern society who as a group strive to attain upper-class standards of life, rather than to the increase in the differential between the upper and lower classes. No data are available to prove this position, but it seems to be more tenable than the assumption that the differential birth rate is a wholly new phenomenon.

Before leaving this matter of the differential birth rate it will be well to call attention again to the fact that a differential birth rate is developing as between nations and that it is creating some difficult problems in international politics. Western nations which were increasing in numbers very rapidly during the last century have entered upon a period of slow growth which will soon lead to a stationary or a declining population, while certain other peoples that have been almost stationary until recently are beginning to expand at a rapid rate. Since these latter peoples often lack adequate resources to care for their growing numbers for any great length of time at present levels of living, to say nothing of improving standards, we may anticipate their making efforts to secure the larger resources that they need. Since the foregoing was written Japan has taken an aggressive attitude, first toward her continental neighbors, and

is now attempting to secure a larger place in the sun by forcing Great Britain, Holland, and the United States out of southeastern Asia. Italy, too, undertook to enlarge her empire by conquest and for the moment succeeded, while Germany is at present engaged in the world's greatest effort to expand her frontiers. (In the writer's opinion it would be a great mistake not to recognize that a significant element in these attempts at national expansion is the differential rate of population growth in some of these countries as compared with some of their neighbors and the inadequacy of the resources of some of these growing countries to support their populations.)

References

1. BECK, P. G.: "Recent Trends in the Rural Population of Ohio," Ohio Agricultural Experiment Station, Wooster, Ohio, May, 1934, *Bull.* 533.
2. BERTILLON, JACQUES: "La Natalité selon de degré d'aisance; Étude à ce point de vue de Paris, Londres, Berlin et Vienne," *Bull. de l'institut international de statistique*, 11 (1899), 163–176.
3. BURGDÖRFER, FRIEDRICH: "Volk Ohne Jugend," 3d ed., 536 pp., Vowinckel, Berlin, 1935.
4. EDIN, KARL ARVID: "The Birth Rate Changes; Stockholm 'Upper' Classes More Fertile than the 'Lower,'" *Eugenics Rev.*, 20 (1929), 258–266.
5. ———, and EDWARD P. HUTCHINSON: "Studies of Differential Fertility in Sweden," 116 pp., P. S. King & Son, Ltd., London, 1935.
6. France, Bureau de la statistique générale: "Statistique des familles en 1906," 205 pp., Imprimerie nationale, Paris, 1912.
7. GERMANY, Statistisches Reichsamt: "Volkszahlung vom 16 Juni 1933," Paul Schmidt, Berlin, 1937, Vol. 452, Nos. 1 and 2.
8. Great Britain, Census Office: "Fertility of Marriage," 2 vols., H. M. Stationery Office, London, 1917. (Census of England and Wales, 1911, Vol. 13.)
9. HUBER, MICHEL: "La Population de la France," 249 pp., Librarie Hachette, Paris, 1937.
10. INNES, JOHN WARWICK: "Class Fertility Trends in England and Wales," 152 pp., Princeton University Press, Princeton, N. J., 1938.
11. KISER, CLYDE VERNON: "Variations in Birth Rates According to Occupational Status, Family Income, and Educational Attainment," *Milbank Memorial Fund, Quart. Bull.*, 16 (1938), 39–56.
12. NEWSHOLME, ARTHUR, and T. H. C. STEVENSON: "The Decline of Human Fertility in the United Kingdom and Other Countries as Shown by Corrected Birth Rates," *Jour. Roy. Stat. Soc.*, 69 (1906), 34–38.
13. NOTESTEIN, FRANK W.: "The Decrease in Size of Families from 1890 to 1910," *Milbank Memorial Fund, Quart. Bull.*, 9 (1931), 181–188.
14. ———: "Differential Fertility in the East North Central States," *Milbank Memorial Fund, Quart. Bull.*, 16 (1938), 173–191.
15. SYDENSTRICKER, EDGAR, and FRANK W. NOTESTEIN. "Differential Fertility According to Social Class; a Study of 69,620 Native White Married Women under 45 Years of Age Based upon United States Census Returns of 1910," *Amer. Stat. Assoc., Pub.*, 25, n.s. (1930), 9–32.
16. THOMPSON, WARREN S.: "Average Number of Children per Woman in Butler County, Ohio, 1930; a Study in Differential Fertility," 81 pp., U. S. Department of Commerce, Washington, D.C., 1941.

17. ———: "Race Suicide in the United States," Parts I, II, III, *Sci. Monthly*, 5 (1917), 22–35, 154–165, 258–269. See also *Amer. Jour. Phys. Anthrop.*, 3 (1920), 98–146.
18. ———: "Ratio of Children to Women in the United States, 1920," 242 pp., Government Printing Office, Washington, D.C., 1931. (U. S. Bur. Census, *Census Mon.* 11.)
19. ———: "Some Factors Influencing the Ratios of Children to Women in American Cities, 1930," *Amer. Jour. Soc.*, 45 (1939), 183–199.
20. TIETZE, CHRISTOPHER: "Differential Reproduction in England," *Milbank Memorial Fund, Quart. Bull.*, 17 (1939), 288–293.
21. U. S. National Resources Committee: "Population Statistics, National Data," 107 pp., Government Printing Office, Washington, D.C., 1937.
22. WHELPTON, P. K.: "Industrial Development and Population Growth," *Soc. Forces*, 6 (1928), 458–467, 629–638.

Questions

1. Is a declining birth rate a good thing for the United States? for China? for England? Give reasons for your answer.

2. What is meant by a differential birth rate? Illustrate.

3. What effects may a differential birth rate produce upon the character of a population? How are these effects produced? Are they beneficial or harmful? Why?

4. What relationship, if any, is there between the birth rate and war? Explain your answer.

5. Contrast the birth rate of various classes of the population in the United States. Give illustrations from your own community if possible.

6. How does the differential fertility in other countries compare with that of the United States? Give reasons for the likenesses and differences found.

7. In studying differential fertility in Sweden and Germany what new trend is apparent? Does it seem likely to continue? Why? Would you like to see it continue? Why?

8. What factors appear to you to have the most influence on the birth rate in different classes in the population? After studying the data given in this chapter can you suggest reasons for the operation of these factors?

9. Classify the population of the United States according to size of family. Would you change this if you could? Why?

10 Can you find any evidence of differential birth rates in your own community?

CHAPTER XII

FACTORS IN THE DECLINE OF THE BIRTH RATE[1]

We have seen above that the decline of the birth rate in western Europe and its colonies during the last half century is very great whether it is measured by the crude or by some more refined rate. It is the most important demographic change of our time. It is to be ranked in importance with the expansion of the European peoples during the nineteenth century and seems not less likely to create problems for mankind than did this expansion. The reasons for this decline, therefore, merit the closest study, for unless we understand them we are not likely to appreciate the significance of this movement. In general, we may say that the present decline in the birth rate represents a more or less conscious effort on the part of a vast section of mankind to adapt fertility to the changed conditions of modern life. The attempt to understand a little better the factors operating to reduce the birth rate during the last several decades will be the burden of this chapter.

1. Contraception

Since there are a good many people who are not convinced that voluntary control of the size of the family is the chief means by which the birth rate has been lowered it may be well to devote some space to this point before proceeding to the discussion of the factors which may properly be regarded as the causes of this decline.

Until recently there was no very satisfactory evidence regarding the extent of contraceptive practices or of their effect on the birth rate. As long as this was the case it was inevitable that many people would look for biological or physiological causes of the decline rather than for social and economic causes acting through the voluntary control of conception.

The evidence that the practice of contraception is very widespread and does make it possible to exercise effective control over the birth rate is now conclusive, and the voluntary control of conception is certain to be classed as one of the major events in human history. For the first time it makes possible a relatively easy and painless adjustment of numbers to the social and economic conditions prevailing at any given time. In the past, as has been shown, even when man did achieve a fairly satisfactory adjustment of numbers to the means of subsistence, he did so only

[1] General references: 1; 2; 3; 4; 8; 12; 13; 17; 20; 25. Bibliography for this chapter combined with that of Chap. XIII, pp. 213–215.

by methods which entailed far more suffering and hardship than does the voluntary control of conception.

a. The Extent of Contraception.—Pearl (14, Chap. 4) found that about 45 per cent of the white women and about 17 per cent of the Negro women included in his study had practiced contraception in some form prior to this particular conception. The women (about 30,000) who are reported on in this study probably were not a representative sample of the general population because the data were gathered by hospital attendants (doctors and nurses) at the time of confinement, hence, they were all fertile women. Women who did not want children and who practiced contraception successfully would not be found in this group, nor would women who were infecund from any natural cause. There is also a question whether women who go to hospitals for confinement are typical of the general population. On this point Pearl may be quoted:

> In general it may be reasonably concluded that the present material appears to be a fair and representative sample of the general population from which it was drawn, in respect of a variety of important variables. The results that it reveals, to be discussed in this and the next chapter, may therefore be accepted with a considerable degree of confidence, as indicative of conditions in the general population, and particularly the urban population, of the United States.

The writer is inclined to believe that Pearl was a little overconfident in the typicality of his sample, but, even so, there is little doubt that it was sufficiently like the general population to give his results wide validity. The practice of contraception was very widespread in 1931 and 1932 when Pearl's data were gathered and has been spreading steadily since that time, if one may judge from the decline of the birth rate in recent years in those regions where it had previously been high. There is, therefore, reason to believe that at the present time about half of the married couples in the cities, where the wife is still under forty-five, practice contraception more or less regularly and that the proportion of rural couples practicing it is increasing rapidly.

But even granting that the practice of contraception is widespread and is extending rapidly, it is well known that it has been of highly varying efficacy from family to family and there has been doubt in the minds of many whether this widespread effort to control conception was sufficiently effective to account for any considerable portion of the decline in the birth rate.

b. The Effectiveness of Contraception.—It may now be stated categorically that contraception in the manner actually practiced by large sections of our population is highly effective in reducing the size of the family. The following table adapted from Pearl shows the percentage by which the rate of conception of the women in his sample practicing contraception is lower than that of women not practicing contraception.

TABLE 71.—PERCENTAGE OF CONTRACEPTIVE EFFECTIVENESS BY ECONOMIC GROUPS, COLOR, AND AGE, UNITED STATES (14, p. 215)

Age	White				Negro		
	Very poor	Poor	Moderate circumstances	Well-to-do and rich	Very poor	Poor	Moderate circumstances
Women reporting at time of first birth							
10–14	.....	− 57.6	.....	.....	.....	.....	.....
15–19	43.9	54.8	54.6	84.0	9.2	24.0	.....
20–24	50.8	53.7	56.8	58.0	10.4	42.0	.....
25–29	28.6	48.1	43.0	69.3	67.2	51.1	85.0
30–34	79.4	43.7	37.8	42.0	.....	.....	.....
35–39	.....	42.6	− 7.3	67.6	.....	.....	.....
Women reporting at time of second or later birth							
10–14	−51.5	−109.0	−82.3	.....	− 7.6	−143.2	.....
15–19	3.6	22.5	20.3	63.7	3.8	23.1	30.5
20–24	18.7	26.4	31.6	48.7	5.4	8.2	− 4.5
25–29	12.5	18.2	23.1	42.1	−22.0	− 19.6	67.5
30–34	5.5	9.6	7.3	36.1	10.4	− 33.6	66.4
35–39	15.5	17.0	20.2	− 5.7	− 7.8	− 38.5	.....

These figures leave little room for doubt that at nearly all ages the rather haphazard practice of contraception was highly effective among the white women in Pearl's sample. It is also of interest that, in general, the effectiveness of contraception increased with the rise in economic status. This rise in effectiveness with rise in income is all the more significant from the standpoint of differential birth rates, because it was also found that the proportion of women practicing contraception increased rapidly as economic status rose. Thus of white women aged twenty to twenty-four reporting at the time of their first birth, only 24.9 per cent of those classed as very poor practiced contraception. This percentage rose to 34.6 per cent among the poor, to 55.7 per cent of those in moderate circumstances, and to 80.3 per cent among the well-to-do and rich. Among women reporting at the time of the second or later birth, the percentages for the same economic and age groups were 36.1, 51.2, 64.4, and 86.5, respectively.

The effectiveness of contraception is also shown in the proportion of married life spent in pregnancy by the women practicing and not practicing contraception (Table 72). The former spent a significantly smaller proportion of their married lives in pregnancy. Pearl also found that there was a very marked difference in the proportions of the women in the several economic classes who had had four or more live births

TABLE 72.—AVERAGE PERCENTAGE OF MARRIED LIFE SPENT IN PREGNANT (AND PUERPERAL) STATE, BY ECONOMIC GROUPS AND COLOR (14, p. 217)

	White					Negro			
	Total	Very poor	Poor	Moderate circumstances	Well-to-do and rich	Total	Very poor	Poor	Moderate circumstances
Women reporting at time of first birth									
Practicing contraception...	26.2	30.9	29.3	25.2	22.0	34.6	36.0	37.6	18.3
Not practicing contraception.....	42.3	45.0	45.6	36.3	39.7	37.7	37.7	37.0	54.2
Women reporting at time of second or later birth									
Practicing contraception...	30.4	34.5	31.8	28.1	24.2	38.8	39.8	38.3	32.3
Not practicing contraception.....	36.8	37.6	37.4	33.7	36.1	38.9	39.2	38.4	41.4

TABLE 73.—PERCENTAGES OF WOMEN WHO HAD PRODUCED THEIR FOURTH OR HIGHER ORDER LIVE BIRTH AT TIME OF RECORD, BY ECONOMIC GROUPS AND COLOR (14, p. 218)

	White					Negro			
	Total	Very poor	Poor	Moderate circumstances	Well-to-do and rich	Total	Very poor	Poor	Moderate circumstances
Practicing contraception...	24.2	41.3	28.3	15.4	8.6	43.7	48.0	41.6	23.8
Not practicing contraception.....	32.9	43.8	32.3	19.5	20.6	40.0	44.8	33.9	29.2
Total	28.5	42.9	30.3	17.0	10.7	40.8	45.4	35.9	26.7

(Table 73). The significance of this difference from the standpoint of population growth is that, whereas over two-fifths of all the women in the very poor class had already borne more than enough children to ensure the maintenance of their numbers in the next generation (three), only about one-tenth of the well-to-do and rich had borne four or more. This is even more significant than appears at first glance, because it is practically certain that the very poor women would continue to bear children longer and more frequently than the well-to-do and the rich. Thus the differential in size of completed families of these two economic groups is probably even greater than one might assume at first glance.

The preceding tables show that contraception was not nearly so effective among Negroes as among whites. The chief reason for this

difference probably lies in the lower economic status of the Negro women. Only a small proportion of Negro women practice contraception and those who do practice it do so very ineffectively, as is the case among poor white people.

Stix and Notestein (18; 19), using data secured from women who had visited a birth-control clinic in New York City, have shown that contraception as practiced by these women even before visiting the clinic is more effective than among the women in Pearl's sample. This is probably due to the fact that these women were more interested in contraception than the average woman, as witnessed by their visits to the clinic and their payment for its service and materials. The following table shows beyond question that untutored contraceptive practice reduced the rate of conception of these women by over one-half. Furthermore the degree of effectiveness increased as the duration of the marriage increased. This would appear to be a natural consequence of

TABLE 74.—PREGNANCIES PER YEAR OF MARRIED LIFE WITH AND WITHOUT CONTRACEPTION, BEFORE CLINIC ATTENDANCE (18, p. 61)

	Pregnancy rates	
	No contraceptive used	Contraceptive used
Period of married life:		
Total rate standardized	0.70	0.32
First pregnancy	0.91	0.50
All later pregnancies:		
Total	0.64	0.28
Years since marriage:		
0–4	0.63	0.32
5–9	0.66	0.28
10–14	0.70	0.23
15–29	0.67	0.14

increased desire to prevent the birth of additional children after the couple already had children and also of the decreasing fecundity of the women as age advances. This latter point is unquestionably of considerable importance even though the data given here seem to contradict it. The word *seem* is used because these data for the longer durations of marriage for women not practicing contraception are too scanty to be entirely reliable.

Although the preclinic experience of these women with contraception shows that it was quite effective in reducing the birth rate yet they were not satisfied or they would not have visited the clinic. Did the visit

to the clinic help these women to increase the effectiveness of their contraceptive efforts? The answer is an unqualified yes. Whereas the preclinic rate of conception for first pregnancies was 41, the postclinic rate was only 7; for second and later pregnancies the rates were 27 and 10, respectively. These differences are too large to be merely accidental, but it should be remembered that a considerable proportion of these women came to the clinic because they already had all the children they felt they could care for or because they wanted a longer interval between births. Hence, they were ready to practice contraception more diligently than in the past, and this, together with knowledge gained at the clinic, accounts for the greater effectiveness of contraception in postclinic experience.

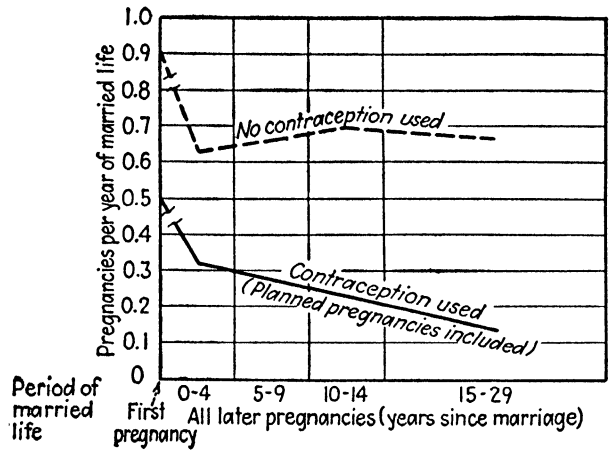

FIG. 28.—Pregnancy rates per year of married life, with and without contraception, before clinic attendance. (*From R. K. Stix and F. W. Notestein, Controlled Fertility, The Williams and Wilkins Company.*)

The data collected by Stix and Notestein also throw light on a number of other important aspects of contraception. They show, for example, that a large part of these women plan their families from the beginning of their married life. About 34 per cent planned their families before they had ever had a pregnancy, while about 44 per cent did so before they had a living child. Only 19 per cent planned a pregnancy after they had had two pregnancies and only 10 per cent after they had two living children. Clearly, these women were planning small families.

This study also shows, contrary to a very common belief, that the practice of contraception does not render the woman less likely to conceive when a child is desired. "Fifty-four per cent of the 'planned pregnancies' were conceived within a month after contraceptive practice was stopped, and nearly 80 per cent within three months.

"The 'planned pregnancy' type of noncontraceptive exposure was peculiarly favorable for conception." This is shown by the fact that, where contraception was the usual practice but it was omitted in order to have a child, the average period before conception took place in the case of first births was 2.6 months whereas when there was no contraception at all it was 4.0 months. For second and later conceptions the differences were much greater, 2.8 months, and 9.6 months, respectively. This difference is not surprising, since the natural contraceptive effects of birth and of nursing a child have a chance to display their efficacy for those not practicing contraception in the interval between birth and the next conception, while they have no chance to display their efficacy among those practicing contraception during this time.

Another fact of interest in this study is that the Catholic women visiting the clinic were much less given to the practice of contraception prior to their visit than the Jewish women. Whereas the former had practiced contraception for only about 6 years to each year in which they had not practiced it, the latter had practiced it for about 25 years to each year for which they had not practiced it. It also appears that both before and after clinic experience Catholic women practiced contraception less effectively than Jewish women. Likewise the wives of manual workers practiced contraception less effectively than those of white-collar workers, and poor and uneducated women succeeded less often in preventing conception than women in better economic conditions and with more schooling. But the significant point to remember here is that even where contraception had the least effect it still was instrumental in preventing a considerable proportion of the conceptions which would have occurred had it not been practiced.

A number of other studies which cannot be discussed here have fully confirmed the fact that contraception as actually practiced by large segments of our population is highly effective in keeping down the birth rate. There can no longer be any reasonable doubt that it is the chief means by which the high birth rate of a half century ago has been reduced to a level where it is no longer sufficient to replace the population in many countries and in many social and economic classes.

c. Abortion.—As noted earlier, abortion always has been and still is an important factor in reducing the birth rate. This matter has attracted considerable attention of late and recently Wiehl has reviewed the data. Her summary follows:

> Total abortion rates for urban samples studied varied from 12.1 per cent to 16.8 per cent; and the weight of evidence favors a rate of approximately 15 per cent of total pregnancies, or 18 abortions per 100 live and stillbirths.
>
> Spontaneous abortions were found to occur in 9 to 10 per cent of pregnancies.

Illegal abortions reported varied from slightly less than 3 per cent to 8 per cent, 4 or 5 per cent of total pregnancies being the most probable rate for married white women in the general population.

Limited data for rural communities suggest that abortions may be somewhat less frequent in the rural areas. (26, p. 88.)

On the basis of these data there can be no reasonable doubt that abortion substantially reduces the birth rate, but there may be some doubt whether there has been much, if any, increase in abortion in recent years. If there has been an increase it has almost certainly been a minor factor. Moreover, abortion, like contraception, cannot be regarded as a cause since it is only a means of keeping the family size within desired limits. The reasons for resorting to abortion are probably the same in kind, but somewhat intensified, as those for practicing contraception.

2. Changes in Age at Marriage, and Proportion of Married Women

It is often claimed that the decline in the proportion of married women in the population, resulting chiefly from marriage at a later age, is a rather important cause of the decline in the birth rate. As a matter of fact, there is no proof that, in the period since the decline in the birth rate has become most rapid, there has been any change in age at marriage which would result in a general decline in the birth rate, while the proportion of women fifteen to forty-four who are married has increased rather than decreased (Table 75).

In England and Wales the change in age at marriage between 1910 and 1935 as well as in the proportion of women marrying under thirty was slightly favorable to an increase in the birth rate. As shown in Section *B* of this table, 1,000 married women should have had more children in 1935, if age at marriage was the only factor changed, than the same number of married women in 1910. In Sweden and Germany, on the other hand, age at marriage was less favorable in 1935 than in 1910. But in all these countries the birth rate declined in much the same way. Clearly, changes in age at marriage will not go far in explaining the decline in the birth rate, nor will proportion of married women, since in all three countries this rose during this period.

In the United States there are no data on the age at which women marry except for one or two states, and these are by no means typical of the entire nation. Our censuses do, however, give data on the proportions of women at the several ages who are married. These show that there has been a steady increase since 1890 in the proportion of all women of fifteen and over who are married and that this increase is particularly large at the younger ages. These changes should raise rather than lower the birth rate, but it fell steadily from an estimated rate (white) of 31.5 in 1890 to 20.1 in 1930 (VIII, 9, Chap. 8) and to 17.9 in 1940 (22). Since

TABLE 75.—NUMBER OF SINGLE WOMEN MARRYING PER 1,000 WOMEN MARRYING UNDER 45, BY AGE AND NUMBER OF CHILDREN 1,000 WOMEN MARRIED AT AGES GIVEN ABOVE, WOULD HAVE AT THE FERTILITY RATES BY AGE AT MARRIAGE IN ENGLAND AND WALES, 1911

Age	England and Wales		Sweden		Germany	
	1910	1935	1911–1915	1935	1910	1935
A. Number of single women marrying at given age per 1,000 women marrying under 45						
Under 20	72	88	76	66	93	57
20–24	490	484	419	399	531	464
25–29	298	299	313	334	271	330
30–34	94	87	124	134	73	103
35–39	33	29	48	48	23	33
40–44	13	13	20	19	9	13
B. Number of children per 1,000 women married at ages given above would have at the fertility rates by age at marriage in England and Wales, 1911						
Under 20	533	652	563	489	689	422
20–24	2,680	2,647	2,292	2,183	2,905	2,538
25–29	1,061	1,064	1,114	1,189	965	1,175
30–34	219	203	289	312	170	240
35–39	41	36	60	60	28	41
40–44	4	4	6	5	3	4
Total	4,538	4,606	4,323	4,238	4,760	4,420
Proportion of women 15–44 who were married						
	1911	1931	1910	1935	1910	1933
15–44	47.7	50.1	40.6	44.7	51.4	52.0

there is no good reason to believe that the situation as regards age at marriage and proportion of women fifteen to forty-four who are married is fundamentally different in other countries than in those for which data have been given, it seems certain that these factors may be dismissed as the more important causes of the decline in the birth rate in any country and even as minor causes in most of them.

3. CHILDLESSNESS

For the United States the data on sterile marriages are not very satisfactory. In his study for the Immigration Commission, Hill (23) found that 7.4 per cent of all women included in his sample, married

10 to 19 years and under forty-five at the time of the 1900 census, were childless (had never borne a child). But he also found great differences in percentage between rural and urban areas, the latter generally having a rate two to three times that of the former. There was also a marked difference between the older native stock and the immigrant stock, the immigrant stock generally having a rate only about one-half that of the older native stock, except in rural Ohio, where there was no significant difference. Thus in Cleveland 8.1 per cent of all the women in the tabulations who were under forty-five years of age at the time of the 1900 census, and who had been married 10 to 19 years, reported that they had never borne a child. In the rural areas of Ohio the percentage for the group with the same characteristics was 5.2. When these were broken down into native white women of native parentage and white women of foreign parentage the proportions in Cleveland were 15.2 per cent and 6.3 per cent, respectively, and in rural Ohio 5.7 per cent and 5.1 per cent, respectively. In Minneapolis the proportion who were childless was slightly higher than in Cleveland, 8.5 per cent, but in rural Minnesota it was only 3.0. In Minneapolis the proportion of native white women of native parentage who were childless was 12.7, while that of the women of foreign parentage was 6.9, and in rural Minnesota these percentages were 5.1 and 2.7, respectively. In Rhode Island the percentage of childlessness was higher for women of both native and foreign parentage.

In their study of fertility of native women, 1910, Sydenstricker and Notestein (XI, 15) found that the percentages of women having no children varied considerably according to occupational status of the family and the age of the women. Thus, in the professional class 14.7 per cent of the women sixty to sixty-four had no children; this dropped to 9.6 per cent in the business class, to 9.0 per cent among farmers, to 8.8 per cent among the skilled workers, and to 4.4 per cent among unskilled workers. Where the women were only forty to forty-four at the time of the 1910 census the percentages were: professional, 19.8; business, 17.9; skilled, 17.4; unskilled, 16.3; and farmer, 10.6. This shows a marked increase in all classes except farmers, and even there the increase is significant (Chap. XI, Table 61).

In 1928 Lotka (10) calculated that 13.1 per cent of the marriages in the United States were childless. In their study of prolificacy in the United States Whelpton and Jackson (24) found that in 1919–1921 12 per cent of all the women marrying were childless and that by 1929–1931 this proportion had increased to 23.1 per cent. These proportions (1929–1931) were by no means uniform throughout the nation. For native white married women living to age fifty the proportion varied from 10.6 per cent in the Mountain States to 23.0 per cent in the Middle Atlantic States, and 26.4 per cent in the Pacific States. Even within divisions

there were large differences. In New England, Vermont was low, with 16.4 per cent, and Rhode Island high, with 23.1 per cent. There was not much variation within the Middle Atlantic division, but in the East North Central division Wisconsin had only about half as high a proportion of childless women (13.0 per cent) as Indiana (25.7 per cent). The extreme low is found in Arizona (2.7 per cent) and the high in Washington (27.0 per cent), just ten times as high. In general it appears that the industrialized Northeast and the Pacific States have a higher proportion of childless women than the South and the region between the Mississippi to the Pacific States. On account of the deficiencies in the vital statistics of some of the states the differences just given may have a certain amount of error, but there can be no reasonable doubt that there are wide differences in the proportion of childless women in different parts of the country and probably in different classes of the population.

In a study of fertility in a section of Brooklyn (Bushwick) in 1933 Kiser (6) found that 12 per cent of the native white wives and 8 per cent of the foreign-born wives under fifty years of age and married 10 years or more had had no children. In the more representative study of New York City just cited he found that 11 per cent of the native wives and 7 per cent of the foreign-born wives (9 per cent of all wives) of this age and marital group were childless. These studies all show that childless wives constitute a very significant proportion of all wives in the United States and they give some reason to believe that the proportion is increasing.

In general, European studies on childlessness, where comparable with the American studies cited above, show proportions more like those found by Hill, Notestein, Lotka, and Whelpton than those found by Kiser in New York City, as the following citations indicate.

In 1901 Körösy (7) found that in Budapest 22.3 per cent of the marriages broken by death (1879–1900) where the women had been married 10 years or more were childless. Even where the marriage had endured 30 years or more 16.6 per cent were childless. In Copenhagen in 1900, where the average duration of marriage was 13½ to 15½ years, the proportion of sterile wives varied from 9 per cent among workers to 11 per cent among government employees and professional families (11, p. 219*). In three sections of Paris, where the women were married at twenty to twenty-five years of age and had been married 15 years, the proportions of families without living children varied from 14 per cent in a workers' section to 21 per cent in a section classed as comfortable and to 23 per cent in a rich quarter. By size of community it was found that, in 1901, of the couples in France married more than 15 years, 9.6 per cent of those in communities under 2,000, 10.5 per cent in communities of 2,000 to 50,000, 14.5 per cent in those of 50,000 to 100,000, 15.9 per cent in cities of over 100,000, excepting Paris, and 17.4 per cent

in Paris, had no living child (11, p. 213*). Having no living child is not the same as childlessness but clearly the proportion of childlessness varied greatly in different types of communities.

Data on number of children borne by each woman were collected in the 1912 census of Rumania (16, p. 102). The results are of much interest, since they throw light on the proportions of childless women in the rural and urban segments of the population. Of the rural women in Rumania who were married, widowed, and divorced and aged thirty-five to thirty-nine at the census only 5.4 per cent were childless, while in urban communities the proportion was 18.2 per cent. This age class is used here as showing near the minimum of childlessness because at this age women generally have been married long enough to have children if they are going to. But since the married, widowed, and divorced women are all classed together this figure is not quite the minimum for married women who have spent 10 years or more in wedlock.

Since a smaller proportion of older women were childless it seems probable that childlessness had been increasing prior to 1912.

A study of a similar nature was made in connection with the 1931 census in Italy (5, 1931). Fortunately several important factors were controlled carefully. The following data refer to women married under twenty-five years of age who had lived with their husbands until the time of the census (1931) and were forty-five or over at that time. In the whole of Italy 5.2 per cent of such women were childless, but the proportion childless varied from 4.0 per cent among people attached to agriculture to 9.2 per cent among professional people, with farm laborers having 4.9 per cent childless and white-collar workers (other than professional) 8.5 per cent. For all married women forty-five and over at the time of the census the proportion childless was 9 per cent, or about three-fourths greater than for women married under twenty-five.

The study of fertility carried out in connection with the 1911 census in England and Wales showed that 16.2 per cent of the married women over forty-five had never had a child (XI, 8, p. xliii). This is one of the highest proportions known to the writer for an entire country but is not surprising if we will remember that England and Wales are more urbanized than any other large country and that the proportion of childlessness among urban women is generally much higher than among rural women. The following table is of interest as showing the proportion of childless women in England and Wales in 1911 both by time of marriage and by age at marriage. It shows that, regardless of the date at which the marriage took place, the proportion of childlessness increased rapidly when married after age twenty-five.

The 1933 German data throw more light on childlessness in that country than do the data for most other countries, since both the age at marriage and the duration of the marriage are known (XI, 7). These

TABLE 76.—PERCENTAGE OF STERILE MARRIAGES BY TIME OF MARRIAGE AND AGE AT MARRIAGE OF WIFE, ENGLAND AND WALES, 1911 (XI, 8, PART 2, P. XLV)

Date of marriage	15–19	20–24	25–29	30–34	35–44
Before 1851	4.7	5.4	7.3	....	....
1851–1860	4.0	5.9	8.6	13.6	....
1861–1870	3.5	5.8	9.8	15.8	29.9
1871–1880	3.2	5.5	10.3	17.1	38.2
1881–1885	3.2	5.5	10.4	18.9	42.8
1886–1890	...	5.7	11.3	20.8	47.1
1891–1895	...	...	11.6	21.8	51.0
1896–1901	...	...	...	23.4	52.8

data show that (*a*) the proportion of childless wives has been increasing since early in this century and has been increasing far more rapidly in large cities than in rural areas; (*b*) the proportion of childless wives has long been much higher in the large cities than in rural areas; (*c*) the proportion of childless wives mounts very rapidly as age at marriage increases, especially above twenty-five, there being little difference in rate of increase between rural areas and large cities; (*d*) in the same areas there is little difference in the proportions of childlessness among Evangelical and Catholic populations; (*e*) the proportion of childless women increases steadily and rapidly as social status improves, social status being measured here by type of occupation, beginning with the peasantry and agricultural labor as the lowest and proceeding to the professions and those of independent means; (*f*) landowners' wives, regardless of social status, have a lower proportion of childlessness than wives of nonlandowners; (*g*) there is very little difference in proportions of wives childless within the same social class where women do and do not help their husbands at their work, but where women are themselves the enterprisers the proportion childless mounts rapidly; (*h*) finally, it appears that recently the proportion of childless wives has been mounting rapidly if it can be assumed that women married 10 to 15 years and still childless at the time of the 1933 census will never have a child. The proportion of wives married in 1918 and childless in 1933 was 17.4 per cent and of those married in 1923 the percentage was 21.8. Clearly childlessness is becoming a very important factor in the growth of the population in Germany just as it had already become of great importance in England and Wales, as shown by the 1911 data given above.[1]

[1] Questions for this chapter combined with those of Chap. XIII, p. 215.

CHAPTER XIII

FACTORS IN THE DECLINE OF THE BIRTH RATE (*Continued*)

With a growing proportion of childless wives and with large differentials in childlessness, as shown in the preceding chapter, it would be of much interest to know the relative importance of voluntary and involuntary factors in producing childlessness.

1. Voluntary and Involuntary Childlessness

Unfortunately very few studies have been made which throw any light on this point and these few are contradictory and, therefore, inconclusive. They are, however, of such importance that the results will be given briefly. Lorimer and Osborn (9) analyzed 60 cases of childless women of completed fertility and concluded that from two-thirds to three-fourths of them were involuntarily childless. On the other hand, Popenoe concluded from his investigations of childless women that about two-thirds of them were voluntarily so. Neither of the groups of women just referred to can be considered typical of any considerable part of the population, hence the authors are careful not to draw any definite conclusions and strongly emphasize the need for more study along this line.

Kiser (6) has recently studied a group of childless women in New York City consisting of white wives under fifty years of age and married 10 years or more. It will be impossible to describe this study in detail here, but his results are of unusual interest because the investigation was set up especially to determine the proportions of voluntary and involuntary childlessness and was controlled much more carefully than was possible in the two studies just noted. In this study it is shown that, of 291 women who had never been pregnant, 217, or 77.8 per cent, had never practiced contraception and that 187 of them, or 66.8 per cent, expressed themselves as disappointed in not having children. Furthermore, 157 women, or 57.3 per cent, had sought medical advice to overcome their childlessness. In addition there were 90 women who had been pregnant but who had never borne a child; thus of 381 childless women whose pregnancy history was known 76.4 per cent had never been pregnant and 57 per cent had never practiced contraception as far as is certainly known, since the 90 who had been pregnant but had not borne a child did not report on the practice of contraception.

As Kiser points out, there is some evidence that these women married somewhat later in life than the average woman in the same communities

and this may have had some influence in raising the proportion of involuntary childlessness among them, but he thinks this could not have been very great since really late marriages (of women over forty) were excluded by the method of selection employed. Kiser also calls attention to the fact that these women were married between 1905 and 1927 and that the importance of contraception in producing childlessness may have changed in recent years. His "tentative conclusion is that, however prevalent may be the practice of contraception for purposes of postponing and spacing pregnancies, such practices cannot be held responsible for any major share of existing permanent childlessness."

This conclusion seems to the writer to go a little beyond his data in view of the fact that there were 30 other childless women of whom neither the pregnancy history nor the contraceptive practice was known and in view of the lack of certainty whether this group of women was truly representative of the childless women in the city as regards the proportions of voluntary and involuntary childlessness.

In a study on factors affecting fertility now under way in Indianapolis it was found that 14.3 per cent of the native white couples married 12 to 14 years were childless. Of the couples in this childless group interviewed in detail at date of writing 30 out of 83, or 36 per cent, were voluntarily childless. This is certainly an important proportion of all childless women and if it holds throughout the study it would be impossible to maintain for this group, as Kiser does for his, that contraceptive practices "cannot be held responsible for any major share of existing permanent childlessness."

Drs. Reynolds and Macomber (15), who have specialized in the removal of obstacles to fertility, believe that in the United States from 10 to 12 per cent of all marriages are involuntarily sterile. This would probably amount to two-thirds or three-fourths of all childless marriages. They do not give any satisfactory evidence for this belief, and one wonders whether they are not biased in their estimates by the type of medical practice in which they specialize. At present, then, it is quite impossible to do more than guess at the proportion of childless marriages which are voluntary but certainly voluntary childlessness cannot be dismissed as unimportant until more evidence is gathered. On the other hand, it appears that the amount of involuntary childlessness is large and is probably on the increase and may much exceed the lower limits of childlessness shown by some of the studies cited above, namely, from 3 to 5 per cent of all married women. It is greatly to be hoped that there will soon be more conclusive evidence regarding the part played by the voluntary control of conception in producing childlessness.

If most of the sterile marriages are involuntarily so, as some physicians seem to think and as Kiser's data indicate, then the growth in childlessness would seem to lend support to some such theory as Herbert Spencer's,

to the effect that, as civilization evolves and life becomes more complex, individuation proceeds apace, and man's reproductive capacity becomes weaker. This view assumes that a fundamental biological change is taking place in man which renders him less and less capable of reproducing himself. It seems unlikely, however, that in a generation or two any such basic biological change would take place. Before Spencer's theory can be accepted as established we must have evidence that fertility is declining independently of man's interference with it (contraception); also that the class differentials discussed above are not only involuntary but are not connected with the different modes of living which characterize different classes and groups.

Pearl's findings regarding the effectiveness of contraception seem to indicate that where contraception is never practiced there is no difference in the fertility of different economic groups except such as can be accounted for by differences in age at marriage (14). Furthermore, the English data given above show no significant change during almost half a century in the proportion of childless women when they were married under twenty-five. The German data from the census of 1933 show that in rural areas the proportion of childless wives married in 1907 and earlier was 6.7 per cent; in 1899 and earlier it was 6.5 per cent and had only increased to 7.9 per cent for those married in 1913. On the other hand, childless women living in cities of over 100,000 increased from 10.7 per cent for those married in 1899 and earlier to 11.8 per cent for those married in 1907 and earlier, and to 16.9 per cent for those married in 1913. Such large changes in the proportion of childless women within a few years can scarcely be attributed to fundamental biological changes. At most it would seem that the recent increase in childlessness and the decrease in the size of the average family, if they are involuntary, would have to be attributed to some physiological change in reproductive capacity taking place in certain individuals and groups owing to their mode of life and not to basic biological changes in the race.

In view of this situation special attention should be paid to the operation of environmental factors which might reduce the fertility of individuals and groups. Gynecologists who are making a specialty of treating sterility frequently point out that abnormal methods of living—for example, very sedentary habits, the eating of soft, rich, prepared foods and too much of them, the living of a rather tense nervous life, and so forth—often lead to sterility. What they appear to mean may be put thus: Man became man and developed his natural reproductive capacity while living an active and more or less dangerous life in the open; in fact, he has always lived an active life in the open until the last few decades. It is not surprising, therefore, that we should find individual reproductive capacity frequently deranged as a consequence of the unwonted urban mode of life which so many of us have adopted. It

may very well be that men are not able to adopt this new mode of life and yet maintain their reproductive vigor. But it should be made clear that this derangement of individual physiological harmony is by no means the same thing as a general decline in the fecundity of the race due to increasing individuation in all classes and groups. It is due to the failure of individuals and groups to make a satisfactory adjustment to changes in environment and, presumably, is within man's control, while basic biological changes are not. Thus, even though it may turn out that a considerable portion of the decline in fertility (both increase in childlessness and decline in size of family) during the last half century is involuntary, this does not mean that we can do nothing about it. It means rather that we have not yet learned to adjust our manner of living to the new conditions which have arisen in our transition from a predominantly agricultural society to a more urbanized society.

2. General Conditions Favoring Voluntary Control of Size of Family

As was pointed out above, man has always exercised more or less control over his growth in numbers, the amount of control varying from people to people and from age to age. The methods by which this control was exercised have also varied greatly in accordance with the customs and traditions of each people, but in the past they have not generally involved any large measure of conception control. In the West a very small amount of restrictive control of any kind had been exercised by social attitudes for some centuries prior to the middle of the nineteenth century. Thus it came about that as soon as science showed how deaths from certain causes could be prevented, and ample food was available, the population grew enormously. But it seems obvious as we look back that this was an unusual situation which could not be expected to endure long. Man was certain to attempt a new adaptation of his growth in the changing economic and social conditions in which he found himself; for no limited area, nor even the world as a whole, could long support the rate of growth which ensued upon the application of science to the reduction of the death rate and to the use of steam in the production and distribution of goods. Under these conditions rates of increase in some instances rose to incredible heights, perhaps 25 to 30 in the thousand each year in some parts of the American colonies, thus doubling the population in 23 to 28 years. Even today we find rates of increase of 20 or more reported for Palestine and Formosa and for parts of the Soviet Union, while rates in the high teens are by no means uncommon.

It is not surprising that as man gained a new measure of control over his death rate he should begin to tamper with his birth rate. When out of eight or ten children born only four or five survived to maturity, and such fearful mortality was accepted as inevitable, there was little urge to con-

trol births. Thus in India in 1901 only 4.9 females out of each 10 born lived to fifteen years of age, that is, to the beginning of the childbearing age, and only 2.5 survived to forty-five, the end of childbearing. Conditions had improved appreciably for children by 1931, when 5.7 reached fifteen but the number that reached forty-five only increased to 2.6. In Sweden, on the other hand, in 1931 to 1935 out of 10 girls born 9.3 reached fifteen, 9.2 reached twenty, and 8.4 lived to forty-five. The situation in India even in 1901 was probably a slight improvement upon what was practically universal before the advent of the Industrial Revolution and the development of modern sanitary and medical services; that in Sweden represents what has happened since these changes. It is quite obvious that Sweden can have a much lower birth rate than India and yet maintain the same rate of increase. Since we live in a world having limited resources, we must either prepare for an early return of the days of high death rates or bring our birth rates to very nearly the same level as our death rates. A population of 2.2 billions with even a small increase would soon fill the world to overflowing.

It may seem a far cry from these rather general reflections upon birth control to the understanding of the reasons why the *A*'s, the *B*'s, and the *C*'s have one, two, or three children rather than six to ten, yet such is not the case. It is true, of course, that the idea of making a new adaptation to changed social conditions does not have much to do with the *A*'s limiting their family to two children, but we must recognize that the knowledge of contraception which the *A*'s possess as well as the will to make use of this knowledge is an outgrowth of the conditions in which they live. Their conduct in this respect can be understood only if we see it in its proper setting. So, while it is quite true that the *A*'s, the *B*'s, and all the rest of us are motivated in our conduct by definite tangible situations and events, yet these definite situations and events take their significance from the total social situation of which they are a part. They are not isolated events in the lives of individuals.

3. Ambition to Change Status

We have seen above that the birth rate is higher among agriculturists than among city people; and that, as between groups in the city, it is generally higher among the laborers and hand workers than among those who hold white-collar jobs. How can these differences in size of families be explained? If the decline in the birth rate is assumed to be in a large measure voluntary, the most general explanation of the present birth differentials is probably to be found in the unequal strength of the urge among different social groups to change their social and economic status, or the desire to retain for themselves and their children the advantages of a satisfactory status which has already been acquired.

It requires no argument to convince most of us that in the industrial civilization of today a very great urge develops in vast numbers of people to change their social and economic status. Agriculture is no longer the chief concern of most Western lands. It no longer absorbs the major part of the energy of men as it formerly did. The demand for its products is declining as compared with the demand for manufactured products; hence, we have had a surplus population in agriculture in many Western countries during the last several decades. This surplus population turned to the cities to find employment, and this has resulted in a disruption of the traditional modes of life for vast numbers of people. The world has never known anything comparable to this uprooting of people from the country and moving them into cities.

All over the Western world a very large part of the city dwellers of today are either migrants themselves or the children of migrants. Migration necessarily involves the individual in many changes—changes in occupation, in social and economic status, in religious interests, in group controls, and in many other aspects of conduct. In fact, a whole new outlook on life inevitably follows upon the disruption of the customary modes of conduct accompanying the movement to urban and industrial centers. In this situation the scramble among newcomers for a new status is necessarily very intense. In the writer's opinion this effort to acquire a new status, which will also be a better status, at least economically, lies at the base of much of the recent decline of the birth rate in industrialized lands. Moreover, even where a desired status has been achieved it is often such a bitter struggle to maintain it and to pass it on to one's children that this can only be done if children are few.

Since we have today a larger group of people than ever before who feel oppressed and humiliated by the differences between their actual standards of living and the standards of more favored groups to which they would like to attain, and since to have a small family, or none at all, is for the majority the surest aid in the attainment or the maintenance of the desired status, we have a tremendous urge toward family limitation which did not exist in past times. If we use the term "ambition" to describe the state of mind aroused in people by the desire to bridge the gap between their actual status and that which they would like and by the will to maintain and transmit to their children a more or less enviable position already achieved, then, in the author's opinion, personal ambition is a basic cause of the decline in the birth rate. If, further, it can be shown how ambition varies in different groups and that the number of children in many cases has a direct influence upon the attainment of one's ambition, we shall have made some progress in proving that ambition is an important factor in the decline of the birth rate.

4. Reasons for the Differential Birth Rate between Country and City

One of the most important differentials in the birth rate is that between country people and city people. Are there in these groups differences in ambition, the attainment of which might be affected by the size of the family? If so, what are they and how would they be likely to influence reproduction?

Attention has been called to the fact that a large proportion of city dwellers are newcomers. They or their parents have moved from smaller rural or semirural communities to the cities. In making this move they have definitely broken with the past and have put themselves in a new situation where traditional beliefs and modes of conduct avail them little in making the necessary adjustments to the new life. In a very real sense their attitudes of mind have been disorganized, and they must work out a new mode of life—reorganize their modes of conduct. Under such conditions they are open to a vast number of new suggestions which will never be presented to their rural cousins who remain on the land. They see differences in modes of living, in incomes, in types of work, in position, in power wielded, in leisure, and in opportunity, of which the rural dweller is only slowly becoming conscious. The differentiations in city life are so numerous and so striking as compared with those in the country that they excite desires to do, to achieve, and to possess, which are certainly less intense in the countryman. The countryman still lives a more or less routine life, and traditional modes of conduct still enable him to meet most situations and gain the approval of his fellows.

The farmer who carries on in about the same way as his father, does a good job of looking after his land and stock, and provides for his family in reasonable fashion will be approved of by his community. He is certainly not regarded as a failure if he does not double or quadruple his father's acres and does not otherwise display a consuming ambition to get ahead economically or socially.

It is much the same with the country woman. She will meet with the approval of her family and her community if she is a good mother and homemaker. She will not be judged to anything like the same extent as the city woman by the way her house is furnished, the clothes she wears, the social items about her in the newspaper, and many other external signs of success. She can still devote her entire energy to her home and her family and feel that she is achieving her full measure of personal development. On the other hand, the city woman has numerous distracting contacts—contacts which make her less sure of traditional values and less willing to devote her entire energies to home and children.

It is not surprising, therefore, that as between the farmer and the city dweller there are a great many more of the latter who find that rearing a

fair-sized family interferes seriously with the attainment of their ambitions. The farmer's ambition in most cases is quite modest. He can be a good farmer and rear a good-sized family where the young man in the city is utterly swamped with a family of like size. The economic and social handicap of the young couple in the city with three or four children as compared with the childless couple with a wife at work is so obvious that it does not need arguing.

Likewise, the woman who undertakes to rear her children in the city on a small income and in crowded quarters will feel much more inclined to restrict her family than will the country woman. The difficulties of rearing children are inevitably greater in the city than in the country. It cannot be otherwise with the differences in space available at home and for play and with the differences in modes of living.

Then, too, the very nature of much city work is that it requires a long period of rather intensive training and that incomes are small until one becomes well established. Since most young people are ambitious to live as do other members of their class, and since in a great many cases they cannot possibly do so if they have children, many of them find it decidedly advantageous to postpone children until they see the way clear to the achievement of their ambitions, and then they want only one or two, if they are not too old to have children at all.

In the country the young man is quite as likely to be able to start his family in his early twenties as he will ever be. His physical vigor is near the maximum, and he has acquired sufficient training to enable him to handle his job satisfactorily. Furthermore, not only is a wife at home not a handicap to his success, as so often is the case in the city, but she is equivalent to the working wife in the city. She contributes not only to the comfort of life but also to the economic prosperity of the family. And, since she must be at home practically all the time in any event, she is less interested in postponing children until a more convenient time.

These differences in the influence of ambition upon the size of the family apply particularly to the differences between farmers and the white-collar workers; and, of course, it is between just these groups that we find the greatest differentials in the birth rate. There are, however, certain general differences between city life and country life which apply to all classes of people in the city, and perhaps we should call attention to these differences before discussing the reasons for the differential birth rates of the several economic classes within the city.

In the first place the rural family and the urban one are organized on quite a different basis. On the farm the family is still the economic and social unit, to a considerable extent. It is true that this is somewhat less the case today than it was a generation ago, but, even so, the farm family has a unity quite lacking in city families. All members of the farm family work at a common task, and each can readily see that his particular

work contributes to the welfare of all and that in return he receives from the others things and services which make his life more pleasant. Besides, the social life of country communities is still organized to a greater or lesser extent on the family unit. There is family visiting, and family picnics are not uncommon. Children are taken for granted and are provided for in the social activities of the community. This is changing somewhat, but the disintegration of the family has not progressed anything like so far in the country as in the city. The divorce statistics show this from one angle.

Then, too, we must remember that general farming is a 365-day job and that 8-hour days are unknown during the greater part of the year. The farmer must be at home all the time. He can seldom take a real vacation. Since the farmer and his wife must be at home in any event to look after crops and stock, they do not find that children add materially to their immobility. In the case of city people, however, children do add enormously to their immobility, and, if it chances that travel is one of the things desired, we certainly have here a strong motive for family limitation which has been largely absent among farmers in the past.

The convenience of bachelor living in the city for both men and women must also be a factor of some importance in determining whether or not one will marry and the age at which marriage will take place. In this country only 72.0 per cent of all urban women over fifteen years of age are married, widowed, or divorced, while among rural women the percentage is 75.7. For men the percentages are 66.1 and 65.3, respectively—a slight preponderance in favor of the urban males. Among the farm population the percentage married is even greater, if we may judge from the data for eight counties of which a special study was made (21, p. 161). Clearly the fact that congenial occupations for women, aside from homemaking, are found largely in the city and the fact that they can live more comfortably there if single have some effect upon their inclination to marry.

The differences between the country and the city in the matter of work for the children are also of importance in determining their differential birth rates. In the city, even among hand workers, there is very little opportunity for the children to engage in any profitable work which will also be good for them physically and morally. If they work at all, they must do so away from home where they cannot be supervised by the parents and where the parents have little or no control over the conditions of work or their companions while at work. This undoubtedly increases the economic cost of children in the city, and it also adds to the moral responsibility of the parents without providing them with means of discharging it to their own satisfaction. Certainly, the country dweller who can provide occupation at home for his children in their leisure time

has less to worry about and will, therefore, be somewhat less reluctant to incur the responsibilities of a fair-sized family than the city dweller of similar economic status.

In pointing out the differences between the country and the city which make for smaller families in the latter we should not forget that information regarding contraceptives is far more widely disseminated in the cities than in the country, particularly the more backward rural areas. No doubt many country people who do not now restrict the size of their families will do so as soon as they learn how. The differences between various sections of the country as shown in ratios of children to women in Tables 57 and 58 (Chap. XI) seem to prove definitely that contraception is now being practiced in certain rural areas to a considerable extent. There can be little doubt that, before long, it will become as general in the country as in the city. But even so, it is not likely that the restriction will ever be so drastic in the country as in many sections of our city population, for children will always interfere less with country people's living as they want to than with city people's living as they want to. It costs less, physically as well as economically, to rear children where there is plenty of space and where their play can be supervised from the kitchen door than it does in congested areas with inadequate playgrounds and those at a distance from home. The city as organized today is primarily a work and recreation place for the vigorous adult. It is not organized to care for child life. Children are not of the essence of the city. The things done for them are afterthoughts, and generally they are very badly done. This failure of the city to provide for the needs of children must discourage many people from rearing any but the smallest families.

5. Reasons for the Differential Birth Rate in Cities

If we turn to the consideration of the differences in birth rates between groups or classes within the city, we shall find that these differences, too, can be explained to a significant degree by the way in which children affect the attainment of ambitions by members of the different groups. It will be recalled that, in general, unskilled laborers have the largest families and that they decline in size as we pass from this group to the semiskilled, skilled, and white-collar occupations, the clerical workers apparently having the smallest families of all.

It will scarcely be questioned that there is far more ambition in the white-collar group than in the hand-working groups. In the white-collar group there is a large proportion who wish in one way or another to change or improve their position or who have to strive so hard to maintain their present status that the additional expense involved in rearing more than one or two children is likely to prove an insuperable handicap unless income can be increased proportionally or even more than proportionally.

For most of these people it is far easier to keep the family small and thus have more to spend per capita than to increase their income; it is also a more certain way to assure oneself of the future. For most urban dwellers mere existence depends upon such a variety of vicissitudes—employment, prices, ability to continue at work, employer-employee relations, and so forth—over which the individual has little control, that each additional child adds considerably not only to the difficulty of maintaining present status and getting ahead but to the precariousness of the future.

The extent to which life is complicated by children and particularly by more than one or two would seem to vary more or less directly with the difference between the way one wants to live and the kind of start he wants to give his children on the one hand, and the means at his disposal on the other. It is obvious that the hand laborer, who has a very modest manner of life to maintain and whose children are generally expected to follow the same pattern of living, has less incentive to keep his family small than the clerical worker, who gets as little or even less income but has to dress better and is expected to live in a higher rent area and in other ways to appear to live on a higher scale. If, in addition, the clerical worker, feeling the general insignificance of his position more than the laborer because of his closer contact with the better paid managerial group, decides that his children must have a rather long and expensive training for a better job, he has a further strong incentive to keep the family small. This situation prevails very widely in the white-collar class but, of course, is by no means absent in the more ambitious laborers, while it is a very important factor in the middle-income groups somewhat above the clerical level but below the well-paid groups, say in that group with incomes of $2,000 to $4,000.

How differences in ambition operate can readily be seen if we examine the situation in the professions as regards the effect of children upon the advancement of the parents and on the prospects of the children themselves. In the first place marriage is relatively late in this class. In addition, in most cases even one or two children early in marriage make matters more difficult for the young couple, while three or four children are quite likely to render the attainment of the desired status extremely difficult and often quite impossible. The period of training for the professions has increased in length until the man who has a sufficient income to live as he is expected to live and support a wife and one or two children by the time he is thirty is the exception rather than the rule. The period of training includes not only the actual time spent in school but also the time spent as a "cub" understudy to someone who has already "arrived" or, if an independent practitioner, the period during which a paying clientele is being built up. In the meantime the desire to live well, to travel, to be free to go and come as seems best for one's advancement, and a hundred other concrete desires make it necessary to choose

between children and those other things. That the decision is often against the baby goes without saying.

The same general type of situation, but with circumstances somewhat altered, is presented to most young couples where the husband is entering business. Children early in life are a considerable handicap, and three or four of them quite generally make it necessary to live more modestly than is desired. Here as in the professions the young man generally has a relatively small income during the years when the couple should (biologically) be having its children. Comfort and security are not generally attained (if at all) until it is too late to add to the family. The maximum income in most of the better paid jobs does not come until forty or later, at which time there is little likelihood of additional children.

In the hand-working groups, on the other hand, maximum earning power is generally attained at a relatively early age, perhaps in the age period twenty to twenty-five. This means that the most desirable time for having children both biologically and economically coincide to a larger extent in this group than in the professional and business groups. It is not surprising, therefore, that up to the present the smaller families are found in the better paid and more ambitious groups. This may not remain so indefinitely, for certainly there are many other motives than ambition, even when defined thus broadly, leading people to desire only one or two children. But since we know only a little about the reasons which are actually effective in keeping families small in different classes and in different areas it will not pay to speculate at much length on other motives. It may be of some interest, however, to append a list of hypotheses on the social and psychological factors affecting fertility which form the basis of an investigation now being carried on by a group of populationists and psychologists of which the writer is a member.

1. The greater the difference between the actual level of living and the standard of living desired the smaller the family.
2. Economic insecurity encourages smaller families.
3. The higher the socioeconomic status the smaller the family.
4. The doubling up of families in living quarters encourages smaller families.
5. People who manifest a strong interest in, and a liking for, home and/or children have larger families than those who show no special interest in this direction.
6. The family in which the wife and/or husband feel that the children confine her and/or him too much to the home or interfere with personal freedom will be smaller than where this is not the case.
7. Among two-child planned families the desire to give an only child a playmate and to insure against childlessness is an important reason for having a second child.

8. The desire for children of both sexes frequently is cause of a third or later birth.

9. The size, type, and location of the community in which people live affect the size of the family.

10. Family and childhood patterns and attitudes affect the size of the family.

11. Families of couples who are traditionally minded are larger than those of people who are not.

12. Families of couples who are interested in religion are larger than those of people who are not.

13. Satisfactory personal adjustment in life encourages larger families.

14. Couples who plan other aspects of their lives tend to plan their families and to have smaller families.

15. The need for ego extension is an incentive to have children.

16. The member of the couple who is, in general, dominant tends also to be dominant in determining the size of the family.

17. People who think children impair marital adjustment are likely to have small families, especially if they think their marital adjustment is poor.

18. Poor health of wife or husband encourages smaller families.

19. Poor health of children encourages smaller families.

20. Women who fear childbirth have smaller families than those who do not.

21. People who have had a happy childhood have larger families than those whose childhood was unhappy.

22. People who are "good sports" have larger families than those who are "poor sports."

23. People who are optimistic have larger families than those who are pessimistic.

Even this list is not complete, and certainly the study referred to will not definitely establish or reject most of these hypotheses; but it will serve to show something of the complexity of the factors which are believed to have something to do with the decline in the birth rate in the last half century. There can be no doubt, however, that if we knew how far these various motives were operative we should have made some progress in understanding the current processes of population growth. Like economic processes and the processes of social control in general, the processes of population growth—the social control of the birth rate—are becoming more and more complex. This makes it all the more needful to study these processes carefully if we should ever want to undertake the control of our own growth in order to enhance our welfare.

References

1. Baber, Ray Erwin, and Edward Alsworth Ross: "Changes in the Size of American Families in One Generation," 99 pp., University of Wisconsin,

Madison, Wis., 1924. (University of Wisconsin Studies in the Social Sciences and History, No. 10.)

2. Cooper, John M.: "Birth Control," 96 pp., National Catholic Welfare Council, Washington, D. C., 1923.
3. Great Britain, National Birth-rate Commission: "The Declining Birth Rate, Its Causes and Effects. Being the Report of and the Chief Evidence Taken by the Commission," 450 pp., Chapman & Hall, Ltd., London, 1917.
4. Huntington, Ellsworth: "The 'Thing' in Families," *Outlook* (New York), 147 (1927), 21–23.
5. Italy, Istituto central de statistica: "Notiziario demografico. Rassegna mensile de dati e notizie sulle populazioni dell' Italia e degli alteri paesi," Rome, 1928——.
6. Kiser, Clyde Vernon: "Voluntary and Involuntary Aspects of Childlessness," *Milbank Memorial Fund, Quart. Bull.*, 17 (1939), 50–68.
7. Körösy, Josef: "Weitere Beitrage zur Statistik der ehelichen Fruchtbarkeit," *Bull. de l'institut international de statistique*, 13 (1901), 1–20.
8. Lindsay, E. V., and A. D. Lindsay: "The Conscious Limitation of the Birth Rate," *Hibbert Jour.*, 22 (1924), 294–310.
9. Lorimer, Frank, and Frederick Osborn: "Dynamics of Population; Social and Biological Significance of Changing Birth Rates in the United States," 461 pp., The Macmillan Company, New York, 1934.
10. Lotka, Alfred J.: "Sterility in American Marriages," *Proc. Nat. Acad. Sci.*, 14 (1928), 99–109.
11. March, Lucien: "Les Statistiques de familles," *Bull. de l'institut international de statistique*, 17 (1907), 209–222.
12. "Must I Have Children?" *Forum*, 89 (1933), 52–54.
13. Ogburn, William Fielding, and Clark Tibbitts: "Birth Rates and Social Classes," *Soc. Forces*, 8 (1929), 1–10.
14. Pearl, Raymond: "The Natural History of Population," 416 pp., Oxford University Press, Oxford, 1939.
15. Reynolds, Edward, and Donald Macomber: "Fertility and Sterility in Human Marriages. With a Section on the Determining Causes of Male Sterility, by Edward L. Young," 285 pp., W. B. Saunders Company, Philadelphia, 1924.
16. Rumania, Direction générale de la statistique: "Bulletin statistique de la Roumaine," Ser. 4, 16 (1921), No. 6–7, 102.
17. Ryan, John A.: "Family Limitation and the Church and Birth Control," 23 pp., Paulist Press, New York, n.d.
18. Stix, Regine K., and Frank W. Notestein: "Controlled Fertility," 201 pp., The Williams and Wilkins Company, Baltimore, 1940.
19. ———: "Effectiveness of Birth Control, a Study of Contraceptive Practice in a Selected Group of New York Women," *Milbank Memorial Fund, Quart. Bull.*, 12 (1934), 57–68.
20. Thompson, Warren S.: "Size of Families from Which College Students Come," *Amer. Stat. Assoc., Jour.*, 20, n.s. (1925), 481–495.
21. Truesdell, Leon E.: "Farm Population of the United States, an Analysis of the 1920 Farm Population Figures, Especially in Comparison with Urban Data, Together with a Study of the Main Economic Factors Affecting the Farm Population," 536 pp., Government Printing Office, Washington, D.C., 1926. (U. S. Bur. Census, *Census Mon.* 6.)
22. U. S. Bureau of the Census, Division of Vital Statistics: "Vital Statistics—Special Reports," Vol. 15, no. 3, p. 9 (October 23, 1941).
23. U. S. Immigration Commission 1907–1910: "Occupations of the First and Second Generations of Immigrants in the United States. Fecundity of Immigrant

Women," 826 pp., Government Printing Office, Washington, D.C., 1911. (Sixty-first Congress, 2d session, *Sen. Doc.* 282.) On cover: Senate Documents, Vol. 65.

24. WHELPTON, P. K., and NELLE E. JACKSON: "Prolificacy Distribution of White Wives According to Fertility Tables for the Registration Area," *Human Biology*, 12 (1940), 35–58.
25. "Why I Am Having a Child," *Forum*, 89 (1933), 237–240.
26. WIEHL, DOROTHY G.: "A Summary of Data on Reported Incidence of Abortion," *Milbank Memorial Fund, Quart. Bull.*, 16 (1938), 80–88.

Questions

1. Of what importance are age at marriage and proportion married as causes of the decline in the birth rate? Illustrate if possible from the history of your own family.
2. How would you account for changes in age at marriage and proportion married?
3. Is voluntary sterility increasing? Can you suggest reasons in support of your answer?
4. Is it wrong to control the size of family? Is there anything "unnatural" about it? Why? What is the attitude of your home community in this matter?
5. Describe the kind of social order in which ambition to change status is strong. Why is it stronger in some communities than in others? Give concrete illustrations in support of your answer.
6. What are the reasons for the differential birth rate between country and city? Are present differences likely to remain? Why?
7. What are the reasons for the differential birth rate within the city? Give examples from personal knowledge if possible.
8. Is there any motive for birth control in a community where the opportunity to change social status is greatly limited? Is it as potent a motive as in a more dynamic society? Give reasons for your answer.
9. Is it advisable to start a crusade against the "woman movement" in order to avert possible race suicide? Explain your answer.
10. Discuss the influence of religion on the birth rate. Is this influence likely to change in the near future? Why?
11. See if you can find what the dominating motives were for family limitation in particular cases from talking with your parents and friends.
12. How many children would you like to have? Give reasons.
13. Rank the hypotheses given above in the order of importance as they appear to you. Read them over carefully several times before doing so. Why is it important to understand the motives determining the size of the family?
14. Write an essay of 500 words telling why you ranked the first two hypotheses as you did.

CHAPTER XIV

THE DEATH RATE[1]

The data on crude death rates for the leading countries of the world are given in Table 77. Here, as in the case of birth rates, the gaps are numerous and important and emphasize how little we really know regarding the movement of population in the world as a whole. Then, too, there are still considerable inaccuracies in the data for many countries.

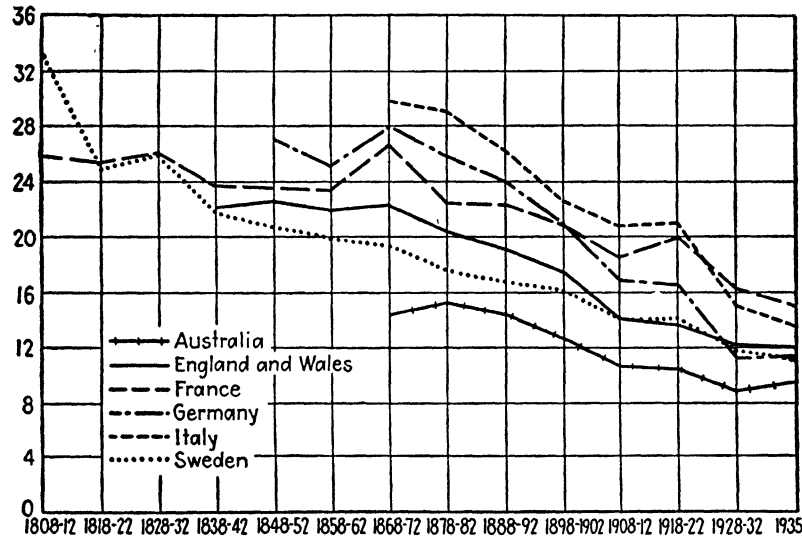

FIG. 29.—Crude death rates of selected countries, 1808 to 1939. (Based on Table 77.)

These inaccuracies are due chiefly to omissions, except in those countries where population is estimated. Here, obviously, errors of estimate will also affect the accuracy of the rates. Errors in the death rate are, however, generally less than in the birth rate, for in the nature of the case it is easier to register deaths than births. But in spite of the incomplete condition of statistics on deaths in many countries, there are several important facts of general interest shown by the data in Table 77 and by Fig. 29.

It is clear at a glance that apart from fluctuations which may be readily explained—for example, by epidemics, war, and crop shortages—

[1] For a more detailed discussion of many of the matters treated in this chapter as they concern the United States see IX, 17; also VIII, 9. General references: 1, 4, 8.

TABLE 77.—AVERAGE CRUDE DEATH RATES OF THE WORLD, 1808 TO 1939[1]

Year	Austria	Belgium	Bulgaria	Denmark	England and Wales	Finland	France	Germany	Hungary	Ireland
1935–1939	13.9	13 0	13.9	10.6	12.0	13.2[2]	15.6	11.9	14.3	14.3
1928–1932	14.1	13.6	16.7	11.1	12.2	13.5	16.4	11.5	17.0	14.4[3]
1918–1922	18.4[2]	15 5	23.3	12.4	13.7	18.3	20.0	16.7	22.1	15.9
1908–1912	19.8	15.8	23.2	13.4	14.2	16.9	18.5	16.9	....	17.0
1898–1902	22.7	18.0	23.4	16.0	17.4	19.6	20.7	20.8	....	18.2
1888–1892	26.5	20.6	23.1	19.3	19.0	20.8	22.2	23.9	....	18.3
1878–1882	28.7	21.4	....	19.2	20.3	23.0	22.4	25.8	....	18.6
1868–1872	....	23.9	....	19.0	22.2	31.7	26.6	28.0	....	16.7
1858–1862	....	22.2	....	20.1	21.9	26.3	23.4	25.1		
1848–1852	....	23.2	....	20.1	22.6	25.7	23.5	27.0		
1838–1842	....	25.1	....	20.3	22.1	21.9	23.6			
1828–1832	....	....	....	26.8	....	27.3	25.9			
1818–1822	....	....	....	20.7	....	25.6	25.3			
1808–1812	....	....	....	24.9	....	39.8	25.7			

	Italy	Netherlands	Norway	Poland	Rumania	Russia	Scotland	Yugoslavia	Spain	Sweden
1935–1939	13.8	8.7	10.2	14 0[2]	19.6	20.8[2]	13.2	16.1[2]	16.6[2]	11.7
1928–1932	15.2	9.6	10.9	16 0	20.7	18 9[2]	13.6	....	17.2	12.0
1918–1922	21.1	13.0	13.5	23.6[2]	23.9[2]	21.7[2]	14 8	....	24.4	14.2
1908–1912	20.8	13.8	13.6	21.2	25.6	28 9[2]	15.6	23.7[2]	23.1	14.1
1898–1902	22.6	17.1	15.4	25.0	26 4	31.8	18.0	22.8	27.9	16.2
1888–1892	26.3	20.5	17.7	....	30 2	35.8	19.1	27.0	30.9	16.8
1878–1882	29.0	22.2	16.6	....	30.6	34.9[2]	20 1	28.8	30.6	17.6
1868–1872	29.8	25.8	17.0	....	26.5	36.9[2]	22.2	32.0	....	19.3
1858–1862	....	26.6	18.0	....	....	....	21.1	....	....	19.9
1848–1852	....	....	18.2	....	....	....	....	....	....	20.6
1838–1842	....	....	19.3	....	....	....	....	....	....	21.7
1828–1832	....	....	19.4	....	....	....	....	....	....	25.8
1818–1822	....	....	19.5	....	....	....	....	....	....	24.9
1808–1812	....	....	....	....	....	....	....	....	....	33.1

	Switzerland	Argentina	Canada	Chile	Guatemala	Honduras (British)	Jamaica	Puerto Rico	United States	Ceylon
1935–1939	11 6	12.1	9.7	24.7	18.0	21 9[2]	16.7[2]	19 1	11.0	24.6
1928–1932	12 1	12.8	10.6	24.1	21.1	23 0	18 1	21.6	11.5	24.0
1918–1922	14 7	17.1[2]	10.8[2]	31.9	23.1	25 6[2]	. . .	21 0[2]	13.5	31.6
1908–1912	15.4	17 2[2]	12 5[2]	31.7	21.4	25.2[2]	24 3[2]	....	....	31.1
1898–1902	18.1	18.4[2]	12.1	32.2	20.7	....	21 4	31 0[2]	....	28.2
1888–1892	20 1	....	11.0	35.0	28.2	....	22.6	30.4	....	26.8
1878–1882	22.4	....	....	28 5	. . .	. . .	....	....	....	22.7
1868–1872	....	....	....	25 8	....	. . .	....	....	....	20.9
1858–1862	....	....	....	25.5						

	India	Japan	Philippine Islands	Algeria[4]	Egypt[5]	Union of South Africa[4]	Australia	New Zealand
1935–1939	23 2[2]	17 2[2]	16 3[2]	14.3[2]	27 2[2]	9 8	9 6	9.0
1928–1932	24 6	18 8	19.1	15 1	26.9	9 7	9 0	8.4
1918–1922	36 8	24 0	24 9	17.6	29.7	12.0	10 5	10.4
1908–1912	32 8	20.8	21.6	17.9	27.1	10.3[2]	10.7	9.4
1898–1902	31 3	20 6	23 5[2]	21 6[2]	26.5[2]	....	12 7	10.0
1888–1892	29.1	20.4	42.7	25 8[2]	25.1[2]	....	14.4	9.8
1878–1882	....	18.1	....	28.3[2]	....	....	15.2	11.5
1868–1872	....	....	....	26.9[2]	....	....	14.4	11.3
1858–1862	....	....	....	27.5[2]				
1848–1852	....	....	....	43.7[2]				
1838–1842	....	....	....	39.1[2]				
1828–1832	....	....	....	39.8[2]				

[1] For the current data on death rates the reader is referred to "Population Index."

[2] Austria, 1919 to 1922; Finland, 1935 to 1938; Poland, 1935 to 1938, 1919 to 1922; Rumania, 1920 to 1922; Russia, 1933 to 1935, 1928, 1920 to 1924, 1906 to 1909, 1876 to 1880, 1866 to 1870; Yugoslavia, 1935 to 1938, 1909 to 1912; Spain, 1935 to 1938; Argentina, 1915 to 1919, 1909 to 1913, 1899 to 1902; Canada, 1920 to 1924, 1911 to 1913; Honduras (British), 1935 to 1937, 1922 to 1924, 1909 to 1911; Jamaica, 1935 to 1938, 1906 to 1910; Puerto Rico, 1921 to 1925, 1894 to 1898; India, 1935 to 1938; Japan, 1935 to 1938; Philippine Islands, 1935 to 1937, 1903 to 1907; Algeria, 1931 and 1933 to 1935, 1901 to 1905, 1891 to 1895, 1881 to 1885, 1872 to 1876, 1861 to 1865, 1851 to 1855, 1841 to 1845, 1831 to 1835; Egypt, 1935 to 1938, 1905 to 1909, 1901 to 1904; Union of South Africa, 1910 to 1914.

[3] Irish Free State.

[4] Europeans only.

[5] Before 1917, Bedouins were not included in population estimates.

the death rate has been declining in much the same manner as the birth rate during the last few decades. In some countries, indeed, it has been declining for more than a century, and, on the whole, prior to World War I it had been declining somewhat faster than the birth rate in many Western countries. There are a few countries, however, in which there has been but little decline in the death rate until quite recently. Bulgaria, Japan, India, Egypt, and Ceylon belong in this group; but it is not at all certain that the failure to show a decline in these cases means that there was none. In most of these countries the registration of deaths is of rather recent origin and for a variety of reasons encounters many difficulties. Since registration almost always improves with age, it may very well be that better registration is the chief cause of the failure of these countries to show a decline in the death rate earlier. In the second place, Japan did not have a true count of the population until 1920, and early censuses in some of the other countries probably contain rather large errors. In spite of these possible exceptions it may be said that there has been a very large and general decline in the death rate during the last few decades in all lands where sanitary practices have been improved and where even a small amount of modern medical service has become available. The decline of the death rate in the West has prevailed for so long that we have almost come to the point of regarding a falling death rate as the normal condition of society. It is clear, however, that this decline cannot continue indefinitely. It must soon cease unless there should be a definite increase in the span of life and in the proportion of the people who live out the full span, and of this there is as yet no evidence.[1]

1. Further Decline in the Death Rate

Since many people seem to think that the death rate can continue to decline indefinitely, it may not be out of place to say a word at this point regarding its further decline in our own country and in others similarly circumstanced. It is obvious that there is a limit to the decline of the death rate, but it is not so obvious to many people what the maintenance of the present low death rates in Western lands involves. To maintain

[1] The *span of life* means the extreme age to which people are apt to live. It is determined, other things equal, by the physiological processes in the human body. Thus, at the present time there are very few authentic cases of persons living to be one hundred years old. If it were clearly proved that the proportion of persons living beyond one hundred was increasing, it could be said that the span of life was increasing. Some people might want to place this upper limit at eighty or ninety years instead of one hundred; this matters little, the important point being that the span of life cannot be said to be lengthening unless the proportion of the population living to extreme old age is increasing. This idea should not be confused with an increase in the expectation of life, which means an increase in the average number of years that persons of any given age may expect to live (see Sec. 9).

our present crude death rate of about 10 or 11, it is not sufficient to cut down still further the deaths in the earlier years of life, as we have been doing in the past; we must actually lengthen the span of life. Instead of man's days being threescore and ten, they must become fourscore, fourscore and ten, or fivescore for an increasing proportion of the population. This can be seen from the fact that in a population with the age composition of a stationary population a death rate of 11 would mean that every person born would, on the average, live 90.9 years, while a death rate of 8.0, such as now prevails in New Zealand, would mean an average length of life of about 125 years. As has been said there is no evidence that this is likely to happen. What has happened in the more advanced countries is that modern medicine and sanitation are making it possible for a larger proportion of the people to live out a larger part of the normal life span. Of this there can be no doubt, but we should be careful not to assume that medical science has done more than it really has. It is one thing to scotch the contagious diseases—smallpox, typhoid fever, diphtheria, scarlet fever, typhus, tuberculosis, dysentery, and so forth, and to alleviate the scourge of epidemics, for example, influenza, which in a population of about 100,000,000 in the United States killed about 500,000, but in India, with a population only about three times as large, killed perhaps 30 or 40 times as many (I, 7, 1921, Vol. 1, Part 1, pp. 12–18)—and quite another thing to prevent the ravages of some of the degenerative diseases. Science makes no claim to have discovered the fountain of youth. The achievements of medical science command the admiration and gratitude of all of us, but we should keep our expectations of reduced mortality within the bounds reasonably assured.

In the near future, therefore, we may expect to see the crude death rate (the number of deaths per thousand of the total population) cease to decline and begin to increase in those countries where it is now below 11 or 12. The low rates of today are possible only because population has been increasing very rapidly in the recent past, and the proportion of young people is very high. When the age composition approaches more nearly to that normal to a stationary or slow-growing population, as it will in the near future because of the falling birth rate, the crude death rate is certain to rise. This is shown by the fact that in 1930 the death rate for a stationary population in the United States registration states, based on the life tables of that year, was 16.4 for whites, while the crude rate was only 11.3. The low birth-rate nations are near the end of their extremely low death-rate period.

The average expectation of life for children at birth in the registration states of the United States in 1930 to 1939 was 60.6 years for white males and 64.5 for white females (12). If the average for the two sexes combined were raised to 66.6 years by the time the population becomes stationary, the death rate would be 15.0. This means that every child

born alive would have to live to the age of 66.6 or, as would actually happen, that the deficit in years of all persons dying under this age would be counterbalanced by the surplus of years of those living beyond that time. I have used here the figures for the United States, but the conclusion would not be changed in the least if we used the data for any other of the Western countries. In England and Wales (7, Part 1, pp. 48–49) the average expectation of life for children at birth in 1930 to 1932 was 60.8 and the death rate was 16.4 for a stationary population. In Germany in 1932 to 1934 the expectation of life at birth was 59.9 years for males and 62.8 years for females (6, 1938, p. 51). The death rate for a stationary population in Germany was 16.3.[1]

In the light of these facts it is easy to understand one of the chief reasons for the relatively high crude death rate of France. France has had a practically stationary population for some decades, so that the age groups are not so favorable there to a low crude death rate as are those in new countries like the United States, Australia, and New Zealand, where there have been high birth rates and large numbers of young immigrants. The general health conditions are somewhat less favorable in France than in England and Wales and the United States, but these differences by no means account for the differences in their crude death rates. These are due in large measure, if not chiefly, to the larger proportions in the older age groups.

2. Infant and Child Mortality and the Decline in the Death Rate

It is perhaps not generally realized that by far the greater part of the decline in the death rate in recent decades has been brought about by the saving of the lives of infants and children. Until quite recently a very considerable part of all children born died before the end of the first year of life, and it was not at all uncommon for half or more to die before they were ten years old. Graunt estimated that in London about 1662 only 640 children survived to age six out of each 1,000 born and only 250 to age twenty-six. Dupré de St. Maur calculated that in France prior to 1750 only 540 children out of 1,000 born alive survived to the fifth year, and only 484 to the tenth year. Halley, working on data for Breslau, 1687 to 1691, found 661 surviving to the tenth year. Süssmilch, basing his calculations on German data prior to 1775, found 532 surviving to the tenth year; and Wargentin, working on Swedish data, 1757 to 1763, found 611 surviving to this age (nine). Such calculations serve to show that the mortality of children at the early ages was very great as late as the latter half of the eighteenth century in most of Europe. It was reduced steadily but slowly during the nineteenth century but infant

[1] For more detailed information on expectation of life in other countries see Sec. 8, below.

mortality was still quite high at the beginning of the twentieth century, as is shown in Table 78.

TABLE 78.—INFANT MORTALITY (DEATHS UNDER ONE YEAR PER 1,000 LIVE BIRTHS), SELECTED COUNTRIES, 1898 TO 1938[1]

Country	1934–1938	1918–1922	1908–1912	1898–1902
New Zealand[2]	32	47	61	82
Australia	40	63	73	111
Norway	43[3]	58	69	91
Switzerland	46	80	109	142
Netherlands	39	81	111	148
Sweden	44	65	75	98
United States[4]	56	85	....	....
England and Wales	57	85	112	152
Denmark	65	84	104	131
Finland	69	108	115	138
France	67	112	123	154
Germany	65	140	170	199[3]
Belgium	77	115	141	157
Austria	92	155	198[3]	220
Italy	103	141	147	167
Spain	116	158	152	190[3]
Japan	114	172	159[3]	155
Hungary	141	193	200	214
Rumania	182	209[3]	192[3]	207
Chile	248	258[3]	314	349

[1] League of Nations, "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940, p. 40.

[2] Europeans only.

[3] Norway, 1933 to 1937; Germany, 1901 to 1905; Austria, 1909 and 1910 not included; Spain, 1900 to 1902; Japan, 1908 to 1910; Rumania, 1919 to 1922, 1911 to 1912; Chile, 1919 and 1920 omitted.

[4] Birth Registration Area.

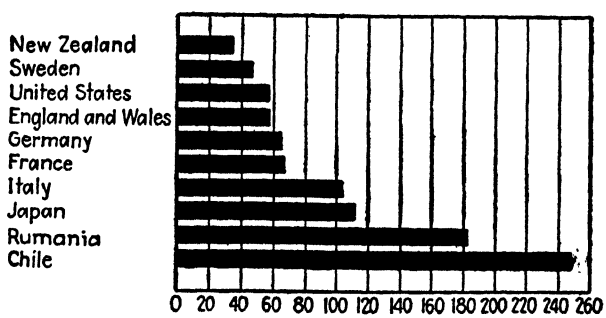

FIG. 30.—Infant mortality (deaths under one year per 1,000 live births) for selected countries, 1934 to 1938. (Based on Table 78.)

The lowering of infant mortality since about the turn of the century has been one of the greatest achievements of modern times. When we inquire into the causes of this improvement we find four factors para-

mount: (*a*) the better care that children are receiving at home, that is, primarily, the improvement in the methods and sanitation of infant feeding; (*b*) the decline in the number of children born to a large portion of the mothers, thus enabling them to give their children better care both before and after birth; (*c*) the more expert medical care of children; and (*d*) the generally more comfortable circumstances in which a large part of the people in the more advanced nations now live.

With regard to the first of these four factors little need be said. There is clear evidence of its operation everywhere. Mothers are quite generally urged to nurse their children if possible and to take care that their food and their dishes are kept clean. If the child shows evidences of malnutrition, they are urged to bring him to a clinic, or special nurses are sent out to help find the proper diet. Even the pinch of poverty is often somewhat lessened through the help of community organizations which will furnish the proper baby food and provide free instruction in its preparation and care. All this is well known, and it needs no argument to convince any of us that cleanliness and health are closely associated, especially in the lives of young children. The great decline in infant deaths due to gastric and intestinal disturbances (Table 94) is the reward of this greater cleanliness in the home care of children, while the influence of breast feeding is shown very positively in Table 79.

TABLE 79.—INFANT MORTALITY DURING THE YEAR FOLLOWING THE BIRTH OF THE CHILD BY METHOD OF FEEDING, AND EARNINGS OF THE FATHER, BALTIMORE, MARYLAND, 1915 (VIII, 3; IX, 17, P. 117)

Annual earnings of father	Rate per 1,000 fed babies	
	Breast fed	Artificially fed
Under $550	61.8	310.1
$550–$849	46.1	185.4
$850–$1,249	22.5	117.3
$1,250–$1,849	23.2	130.1
$1,850 and over	13.3	27.5

It is also easy to understand how the mother with a small family can generally give better care to her children than can the mother with a large family, so that the decline in the birth rate is likely, other things equal, to be accompanied by a decline in child mortality. This is shown by the data in Table 80.

In the cities where these data were gathered the size of the family had a marked effect on the infant mortality. Almost twice as many of the tenth- and later-born children had died at the time that the studies referred to below were made as of the second-born. Of course not all this difference can be attributed to differences in size of the family, as

TABLE 80.—INFANT MORTALITY RATES BY ORDER OF BIRTH, EIGHT CITIES IN UNITED STATES, 1911 TO 1916 (15, P. 48)

Order of birth	Number of live births	Deaths of infants under 1 year	
		Number	Rate
Total	22,967	2,555	111.2
First	6,230	652	104.6
Second	4,954	474	95.7
Third	3,328	348	104.6
Fourth	2,481	270	108.8
Fifth	1,767	210	118.8
Sixth	1,263	155	122.7
Seventh	921	126	136.8
Eighth	677	92	135.9
Ninth	470	69	146.8
Tenth and higher	876	159	181.5

there are many other factors to take account of. For example, large families are more common among the poor than among the well-to-do, among the ignorant than among the well educated, and among laborers

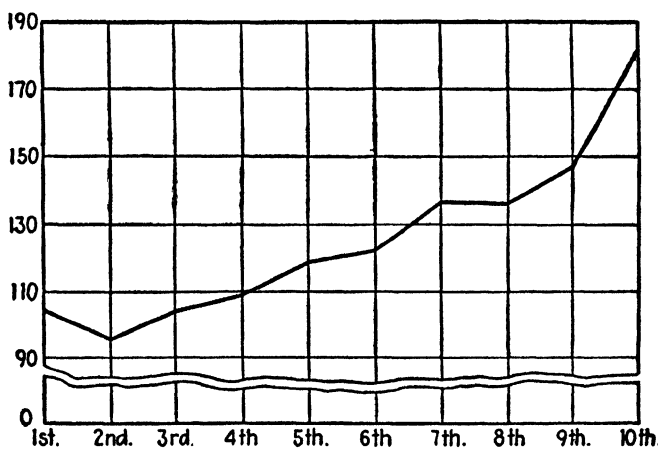

FIG. 31.—Infant mortality rates by order of birth, eight cities in United States, 1911 to 1916. (Based on Table 80.)

than among professional men. But these factors aside, there can be no reasonable doubt that the size of the family determines to a considerable extent the amount and quality of the care that the infant will receive, and this in turn affects the death rates of the children, especially during the first year or two of life.

The third important factor in reducing infant mortality is the great improvement in the medical care available to children at the present time as compared with that of a few generations ago. We need only mention that smallpox has been practically wiped out by vaccination, that diphtheria has yielded to serum treatment, that scarlet fever and whooping cough have partially yielded to somewhat similar treatment, and that most of the other diseases of infancy and early childhood do not take the toll that they formerly took. We must also add to the list of alleviating factors the great advances in surgery which have been made and which undoubtedly have saved many children who would have perished but a decade or two ago. Certainly medicine has done a great deal for children in recent years—far more than it has for adults, as we shall see shortly.

The fourth factor mentioned above is probably of more importance than any of the others. The relatively easy economic conditions under which many people are living today, as compared with those of a century ago, are favorable to a low general death rate, especially to a low death rate for infants and young children. Many studies of infant mortality have shown this beyond question, but even rather casual observation of the differences in living conditions between peoples having widely different levels of living is sufficient to convince anyone that harsh economic conditions bear very heavily on children and raise their death rate. This is shown very clearly in the Children's Bureau studies (15; 16, p. 148). In the eight cities where special studies were made, the infant deaths numbered 166.9 per 1,000 live births in families where the father's income was less than $450 per year, and the rate declined steadily as the income increased, until it was only 59.1 in families where the father's income was $1,250 or over. Of course, not all this difference in mortality is due to difference in incomes, but this is a very important factor. Even more than size of the family, the size of the income affects the care that can be given the children. In this connection Table 79 is also of considerable interest. It shows a large saving of infant lives as the economic status of the family improves, as well as the effects of breast feeding compared with bottle feeding. The difference in mortality between bottle-fed babies in families having an income of less than about $550 and those with incomes above $1,850 is startling, while even for breast-fed babies the difference is sufficient to prove beyond question the greater opportunity for survival arising from better economic conditions.

As regards the effects of the further decline of infant mortality on the general death rate it should be noted that, where infant mortality has already been reduced to 50 or 60 or even less, the future savings will be small compared with those of the past, hence, they will have comparatively little effect on the general death rate. Moreover, we cannot reasonably expect that the low rates of New Zealand, 36 (1938) and Australia, 38, will become general in the near future, because these coun-

tries have unusually favorable social and economic conditions. The saving of the lives of infants and children as a source of decline in the general death rate is drying up, and there is no other to take its place. In Sweden, 1931 to 1935, approximately 94,000 children out of each 100,000 born lived to five years of age—a very low rate of mortality—but even so the total number of deaths in these first five years was equal to that of the next 25 years (five to twenty-nine), during which the average death rate was about 2.5 per 1,000. To show how important infant and child mortality are in comparison with mortality at older ages the

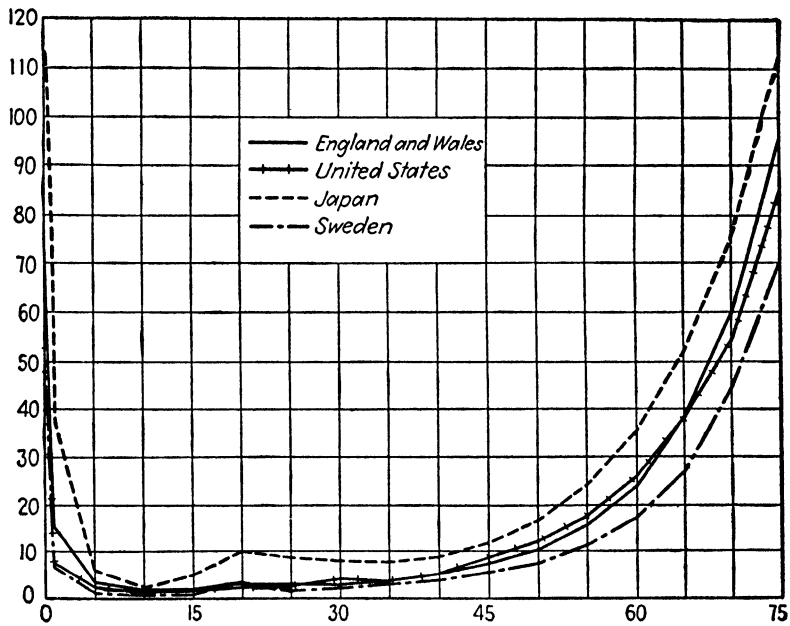

FIG. 32.—Deaths per 1,000 living at specified ages for males in selected countries. (Based on Table 81.)

figures just given for Sweden may be compared with those for Japan in 1926 to 1930. In Japan at five years of age there were slightly over 79,000 survivors out of 100,000 born. Thus in the first five years of life Japan lost about 15,000 more children than Sweden. In the next 25 years Sweden lost about 6,000, while Japan lost about 12,500. Thus the reduction of infant and early child mortality in Japan to the level prevailing in Sweden would save almost two and one-half times as many lives as would the reduction of Japanese mortality at ages five to twenty-nine to the Swedish level at those ages. In the 30 years of life thirty to fifty-nine Sweden lost 16,500 by death, while Japan lost 22,500, a difference of only 6,000. Thus Japan could save a good many more lives by reducing infant and child mortality up to five years of age to Sweden's level than

by reducing mortality at all ages five to fifty-nine to Sweden's level. These comparisons of absolute numbers are not so precise as comparisons of rates, but they do show that once infant and child mortality have reached a low level the opportunities for further savings are greatly limited. This is also shown clearly by the age-specific death rates in Table 81 and by the data on the expectation of life in Table 95.

TABLE 81.—DEATHS PER 1,000 LIVING AT SPECIFIED AGES FOR MALES AND FEMALES, SELECTED COUNTRIES

Age	England and Wales[1] 1930–1932		Germany[2] 1932–1934		Sweden[3] 1931–1935		Japan[4] 1935–1936		United States[5] 1930–1939	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	71.9	54.6	85.4	68.4	54.9	41.8	113.0	99.2	57.0	45.0
1	15.3	13.4	9.3	8.2	7.6	6.7	37.0	35.3	8.1	7.2
5	3.4	3.0	2.3	2.2	1.6	1.5	6.5	6.6	2.0	1.7
10	1.5	1.3	1.3	1.1	1.3	1.2	2.4	2.5	1.4	1.0
15	2.0	1.9	1.6	1.3	1.9	2.0	4.8	7.0	1.8	1.3
20	3.2	2.7	2.8	2.3	3.9	3.4	10.0	9.6	2.7	2.2
25	3.3	3.0	3.0	2.7	3.6	3.5	9.2	9.1	3.1	2.7
30	3.4	3.2	3.2	3.0	3.7	3.3	7.7	8.1	3.5	3.1
35	4.2	3.6	3.9	3.5	4.1	3.9	7.6	8.2	4.6	3.8
40	5.6	4.4	4.8	4.2	4.6	4.1	8.9	9.0	6.1	4.6
45	8.0	5.8	6.6	5.5	6.4	5.6	11.8	9.5	8.6	6.3
50	11.3	8.2	9.4	7.9	8.5	7.4	17.2	12.1	12.4	8.9
55	16.1	11.7	14.2	11.5	11.9	10.2	24.0	15.9	17.7	12.6
60	24.2	17.7	21.7	17.5	17.7	15.5	35.5	22.7	25.7	19.0
65	37.9	27.6	34.0	28.5	27.6	24.3	51.9	34.1	37.8	29.1
70	60.4	44.5	54.0	47.6	44.9	39.1	76.7	53.3	56.3	45.8
75	95.2	74.1	87.4	80.3	70.1	66.9	113.3	85.3	84.7	72.8

[1] Great Britain, Registrar General, "The Registrar-general's Decennial Supplement, England and Wales," H. M. Stationery Office, London, 1936, Part 1, p. 48.

[2] Germany, Statistisches Reichsamt, "Statistisches Jahrbuch für das deutsche Reich," 1938, Reimar Hobbing, Berlin, 1938, pp. 51–52.

[3] Sweden Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1940, Stockholm, 1940, p. 70.

[4] Japan, Bureau of General Statistics, "Résumé statistique de l'empire du Japan," 1940, Tokyo, 1940, p. 9.

[5] U. S. Life Tables, 1930–1939, for whites. Preliminary figures issued by Bureau of the Census, July 21, 1941.

I would not give the impression that no further decline in mortality is to be expected in Western lands. There is no good reason why the low rates already attained in Sweden and New Zealand should not be approached in most other countries, but again it should be remembered that these savings will be much smaller than those already attained in most of these countries from low infant and child mortality and it seems highly probable that they will be far more expensive to achieve.

3. Age and Sex Composition and the Death Rate

Numerous other aspects of the death rate are of interest, but only a few of the more important of them will be considered here. The sex constitution of a population is an important factor in determining its death rate. Women generally have lower death rates than men, although in the higher birth-rate countries women occasionally have higher death rates than males during portions of the childbearing period (Table 81). In addition women seem to have greater resistance than men to all the more important diseases (Table 82); perhaps they are less exposed than men. Whatever the reason, they survive in greater numbers, and, as a result, a comparison of death rates of different populations without a

Table 82.—Deaths per 100,000 Population by Cause, Age, and Sex, United States, 1939

Cause	Sex	Total	Under 1	1–4	5–14	15–29	30–59	60–69	70 and over
Total	Male	1,168.6	6,079.7	338.9	127.8	259.5	936.8	3,609.9	9,802.5
	Female	951.1	4,736.1	291.2	94 6	214.6	680.2	2,715.2	8,720.7
Diphtheria	Male	1.6	10.0	14.4	2.3	0.2	0.2	0.1	0.2
	Female	1.4	6.6	12.1	2.1	0.3	0.2	0.2	0.2
Whooping cough	Male	2.2	97.5	9.6	0.3	.....	.....	.....	.....
	Female	2.4	103.0	11.7	0.4	.....	.....	.....	.....
Tuberculosis	Male	54.0	28.5	13.5	5.2	37.5	82.9	103.4	94.9
	Female	40.1	25.2	13.5	7.1	53.8	45.1	52.1	67.4
Influenza	Male	16.6	131.4	15.1	3 0	4.3	11.4	34 2	140.2
	Female	16.2	98.1	14.4	3.1	4.4	10 2	32.8	150.7
Cancer and other malignant tumors	Male	110.1	4.5	4.9	3.1	6.9	91.4	502.2	1,057.0
	Female	125.1	3.1	4.4	2.6	7.7	138.9	503.3	924.5
Respiratory system	Male	79.1	828.5	69.8	11.3	16.6	59.6	178.7	556.1
	Female	61.1	660.3	58.5	9.6	13.4	35.6	117.8	515.4
Nervous system	Male	101.0	110.3	15.9	6.8	10.1	64.0	384.2	1,195.1
	Female	100.2	82.1	13.4	5.9	7.6	64.8	350.7	1,180.0
Genito-urinary system	Male	107.1	22.3	5.0	3.2	7.9	67.0	386.6	1,408.1
	Female	86.3	15.5	3.9	3.3	11.8	63.8	277.5	986.4

knowledge of their sex constitution may, and often does, result in some misconception of their actual mortality conditions. As indicated above (Chap. VIII; also Table 81), however, differences in age composition are of the greatest importance.

Death rates which take account of these two factors—sex and age—by using age-specific rates such as those in Table 81 are called "standardized," "corrected," "refined," or "adjusted" rates and are more useful for comparing different populations, or the same population at different times, than are the crude rates. For example, in comparing England and Wales with the United States, the fact that the former has had a preponderance of male emigrants while the latter has had a great influx of male immigrants should be taken into account, through the standardization or adjustment of their rates, where a single rate is desired for a whole population. Specific age rates for sexes such as those in Table 81 permit of no misunderstanding, provided they are for the same periods of time.

4. The Death Rate in Urban and Rural Communities

In most of the nations where machine industry has developed to any appreciable extent there is a considerable movement of young adults

Table 83.—Deaths per 1,000 Native White Population by Age and Sex in Urban Groups and Rural Areas, Ohio, 1930 (3, Pp. 90–115)[1]

Age	100,000 and over		10,000–100,000		2,500–10,000		Rural-nonfarm		Rural-farm	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total (crude)	9.3	8.1	10.3	9.2	11.7	10.7	10.4	9.9	11.7	11.1
0–4	17.2	13.6	17.1	15.0	17.2	13.2	17.3	13.7	16.8	14.0
5–9	2.4	1.7	1.9	1.0	1.9	1.2	1.9	1.4	1.8	1.7
10–14	1.5	1.2	1.7	0.9	1.5	1.0	1.4	1.4	1.5	1.3
15–19	2.4	1.9	2.6	1.7	2.5	2.3	2.7	2.2	1.6	1.8
20–24	2.7	2.7	2.7	2.5	3.8	3.4	3.6	3.5	3.6	3.1
25–29	3.1	3.3	3.3	3.1	3.9	3.9	3.4	3.5	4.0	3.7
30–34	4.4	3.8	3.7	3.3	3.9	3.4	3.5	3.4	3.3	4.3
35–44	6.4	5.0	5.4	4.5	4.6	4.9	5.2	4.8	4.5	4.5
45–54	12.3	10.0	10.6	9.0	9.6	9.6	7.8	8.6	7.2	7.5
55–64	25.8	19.9	24.0	19.1	23.2	17.7	17.0	17.0	16.6	16.2
65–74	59.1	45.9	58.8	45.1	51.2	41.4	43.9	41.2	43.8	39.5
75 and over	135.6	114.5	140.9	122.2	140.8	122.2	117.6	123.5	118.0	110.1
Adjusted rate[2]	10.7	8.7	10.3	8.5	10.0	8.4	9.0	8.4	8.6	8.0

[1] Exclusive of institutional deaths.

[2] Based on the standard million population of England and Wales, 1901.

from the country to the cities. In this movement females generally outnumber males. The demographic consequences of this movement are two: (*a*) the cities are quite likely to have larger proportions of young people than rural areas; and (*b*) the cities are likely to have proportionally more women than men, while the rural areas have more men. Hence, comparisons of death rates in city and country on the basis of crude rates are often misleading. Thus the crude rates in Ohio (Table 83) make it appear that the death rate in rural areas is higher than in cities, particularly in the larger cities, but the adjusted rates show that this is not the case, as does also the comparison of the age-specific rates for these different areas. The differences between the rates for the farm population and the larger city populations are increasingly significant after age thirty-five.

That such differences in death rates between rural and urban communities are not confined to the United States is shown by the following data for England and Wales.

TABLE 84.—RATIO OF ACTUAL TO EXPECTED DEATHS AS COMPUTED BY ENGLISH LIFE TABLES, ENGLAND AND WALES, 1930 TO 1932 (7, PART 1, PP. 45–47)

Age	Male			Female		
	County[1] boroughs	Urban districts	Rural districts	County[1] boroughs	Urban districts	Rural districts
5 and over	1.106	0 971	0.858	1.054	0.978	0.934
5–9	1.088	0.971	0.847	1.066	1.011	0.840
10–14	1.096	0.949	0 929	1.064	0.966	0.906
15–19	1.050	1.002	0.921	1 063	0 962	0.937
20–24	1.043	0 957	0.971	1.038	0.957	0.975
25–29	1.060	0.954	0.932	1.024	0 984	0.978
30–34	1.092	0 939	0 902	1.031	0 972	0.983
35–39	1.120	0 940	0 850	1.029	0 972	1.002
40–44	1.145	0 929	0 800	1.073	0.951	0.921
45–49	1.169	0 929	0.763	1.064	0 962	0.916
50–54	1.164	0 935	0 756	1 074	0 955	0.911
55–59	1.140	0.947	0.796	1.068	0.967	0.909
60–64	1 114	0 971	0.815	1.059	0.983	0.907
65–69	1.109	0.983	0.835	1.064	0.978	0.913
70–74	1.099	1.000	0.841	1.054	0 986	0.908
75–79	1.075	1.001	0 905	1.051	0.988	0.945
80–84	1.060	1.003	0.932	1.044	0.984	0.963
85 and over	1.029	0.963	1.000	1.035	0.988	0.985

[1] Includes London Administrative County.

At no period of life except at ages twenty to twenty-four and at eighty-five and over did males in the rural districts of England and Wales have so high a ratio of actual to expected deaths as males in both county boroughs and other urban districts. On the other hand, the ratio among

females at ages twenty to twenty-four, thirty to thirty-four, and thirty-five to thirty-nine was higher in the rural districts than in the smaller urban districts but at no age was it so high as in the county boroughs. Obviously, urban life in the United States and in England and Wales is less favorable to a low death rate than rural life, in spite of the fact that a disproportionately large part of all expenditures for health, and particularly for public health, takes place in the cities. However, the gap between rural and urban death rates is growing narrower; a good many

TABLE 85.—DEATHS PER 1,000 PERSONS IN EACH OF THE SPECIFIED AGE GROUPS BY SEX AND MARITAL CONDITIONS, SELECTED COUNTRIES

Country, year, and marital condition	Male			Female		
	20–39	40–59	60 and over	20–39	40–59	60 and over
France, 1931:[1,2]						
Single	8.0	25.7	89.1	6.5	12.5	66.8
Married	4.5	13.1	56.6	4.2	8.8	37.7
Widowed or divorced	12.3	27.2	111.9	7.4	12.2	75.8
Bulgaria, 1932:[2,3]						
Single	8.1	20.8	75.7	8.0	16.9	64.1
Married	4.6	9.7	43.0	6.6	7.9	34.7
Widowed or divorced	9.8	17.5	87.0	9.4	12.0	63.4
Sweden, 1935:[2,4]						
Single	4.2	11.3	58.9	3.5	8.7	53.8
Married	2.6	7.5	43.4	2.8	6.5	37.7
Widowed or divorced	7.1	13.0	89.5	5.2	8.7	77.5

[1] France, Bureau de la statistique générale, "Annuaire statistique de la France," 1934, Imprimerie nationale, Paris, 1934, p. 23.

[2] Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939, pp. 84, 89, 105.

[3] Bulgaria, Direction générale de la statistique, "Mouvement de la population dans le royaume de Bulgarie en 1932," Sofia, 1935, p. 33.

[4] Sweden, Statistiska Centralbyrån, "Befolkningsrorelsen år 1935," Stockholm, 1938, p. 67.

people think it may disappear altogether, but at present this appears to be wishful thinking rather than sound reasoning from known facts. As was just indicated the rural community has never been nearly so well organized to meet its health problems as the city. In particular there is no public health service in rural communities that can be compared to that of many city clinics and to that of their public schools. It is little wonder then that rural children often show more minor physical defects than city children. But rural children do live longer in spite of the lack of care of these defects. One cannot but wonder whether the physiological effects of noise, dust, and nervous tension and of being removed

some distance and time from the sources of food do not have a deleterious effect on health which more than offsets the advantages of the better health services of the city. Moreover, the effects of indoor life—being deprived of fresh air, sunshine, and exercise in the open—are very imperfectly known. Man has been a rural animal for many thousands of years and it would not be surprising if city living seriously disturbed many of the adjustments he had achieved during this time. But there would seem to be no good reason why new types of urban communities and new and more rational adjustments might not do much to improve health in urban areas.

5. Marital Condition and the Death Rate

When the population is divided into the single and the married, we find interesting differences in the death rates of these groups. Tables 85 and

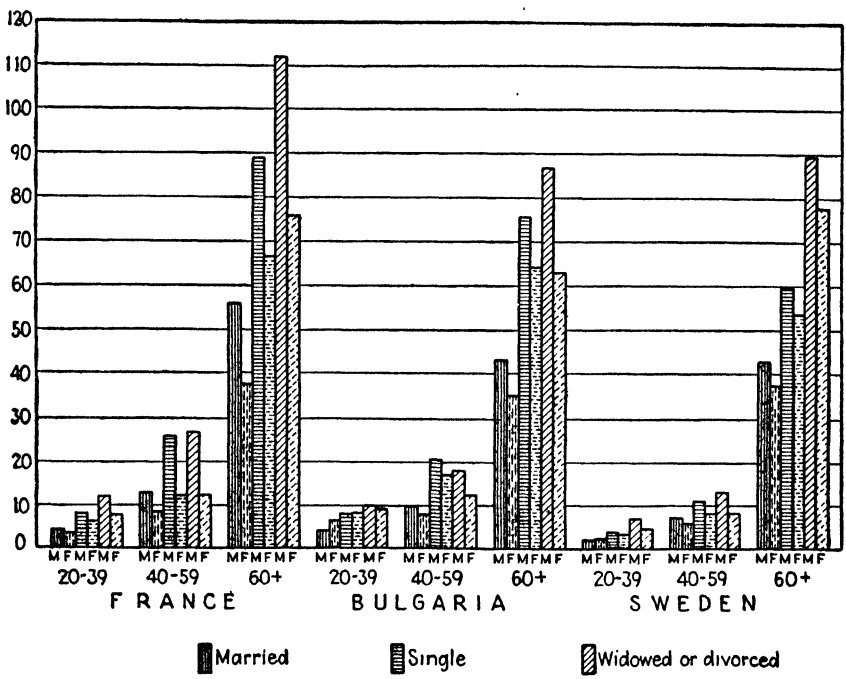

Fig. 33.—Deaths per 1,000 persons in each of the specified age groups, by sex and marital condition in selected countries. (Based on Table 85.)

86 show that in several foreign countries married persons have considerably lower death rates than have the single, or the widowed, or the divorced. In the United States the situation appears to be much the same as in these other countries.

TABLE 86.—DEATHS PER 1,000 PERSONS BY AGE, SEX, AND MARITAL CONDITION, ENGLAND AND WALES AND GERMANY

Age	England and Wales[1]			Germany[2]					
	Female			Male			Female		
	Single	Married	Widowed or divorced	Single	Married	Widowed or divorced	Single	Married	Widowed or divorced
16–19	2.38	3.78							
20–24	2.77	3.01	4.20[3]	2.9	2.2	5.4	2.4	2.9	4.4
25–29	3.18	2.98	4.20	3.5	2.4	5.8	3.0	2.7	4.6
30–34	3.61	3.22	4.54	4.7	2.9	7.0	3.7	2.9	5.1
35–39	4.16	3.83	4.64	6.6	3.8	8.3	4.8	3.6	5.4
40–44	5.51	4.70	5.46	9.1	5.2	10.6	5.7	4.3	6.0
45–49	7.48	6.36	7.88	12.2	7.2	13.5	7.7	6.1	7.8
50–54	9.92	9.10	10.85	18.0	10.7	18.3	11.4	8.8	10.7
55–59	14.19	13.45	15.16	24.4	15.8	23.9	15.1	12.9	15.1
60 and over	.....	.....	.....	58.9	42.9	91.5	50.1	34.7	70.0

[1] Great Britain, Registrar General, "The Registrar-general's Decennial Supplement; England and Wales," 1931, H. M. Stationery Office, London, 1936, Part 1, p. 50.

[2] Germany, Statistisches Reichsamt, "Statistisches Jahrbuch für das deutsche Reich," 1935, Reimar Hobbing, Berlin, 1935, pp. 44–45; Institut international de statistique, "Aperçu de la démographie des divers pays du monde," 1929–1936, The Hague, 1939, p. 80.

[3] Age twenty-three to twenty-four.

TABLE 87.—DEATHS PER 1,000 PERSONS BY AGE, SEX, AND MARITAL CONDITION, NEW YORK, 1930, EXCLUSIVE OF NEW YORK CITY (11, P. 114)

Age	Male			Female		
	Single	Married	Widowed or divorced	Single	Married	Widowed or divorced
20–29	4 3	2.9	9.7	3.2	3.4	8.6
30–39	8.9	4.4	11.4	4.7	4.1	7.5
40–49	16.7	8.2	16.6	8.2	7.3	9.4
50–59	29.1	16.8	31.3	15.6	13.8	18.7
60–69	49.6	36.5	54.5	33.5	28.8	38.3
70 and over	113.7	88.4	136.0	98.7	70.4	113.1

The explanation of these differences in death rates by marital condition appears to be somewhat as follows:

In the first place marriage is rather highly selective, as regards both the physical vigor and the social adaptability of those who marry, particularly men. Those who are in ill health are likely to avoid marriage because of the difficulty of providing for a family. Also, those who for various reasons have little adaptability and do not get on well socially

are likely to avoid family ties. This would probably not be true to quite the same extent among women, because their more sheltered lives do not make the same demands on them as on their husbands. Hence, there would be less intensive selection among women than among men. This might be particularly true in the United States and New Zealand, where women have generally been at a premium because of the excess of males in the population. It may be, too, that selection among women is generally on a somewhat different basis than among men. Men may not be so much interested in the health of their mates as are women, and thus women who are really not fitted to marry may constitute a larger proportion of all married women than such men of all married men.

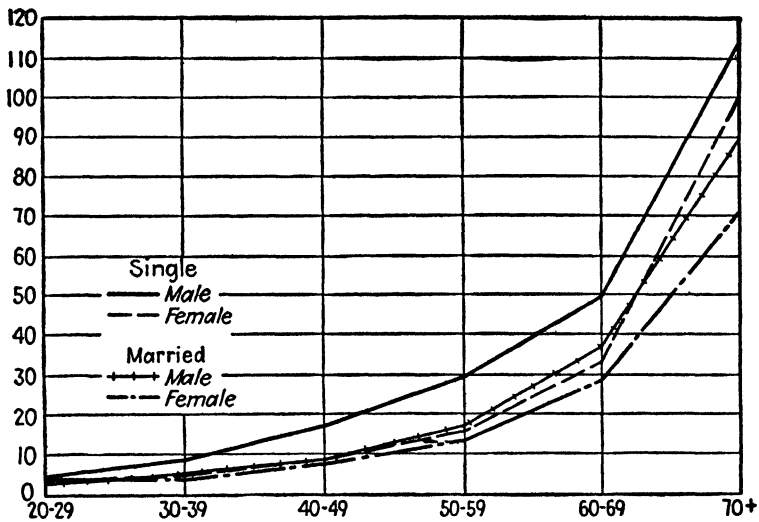

FIG. 34.—Deaths per 1,000 persons by age, sex, and marital condition, New York (exclusive of New York City), 1930. (Based on Table 87.)

In the second place the greater regularity of living among the married, particularly the men, probably has considerable influence upon their death rates. In this connection Newsholme (X, 4, p. 214) thinks that the "comparative freedom in marital life from the terrible risks of syphilis must be given weight."

In the third place, and almost by way of summary, one may say that marriage, on the whole, apparently represents a better adaptation to life, physically and mentally, than does celibacy, in spite of the fact that at certain periods the deaths of married women are slightly more frequent than are those of unmarried women. It is probable also that as a rule spinsterhood has involved less irregularity of living than has bachelorhood, hence, the lesser effect of marriage upon the death rate among women than among men from improvement of the regularity of living.

6. Occupation and the Death Rate (VIII, 4)

Another factor of great importance in determining the death rate of people is their occupation. It is obvious, when one thinks of the matter, that the kind of work one does determines to a considerable extent one's exposure to the various types of illness. People who work indoors are not exposed to the vagaries of the weather as are farmers and common laborers, while, on the other hand, they are exposed to certain other risks which are of little concern to outdoor workers. Again, farmers very clearly do not belong to the same class as laborers, teamsters, railway-track workers, and others who work for daily wages and often live under urban conditions. Table 88 shows the mortality of males, by age, in selected occupations for ten states.

Table 88.—Deaths per 100,000 Gainfully Occupied Males 15 to 64 Years of Age in Selected Occupations, Selected States, 1930 (13, P. 30)[1]

Occupation	15–64	15–24	25–44	45–64
All gainfully occupied males in selected occupations	906.5	327.2	579.8	1,866.8
Professional men	727.2	142.3	316.4	1,633.3
Lawyers, judges, and justices	789.1	122.2	292.5	1,778.7
Physicians and surgeons	1,068.5	105.3	394.3	1,916.6
Proprietors, managers, and officials	927.0	307.6	449.5	1,707.7
Managers and officials (manufacturing)	723.9	164.3	347.8	1,373.0
Retail dealers	981.3	324.9	478.5	1,806.0
Restaurant, café, and lunchroom keepers	1,171.8	661.6	672.0	2,066.3
Clerks and kindred workers	645.4	238.5	430.4	1,727.5
Clerks in stores	511.0	287.1	380.2	1,770.5
Bookkeepers, cashiers, and accountants	534.7	174.9	348.8	1,631.9
Real estate agents	1,008.6	250.0	372.3	1,698.6
Agricultural workers	673.9	275.2	384.1	1,267.8
Skilled workers and foremen	866.5	302.5	499.9	1,747.0
Mechanics	566.8	307.9	469.2	1,370.4
Machinists	749.0	286.0	424.7	1,674.1
Blacksmiths	1,318.4	258.4	669.2	1,915.1
Tailors	1,374.1	428.8	637.3	2,283.8
Semiskilled workers	900.6	339.7	619.4	2,127.7
Chauffeurs, truck and tractor drivers	618.7	420.6	549.3	1,454.7
Bakers	954.9	303.2	552.9	2,241.6
Guards, watchmen, and doorkeepers	2,024.7	229.9	865.6	2,590.5
Unskilled workers	1,441.6	502.4	1,059.3	2,746.3
Laborers (manufacturing)	477.8	186.6	373.5	960.8
Laborers (steam railroad)	701.3	221.4	509.4	1,303.6
Janitors and sextons	1,311.1	274.3	715.6	1,843.8
Factory and building construction laborers	1,696.5	569.0	1,278.6	3,316.2
Draymen, teamsters, and carriage drivers	1,759.4	470.3	1,117.9	2,991.3

[1] Alabama, Connecticut, Illinois, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio, and Wisconsin.

TABLE 89.—DEATHS PER 1,000 MALES 35 TO 45 YEARS OF AGE ENGAGED IN SELECTED OCCUPATIONS, FRANCE AND ENGLAND, 1886 TO 1891 (10, P. 524)

Occupation	France	England
All males	11	11
Teaching profession	6	6
The clergy	7	4
Agricultural laborers	8	6
Clerks, etc	13	10
Bakers	13	9
Publicans	14	22
Carters	17	13
Laborers	20	28
Waiters, etc	22	28
Printers	18	11

Here we see that there are very great differences in the death rates of persons engaged in different kinds of work. Laborers in manufacturing have the lowest rate for all ages combined (fifteen to sixty-four) and almost the lowest of each age. Other occupational groups with low rates are agricultural workers, professional men, clerical workers, skilled workers, and foremen. The group with death rates notably above the average is the unskilled, except in manufacturing and on steam railroads. There are also many interesting differences between particular groups, for example, factory and building construction laborers and tailors and blacksmiths as contrasted with managers and officials, bookkeepers, and mechanics. Incomplete as these data are and subject to certain errors because of difficulties in the classification of deaths, they show beyond question that communities of different occupational make-up may be expected to have differences in death rates due to this factor alone.

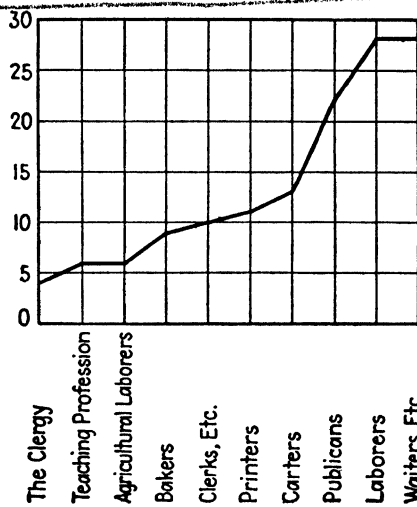

FIG. 35.—Deaths per 1,000 males 35 to 45 years of age engaged in different occupations, England, 1886 to 1891. (Based on Table 89.)

The fact that differential occupational mortality is no new thing for France and England is shown in Table 89 taken from March (10, p. 524). Here we find the same large variations in the death rates of the different occupational groups as in the United States. At ages thirty-five to

forty-five, teachers have only one-third to one-fourth the death rate of laborers and waiters. At ages fifty-five to sixty-five, 15 to 20 years later, teachers have less than one-half the death rate of laborers. Farmers and agricultural laborers in both countries have low death rates, ranking close to teachers. We need not give much space to the explanation of the differences shown here, because it is easy to see that the more sheltered groups have the lower rates (see also Table 90).

TABLE 90.—DEATHS OF EMPLOYERS AND WORKERS COMPARED FOR SELECTED OCCUPATIONS, AT SPECIFIED AGES, FRANCE, 1907 TO 1908 (10, P. 524)

Occupation	35–45		55–65	
	Employer	Worker	Employer	Worker
Farming class	7	8	21	30
Carpenters and joiners	7	10	30	43
Bakers	11	18	37	58
Printers	8	22	26	56
Textile industries	4	11	13	41
Butchers	17	29	41	86
Builders	8	16	28	49

The best studies of occupational mortality known to the writer are those in the decennial supplements to the "Reports for the Registrar-General of England and Wales." The following table is taken from the latest supplement (1931).

TABLE 91.—REGISTERED DEATHS PER 100 STANDARD DEATHS BY SOCIAL STATUS OF OCCUPIED AND RETIRED MALES, 1930–1932[1]

Social class	Registered deaths per 100 standard deaths	
	20–65	35–65
All males	101	100
All occupied and retired	100	100
Social class I	90	90
Social class II	94	95
Social class III	97	97
Social class IV	103	102
Social class V	112	112
Unoccupied	136	104

[1] Great Britain, Registrar General, "The Registrar-general's Decennial Supplement; England and Wales," 1931, H. M. Stationery Office, London, 1936, part 2a, p. 211.

In Table 91 the death rates of the different social classes are given as per cents of the death rate of all occupied and retired civilian males.

The differences are large but decreasing and show clearly the effects of different economic and social status on the death rate. The death rate of the most favored class is but 90.0 per cent of the average, while that of unskilled workers is 112.0 per cent. Expressed in another way, the death rate of unskilled workers is about one-fourth greater than that of the upper class, and this, be it noted, is a standardized figure which makes due allowance for age differences in the various social classes.

The following table shows the ratio of expected to actual deaths in certain specified occupations, the expected deaths in each case being the number that would have occurred in each occupational group if its death rate had been the same at each age as that for all males in England and Wales.

TABLE 92.—STANDARDIZED MORTALITY OF MALES 20 TO 65 YEARS OF AGE ENGAGED IN CERTAIN OCCUPATIONS, ENGLAND AND WALES, 1930–1932 (7, PART II, PP. 191–210)

Occupation	Registered Deaths per 100 Standard Deaths
All occupied and retired males	100
General and undefined laborers	119
Building trade laborers	112
Dock laborers	137
Agriculture:	
Farmers and their relatives	73
Agricultural laborers (including shepherds)	77
Mining:	
Coal—underground workers, not hewers or getters	94
Iron ore—underground workers, not hewers or getters	116
Makers of bricks, pottery, and glass:	
Potter's millworkers, slip makers, and arkmen	120
Earthenware, china, etc., kiln and oven men	157
Brick, tile, and pottery, kiln and oven men	119
Glass blowers and finishers, not machine hands	160
Metalworkers:	
Puddlers	166
Iron- or steel-foundry furnacemen and laborers	132
Metal machinists	97
Grinders in cutlery trade	240
Textile workers:	
Wool sorters	118
Cotton blow-room operatives	233
Cotton spinners and piecers	105
Dyers	123
Cutters (not hats, gloves, or boots)	91
Makers of foods, drinks, and tobacco:	
Bakers and pastry cooks	77
Skilled workers in ale, etc., brewing	112
Tobacco, cigars, cigarettes, snuff	109

TABLE 92.—STANDARDIZED MORTALITY OF MALES 20 TO 65 YEARS OF AGE ENGAGED IN CERTAIN OCCUPATIONS, ENGLAND AND WALES, 1930–1932 (7, PART II, PP. 191–210).—(*Continued*)

Occupation	Registered Deaths per 100 Standard Deaths
Building trades:	
Foremen and gangers	89
Bricklayers	88
Mason's, stonecutters, and dressers	121
Painters and decorators	108
Persons employed in transport and communication:	
Railway officials, station masters, etc	79
Locomotive engine drivers	84
Stevedores	220
Commercial:	
Storekeepers (proprietors and managers of retail businesses)	97
Commercial travelers	93
Costermongers, hawkers, and newspaper sellers	140
Bank officials	62
Insurance officials	69
Insurance agents and canvassers, brokers	92
Professional:	
Clergymen (Anglican church)	69
Barristers, judges, magistrates, stipendiary	116
Registered medical practitioners	106
Dentists	96
Teachers (not music teachers)	68
Persons engaged in personal service:	
Domestic servants (indoor)	92
Inn, hotelkeepers; publicans; beersellers	155
Barmen	149
Waiters	134
Laundry workers	75

These data show the same general condition as those already given, but, being standardized and applying to the entire male population, they leave no room for doubt as to what the situation was in England and Wales in 1930 to 1932. All kinds of agricultural work are among the healthful occupations, while most types of factory work are comparatively unhealthful. The professions are healthful as a whole, although barristers and physicians fall well behind the other groups. On the other hand grinders in cutlery, cotton blow-room operatives, and stevedores have a rate more than twice as high as the average, while nine other groups have rates over 25 per cent in excess of the average. Of course, not the entire amount of the differences in death rates shown here is due to differences in occupational hazards alone. Selection unquestionably plays an important role. Common unskilled laborers, dockers, and stevedores are frequently men who cannot succeed at other jobs and in

the course of time drift into the poorly paid classes, where living conditions are very bad. So it happens that selection picks many of the poorer physical specimens of manhood for the worst paid jobs, and then poor pay makes decent living impossible. The inevitable result of this combination of circumstances is an extremely high death rate in certain occupational groups. It is, perhaps, the living conditions enforced by poorly paid work rather than the nature of the work itself that in many cases, though not in all, cause the high death rate.

If we bear in mind the differences in the death rates of different occupational groups, we shall have little difficulty in understanding the differences in death rates between certain types of communities. Clearly, a section of a city, or an entire city, in which the textile industry is an important one will have a much higher death rate than a section of a city, or a city, where professional men live or a residence suburb where only the well-to-do live. As between a rural area where miners predominate and one where only farmers live, there will also be large differences; and where common laborers are numerous, the death rate will be higher than where skilled workers abound. In summary, one may say that the degree of hardness of life is in large measure determined by the occupation that one follows. It determines, first, the special hazards encountered, such as those peculiar to mining, metal grinding, and where poisonous materials are used; secondly, the conditions of work unfavorable to health, such as violent exercise alternating with idleness (stevedoring), exposure to all kinds of weather (much common labor and farming); and, thirdly, the income, which in turn determines kind of housing, quality and quantity of food, clothing, medical and dental care, and all the other items which go to make up the level of living. In view of these facts it is surely of the utmost importance to secure more information regarding death rates of occupational groups. However, it appears that the gap between the death rates of those in the more hazardous and poorly paid trades and those in the more sheltered occupations yielding larger incomes is being rapidly lessened as public health services become more widespread and more efficient.

7. The Race Factor in the Death Rate

The racial element in the population is so important in determining death rate that where there are appreciable elements of different races separate rates should be given. Our own mortality figures generally make this distinction in the case of Negroes where they constitute over 5 per cent of the community. We do not yet (March, 1942) have separate life tables for whites and Negroes, only preliminary 1940 tables for whites and nonwhites. But since, for the country as a whole, the nonwhites are 90 per cent or more Negroes the data in Table 93 may be regarded as showing with reasonable accuracy the mortality differences

between whites and Negroes. It should not be inferred, however, from these differences in the death rates of the white and the colored populations that these rates are the result of inherent race differences. It is much more likely that they are caused chiefly by the great differences in modes of living of the two racial groups. At least, until the conditions of life in the two groups approximate one another rather closely, the presumption is that differences in death rates arise out of differences in sanitary and medical care and in economic status rather than out of inherent biological differences.

TABLE 93.—DEATH RATES AND EXPECTATION OF LIFE FOR WHITE AND NONWHITE MALES AND FEMALES, UNITED STATES, 1930–1939 (12)

Year of age	Death rates				Expectation of life			
	White		Nonwhite		White		Nonwhite	
	Male	Female	Male	Female	Male	Female	Male	Female
0–1	57.0	45.0	83.5	68.6	60.6	64.5	50.1	52.6
10–11	1.4	1.0	1.8	1.5	55.9	59.0	46 6	48.3
20–21	2.7	2.2	7.1	7.1	46.8	49.7	38.0	39.9
30–31	3.5	3.1	10.2	8.9	38.1	40 9	31 1	32.9
40–41	6.1	4.6	16.0	13.8	29 6	32.2	24 7	26.1
50–51	12.4	8.9	26.9	24.2	21.7	24.0	19.0	20.1
60–61	25.7	19.0	35.8	35.1	14 9	16.4	14.1	15.3
70–71	56.3	45.8	62.9	55.8	9.3	10 2	9.5	10.9

8. CAUSES OF DEATH

Space does not permit going into any detail regarding the causes of death, but since the future growth of population will be considered later, and since this growth depends to an appreciable extent upon the level of the death rate, it may be well to indicate briefly the changes in the causes of death which are taking place. This is shown in brief form in Table 94.

In the last 30 or 40 years the epidemic germ diseases have almost ceased to be important causes of death in Western lands. Tuberculosis has been cut in a very marked manner, while diarrhea and enteritis, largely confined to infants, are rapidly disappearing. In fact, in New Zealand the intestinal diseases of children are now of almost negligible significance, and in such rural states as Wisconsin and Kansas they also claim comparatively few victims.

On the other hand, such diseases as cancer, softening of the brain, and diseases of the circulatory system and of other internal organs are everywhere on the increase. In a word the degenerative diseases which naturally become of greater significance as age increases are steadily

claiming a larger share of all lives. In curbing such diseases medical science has made but little progress as compared with the curbing of those in which sanitation is of prime importance.

TABLE 94.—DEATH RATES PER 100,000 PERSONS BY IMPORTANT CAUSES OF DEATH IN THE CURRENT REGISTRATION AREA, 1900 TO 1940, IN KANSAS AND WISCONSIN, 1936 TO 1939, AND IN NEW ZEALAND, 1900 TO 1904 AND 1936 TO 1939

Cause	Current registration area					Kansas and Wisconsin	New Zealand	
	1936–1940	1921–1925	1910–1914	1905–1909	1900–1904	1936–1939	1936–1939	1900–1904
All causes	1,096.4	1,181.8	1,415.5	1,536.9	1,650.4	1,043.4	918.3	994.5
Typhoid and paratyphoid fever	1.8	7.6	18.9	26.8	33.7	0.6	0.5	8.7
Malaria	1.9	2.9	2.6	2.9	5.6	0.1	0.1	.....
Smallpox	.....	0.6	0.3	0.3	3.7	.....	.....	0.1
Measles	1.2	6.0	9.8	9.8	10.0	0.6	2.9	7.5
Scarlet fever	1.1	3.6	8.5	9.5	11.8	2.4	2.8	5.2
Whooping cough	2.8	7.9	10.5	11.4	11.2	1.7	1.4	10.5
Meningitis	1.9	1.1	11.4	23.9	33.0	1.8	.....	0.7
Diphtheria	1.8	12.3	19.1	23.0	33.6	0.9	1.6	5.3
Influenza and pneumonia (excluding bronchopneumonia)	60.9	82.7	99.8	123.7	155.2	59.4	39.4	92.4
Tuberculosis of the respiratory system and acute disseminated tuberculosis	46.7	82.5	132.8	153.3	173.3	27.1	33.7	73.9
Other forms of tuberculosis	3.5	10.4	20.0	22.6	21.2	2.5	7.3	23.5
Syphilis, locomotor ataxia, and general paralysis of the insane	15.5	16.1	16.1	13.5	12.8	9.0	6.2	1.8
Cancer and other malignant tumors	115.3	88.9	77.3	71.3	66.2	124.7	118.0	65.8
Diabetes mellitus	24.7	17.2	15.3	13.3	10.9	26.4	18.9	10.0
Cerebral hemorrhage and softening of the brain	78.6	84.2	77.2	73.9	72.6	89.4	54.6	37.5
Diseases of the heart	274.6[1]	171.4	158.2	152.1	139.8	214.2	264.8	103.2
Diseases of the arteries	20.0	22.6	23.7	15.6	8.1	22.4	34.3	9.1
Bronchitis and bronchopneumonia	34.2	50.3	66.9	66.0	69.8	33.0	32.1	39.2
Diarrhea and enteritis	13.4	40.8	92.5	112.8	112.7	8.4	4.5	59.7
Appendicitis	11.3	14.6	11.8	11.3	10.5	12.5	7.6	.....
Hernia, intestinal obstruction	9.7	10.6	11.9	13.2	12.7	10.0	7.2	10.1
Cirrhosis of the liver	8.4	7.3	13.6	14.5	14.0	7.6	3.3	5.8
Acute and chronic nephritis	81.0	89.5	101.1	98.4	93.9	77.4	37.9	25.8
Puerperal septicemia and other puerperal causes	7.9	15.6	15.7	15.3	13.9	6.5	6.6	3.2
Early infancy and malformations	49.0	78.1	94.1	90.3	86.5	47.3	43.9	44.2
Senility	7.7	12.8	22.9	31.5	43.9	8.0	24.3	58.3
Suicide	14.6	12.0	16.1	16.0	13.0	16.4	11.3	12.3
Homicide	7.0	8.4	6.7	5.6	2.4	2.8	0.7	0.4
Automobile accidents	25.6	14.3	3.0	0.6	83.8	22.2	48.2	73.5
Other accidents	51.2	59.3	80.2	86.4		55.1		

[1] Not comparable with previous years due to change in classification.

When looking to the future, the significance of this fact can scarcely be exaggerated because, as was noted above, we are rapidly nearing the end of the saving of life possible by eradicating the more common germ diseases. In the future any considerable lowering of the death rate or increase in the expectation of life depends upon mitigating the ravages of the degenerative diseases, and the prospect in this regard is far from bright. All this is just another way of saying that the diseases which can be controlled in large measure by an improvement in the economic status of the community, by an economic surplus which can be made available for better sanitation, are rapidly coming under control, while those which can be controlled only by keeping the bodily organs from degenerating show either no diminution or, more often, even an increase.

9. The Expectation of Life (4)

As has been shown above, the decline in the death rate during the last century has been one of the marked achievements of the Western world. The credit for this achievement must be allotted chiefly to the great scientific advances in the field of medicine and to the Industrial Revolution, the major portion going to the latter factor. The reasons for this last statement are to be found in the type of disease over which the community has gained control and in the actual means by which this control has been exercised.

Long before the germ theory of disease was established, the death rate in countries which were being industrialized and in those in which, like the United States, new land was abundant had been considerably reduced through the general improvement of economic conditions which was in progress. Not only did this improvement in economic conditions result in the individual's obtaining a better living; it also made an increasing surplus available to the community for the establishment of public sanitation, particularly in industrialized countries; and it is to better sanitation that we owe the greater part of the decline in the death rate during the last century or more. Part of the economic surplus was also used for the establishment of medical research, so that in the last analysis it is to the increased productivity following upon the development of power-machine production and to the opening of new lands that we owe the decline in the death rate. But the purpose of this section is not to apportion the credit for the decline in the death rate during the last century or century and a half but rather to show the combined results of all these factors in terms of the expectation of life in countries at different stages of social and economic development.

The expectation of life is the number of years that persons of a given age can, on the average, expect to live. It should be made clear at the outset that such a calculation tells nothing about the chances of any particular person to survive for a given length of time. Thus, in Table 95

TABLE 95.—EXPECTATION OF LIFE BY AGE, SELECTED COUNTRIES

Age	England and Wales[1]				Germany[1]				Italy[1]			
	1937		1838–1854		1932–1934		1871–1880		1930–1932		1889–1902	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	60.2	64.4	39.9	41.8	59.9	62.8	35.6	38.4	53.8	56.0	42.6	43.0
10	56.2	59.6	47.0	47.7	57.3	59.1	46.5	48.2	55.5	57.2	51.2	51.0
20	47.1	50.4	39.5	40.3	48.2	49.8	38.4	40.2	46.8	48.5	43.0	43.1
30	38.3	41.6	32.8	33.8	39 5	41.0	31 4	33.1	38.6	40.4	35.7	36.0
40	29.6	32.8	26.1	27.3	30.8	32.3	24.5	26.3	30.4	32.1	27.9	28.7
50	21.4	24.3	19.5	20 7	22.5	23.8	18.0	19.3	22.4	23.9	20.4	21.0
60	14.3	16.5	13.5	14.3	15.1	16.1	12.1	12.7	15.2	16.1	13.5	13.6
70	8.6	10.0	8.4	9.0	9.0	9.6	7.3	7.6	9.0	9.6	7.7	7.7

Age	Sweden[2]				New Zealand[3]				Japan[1]			
	1931–1935		1816–1840		1934–1938		1896–1903		1935–1936		1908–1913	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	63.2	65.3	39.5	43.6	65.5	68.4	54.4	57.3	46.9	49.6	44.2	44.7
10	58.4	59.5	45.2	48.6	59.1	61.4	53.1	55.0	48.2	50.5	48.8	48.5
20	49.4	50.6	37.3	41.5	49.9	52.0	44.6	46.4	40.4	43.2	41.1	41.7
30	41.1	42.2	30.3	33.4	40.9	43.0	36.7	38.7	33.9	36.9	34.3	35.7
40	32.5	33.5	23.7	26.4	32.0	34.0	29.0	31.2	26.2	29.6	26.8	29.0
50	24.2	25.1	17.6	19.6	23.6	25.5	21.6	23.6	18.8	22.2	19.6	21.8
60	16.6	17.3	12.1	13.2	16.1	17.5	15.0	16.4	12.6	15.1	13.3	15.0
70	10.1	10.5	7.2	8.0	9.8	10.7	9.5	10.2	7.6	9.0	8.3	9.3

Age	India[1]				United States[4]							
					1930–1939				1901		1789	
	1931		1881–1901		White		Nonwhite					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	26.9	26.6	23.6	24.0	60.6	64.5	50.1	52.6	47.9	50.7	34.5	36.5
10	36.4	33.6	34.7	33.9	55.9	59.0	46.6	48.3	50.4	51.9	43.2	
20	29.6	27.1	28.6	28.6	46.8	49.7	38.0	39.9	42.0	43.6	34.2	34.3
30	23.6	22.3	22.9	23.8	38.1	40.9	31.1	32.9	34.8	36.3	30.2	
40	18.6	18.2	17.9	19.1	29.6	32.2	24.7	26.1	27.6	29.1	25.2	26.9
50	14.3	14.6	13.5	14.5	21.7	24.0	19.0	20.1	20.7	21.8	21.2	
60	10.2	10.8	9.5	10.0	14.9	16.4	14.1	15.3	14.3	15.2	14.8	16.1
70	6.4	6.7	5.8	6.0	9.3	10.2	9.5	10.9	9.0	9.6	10.1	

[1] League of Nations, "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940, pp. 66–68.

[2] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok for Sverige," 1941, Stockholm, 1941, p. 67.

[3] New Zealand, Census and Statistics Office, "New Zealand Official Yearbook," 1941, Government Printer, Wellington, 1941, p. 87.

[4] United States Life Tables (Preliminary), 1930–1939, July 21, 1941. Original Registration States in 1901. See 14, Vol. 2, old series, Part 1, 1793.

the expectation of life at birth in England and Wales in 1838 to 1854 is given as 39.9 for males and 41.8 for females. This means that the sum of all the years lived by the children born during this period divided by the number of children born equals 39.9 for males and 41.8 for females. Of course, some died almost immediately after birth while some lived to be a hundred or more, but the average number of years that newborn babies lived at that time was as given, assuming no change in age-specific death rates during their lives.

Life tables from which such a figure is calculated do not go back very far in time for most countries; hence, such a measure of improvement in public health is lacking until rather recent times and even yet is not

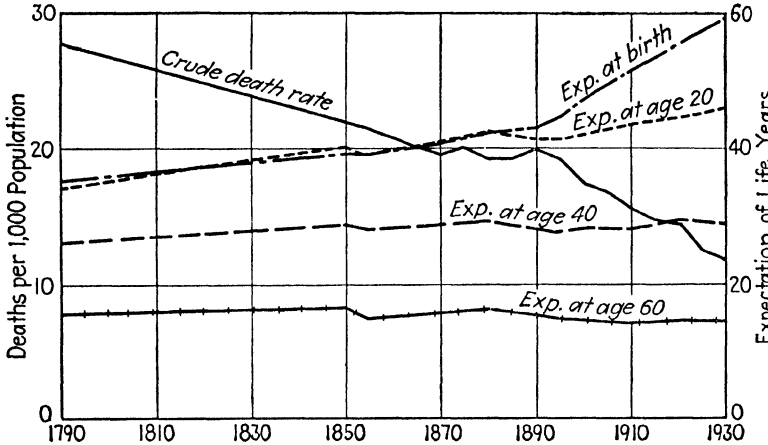

FIG. 36.—Crude death rate and expectation of life at selected ages, Massachusetts, 1789 to 1931. (THOMPSON, W. S. & WHELPTON, P. K., "Population Trends in the United States," p. 230, VIII, 9.)

available for most countries. Life tables for Massachusetts were worked out as early as 1789 (14). At that time the expectation of life at birth was 34.5 years for males and 36.5 years for females (see Table 95, United States, 1789). In 1850 these figures had risen to 38.3 and 40.5 years, respectively. This is about the same as in England and Wales at that time. Since that time there appears to have been a steady increase in expectation of life at birth, which was greatly accelerated in most countries for two or three decades following 1900.

The differences between countries in expectation of life at birth are still very considerable and are of interest as probably the best simple index of the economic conditions or levels of living prevailing in different lands. Thus, in New Zealand the expectation of life for males at age zero was a little over 65.46 years in 1934 to 1938; in the United States for whites it was only 60.6 in 1930 to 1939; in Sweden it was 63.2 in 1931 to 1935; in Japan in 1935 to 1936 it was only 46.9; and in India in 1931 it was 26.9. These differences are about what one would expect from a

study of the economic conditions of these different countries. The expectation of life at birth is very largely a function of the general economic conditions in which children get their start.

At no other age, however, has the increase in expectation of life been nearly so great as at birth, nor are the differences between countries so great at older ages. Even at age ten the improvement in England and Wales in 85 years was only from 47.0 to 56.2 years for males and from 47.7 to 59.6 for females. In Massachusetts it was only from 43.2 in 1789 to about 56.5 in 1930 for both sexes combined—only a little over one-half of what it was at birth. Even the difference between India and New Zealand, 1931, at this age was only about 22 years. At later ages and for all countries the increase in the expectation of life over rather long periods is comparatively small, and in several cases there appears to be even a decrease as old age approaches (5). The differences between countries also decline as age increases. This bears out the statement made above that the decline in the death rate has been achieved more largely through the reduction of infant and child mortality than through the reduction of deaths in older age groups.

Thus by the time one reaches his fortieth year (the sexes combined) he can expect to live, on the average, only about four years longer now than in 1838 to 1854 if he lives in England. If he lives in Massachusetts he may expect to live about 4.3 years more than his great great grandfather living there in 1789. The increase in the expectation of life at forty is somewhat greater in Sweden, 7.9 years, between 1816 to 1840 and 1931 to 1935. At sixty years of age the increase in expectation of life during the last few decades is very little, if any, for most countries, and as between countries it is only a little lower in Japan than in the United States or New Zealand and was only about five or six years lower 40 years ago even in India, where modern sanitation and medicine were almost unknown.

These data prove very clearly that as yet there is no basis at all for the statement often made that the span of life is growing greater. Indeed, some of the data in Table 95 indicate that, on the average, old people have fewer years to look forward to today than had the older people of several decades ago. Thus in Japan and New Zealand the expectation of life at the older ages is not uniformly higher now than formerly. This is also true for the United States if we accept the data for Massachusetts in 1789 as fairly typical of the entire country at that time. Any appreciable increase in the expectation of life at ages over forty seems to await the conquering of the degenerative diseases of the circulatory system, the respiratory system, and the other vital organs, and in this direction progress is slow, although the occupational differentials cited above (Table 88) indicate that there is still considerable opportunity to lower the death rates of certain groups by improving their economic status

and the conditions in which they work (miners, metal grinders). But again the reader should be reminded that this does not mean that we shall soon have octogenarians with an expectation of life equal to that of the sexagenarians of today.

References

1. BRITTEN, ROLLO H.: "Some Tendencies Indicated by the New Life Tables," 13 pp., Government Printing Office, Washington, D.C., 1924. (Reprint 912 from U. S. Pub. Health Service, *Pub. Health Repts.*, pp. 737–749, Apr. 11, 1924.)
2. BROWNLEE, JOHN: "Density and Death Rate; Farr's Law," *Jour. Roy. Stat. Soc.*, 83 (1920), 280–283.
3. DORN, HAROLD F.: "Differential Rural-urban Mortality in Ohio, 1930," 187 pp., University of Wisconsin, Madison, Wis., 1933.
4. DUBLIN, LOUIS I., and ALFRED J. LOTKA: "Twenty-five Years of Health Progress," 611 pp., Metropolitan Life Insurance Company, New York, 1937.
5. FORSYTH, C. H.: "The Decline in the Average Length of Life," *Science*, n.s., 70 (1929), 85–88.
6. Germany, Statistisches Reichsamt: "Statistisches Jahrbuch für das deutsche Reich," 1880——. Reimar Hobbing, Berlin, 1880——.
7. Great Britain, Registrar General: "The Registrar-general's Decennial Supplement; England and Wales," 2 vols., H. M. Stationery Office, London, 1936.
8. HOFFMAN, FREDERICK L.: "An Address on the Significance of a Declining Death Rate," delivered at the First National Conference on Race Betterment, 46 pp., Battle Creek Sanitarium, Battle Creek, Mich., 1914.
9. LEVASSEUR, ÉMILE: "The Tables of Mortality and Survivorship," *Jour. Roy. Stat. Soc.*, 50 (1887), 547–569. Trans. from *Jour. de la société de statistique de Paris*, March, 1887.
10. MARCH, LUCIEN: "Some Researches Concerning the Factors of Mortality," *Jour. Roy. Stat. Soc.*, 75 (1912), 505–538.
11. New York (State) Department of Health: "Fifty-first Annual Report . . . 1930," Vol. 2, Division of Vital Statistics, 329 pp., Health Commission, Albany, 1931.
12. U. S. Bureau of the Census: "United States Life Tables, 1930–1939 (Preliminary)," Census release July 21, 1941.
13. WHITNEY, JESSAMINE: "Death Rates by Occupation, Based on Data of the U. S. Bureau of the Census, 1930," 32 pp., National Tuberculosis Association, New York, 1934.
14. WIGGLESWORTH, EDWARD: "A Table Showing the Probability of the Duration, the Decrement, and the Expectation of Life in the States of Massachusetts and New Hampshire, Formed from Sixty-two Bills of Mortality on the Files of the American Academy of Arts and Sciences for the year 1789," *Amer. Acad. Arts Sci., Mem.*, 2, o.s. (1793), 131–135.
15. WOODBURY, ROBERT MORSE: "Causal Factors in Infant Mortality; a Statistical Study Based on Investigations in Eight Cities," 245 pp., Government Printing Office, Washington, D.C., 1925. (U. S. Children's Bur., *Pub.* 142.)
16. ———: "Decline in Infant Mortality in the United States Birth-registration Area, 1915 to 1921," 7 pp., *Amer. Jour. Pub. Health*, May, 1923.

Questions

1. Discuss the trend of the death rate in recent times. What important differences are there between the United States and India? How would you account for these differences?

2. Why has the great decline in the death rate come from the saving of infants and children? What does this indicate as to the probable future savings of life? In what part of our population would you expect the greatest improvement in the death rate in the future? Why?

3. Discuss the relation between fertility and child mortality. Explain this relation as fully as possible.

4. Discuss the influence of the age composition of the population on the death rate. How does the crude death rate in your own community differ from the refined or adjusted rate? What is the explanation of this difference?

5. How does sex composition affect death rates? Do you see any reasons for sex differences in the death rate? Answer the same questions for marital composition, for race composition, and for other elements making up a population. Always give examples from your own experience or from the study of your own community, if possible.

6. Why are the crude death rates for urban and rural populations not comparable in all cases? Give examples. What is needed to make them comparable?

7. Can you think of any reasons why there should be any relation between density of population and death rates? Give two examples from your own observation if possible.

8. Explain why the death rate of the single and widowed differs from that of the married.

9. Discuss the influence of occupation on the death rate. Can you give illustrations from observations in your community which will help to explain these differences?

10. What changes in the death rates from different causes are now taking place? Can you explain why this should be so? Ask your family physician whether he has noticed a change and what his explanation is.

11. Do the changes in causes suggest anything regarding the probable direction of the public health movement in the future?

12. Describe the changes in expectation of life during the last century. What are the chief factors in these changes? What changes seem likely in the future? Why?

13. How is the war affecting the death rate in the United States, in China, in Germany?

CHAPTER XV

NATURAL INCREASE AND ITS PROBABLE FUTURE TREND[1]

The natural increase of a population is obtained by subtracting its death rate from its birth rate. After what has been said regarding the various ways of correcting, standardizing, refining, or adjusting these rates, this may not seem a very satisfactory definition. However, unless it is otherwise noted, the rate of natural increase ordinarily given is obtained by the use of crude birth and death rates. For many purposes such a rate is quite satisfactory, but there are times when it will not give the correct impression regarding the probable future growth of population. For this reason it is essential to use more refined measures of growth, particularly at a time when the birth rate has been declining rapidly.

1. Past Trends of Natural Increase

The rates of natural increase (based on crude rates) for the leading countries of the world for which such data are available are given in Table 96 below.

In the West the rate of natural increase in most countries appears to have gone through a cycle somewhat as follows: There was a period during the nineteenth century when the death rate fell more rapidly than the birth rate with the result that there was an increase in the rate of natural increase. In a number of countries this rate mounted as high as 12 to 15 per 1,000; in some it was even higher; and in many of them it remained at a high level for several decades.

Table 96.—Average Rates of Natural Increase of the World, 1808 to 1939[1]

Year	Austria	Belgium	Bulgaria	Denmark	England and Wales	Finland	France	Germany	Hungary	Ireland
1935–1939	0 9	2.3	10.2	7.2	3.0	6.8[2]	−0.7	7.5	5.8	5.1
1928–1932	2.3	4.6	13.9	7.5	3.9	6.7	1.3	5.5	7.8	5.2[3]
1918–1922	3.5[2]	2 9	11.6	11.3	7.2	4.9	−2.7	5.0	5.5	4.7
1908–1912	6 7	7.8	17 7	14.1	11.0	13.1	0.9	13.1	...	6.3
1898–1902	8.7	10.8	16.2	13.7	11.4	13.0	1.0	14.9	...	4.8
1888–1892	5.2	8.5	13.6	11.5	11.9	12.6	0.4	12.4	...	4.4
1878–1882	4.5	10.0	....	12.7	14.1	13.2	2.5	12 2	...	6.2
1868–1872	...	8.2	....	11.2	13.1	2.0	−1.3	9.4	...	10.7
1858–1862	...	9.1	....	12.3	12.6	10.5	3.4	11.2		
1848–1852	...	6.6	....	11 2	10.8	10.9	3.5	9.1		
1838–1842	...	8.8	....	9.5	9.5	12 4	4.7			
1828–1832	...	....	....	2.3	....	9.6	4.0			
1818–1822	...	....	....	11.7	....	12.0	6.4			
1808–1812	...	....	....	5.2	....	−4.8	5.7			

[1] General references: 1; 2; 3; 4; X, 11, Chap. 2.

TABLE 96.—AVERAGE RATES OF NATURAL INCREASE OF THE WORLD, 1808 TO 1939[1].—(*Continued*)

Year	Italy	Nether-lands	Nor-way	Poland	Ru-mania	Russia	Scotland	Yugo-slavia	Spain	Sweden
1935–1939	9.3	11 6	4 9	11.4[2]	10 6	23 4[3]	4.5	12.2[2]	5 6[2]	2.8
1928–1932	10 3	13 1	6 1	15 3	14 1	24 9[2]	5 5	. . .	11.0	3.2
1918–1922	5.3	13 1	10 7	9 1[2]	12 5[2]	19 2[2]	9 1	. .	5.3	6.8
1908–1912	11 9	14 9	12 4	17 0	15 9	16 7[2]	11.0	14.5[2]	9.6	10.6
1898–1902	10 7	14 8	14.4	18 7	12 8	17 0	11.7	15 7	6 4	10.6
1888–1892	10 7	12 6	12 5	. . .	10 4	12 8	11.8	16 5	4 8	11.1
1878–1882	7 7	13 5	14 4	. .	7 0	13 5[2]	13.9	12 9	6.1	12.0
1868–1872	7 1	9 5	12 4		7 0	12 0[2]	12.5	11 6	....	9.7
1858–1862	.	7 0	14 9	.	. .	....	13 8	.. .	....	14 2
1848–1852	..	.	12 9	. .		.. .	....	....	....	10.9
1838–1842	.. .	..	9 2	.	. .	...	....	....	....	8.8
1828–1832	. .	.	12 3	. ..	..	. .	....	....	....	6 7
1818–1822	...	..	13 2	..	....	....	....	....	....	9.3
1808–1812	...	. .		.	.	....	....	....	....	−1.3

Year	Switzer-land	Argen-tina	Canada	Chile	Guate-mala	Hon-duras (British)	Jamaica	Puerto Rico	United States	Ceylon
1935–1939	3.8	12 2	10 4	9 5	14.2	12 7[2]	15.7[2]	20.1	6.1	11.0
1928–1932	4.9	16 6	12 8	14 7	23 9	14 4	16.7	16.7	7.1	14 7
1918–1922	5.0	16.8[2]	14.2[2]	7.6	17.9	12.9[2]	....	17.3[2]	9.9	6.8
1908–1912	9.7	20.1[2]	13.6[2]	7.8	17.3	16 2[2]	13.1[2]	.....	...	6.7
1898–1902	10 6	17.9[2]	8.1	6 2	22 1	....	17.8	−4 6[2]	...	10.2
1888–1892	7 5	....	10.6	0 5	16.1	....	15.1	−0.4	...	3.9
1878–1882	7.7	....	....	11 5	....	....	....	.....	...	2.9
1868–1872	....	....	....	16 5	....	....	....	.....	...	4.3
1858–1862	....	.. .	....	16 7						

Year	India	Japan	Philippine Islands	Algeria[4]	Egypt[5]	Union of South Africa[4]	Australia	New Zealand
1935–1939	11 5[7]	12 5[2]	15 4[2]	8 5[2]	16.0[2]	15.0	7.7	9.8
1928–1932	9.0	14 2	16 4	8 6	17 4	15.9	10.3	10.2
1918–1922	−4 3	9 9	8 7	5 3	11 4	16.1	14.2	12.9
1908–1912	5 5	13 0	10 8	11.8	17 9	21.5[2]	16 5	17.3
1898–1902	6.1	11 5	7 3[2]	8.4[2]	18 7[2]	....	14.4	15.7
1888–1892	5.7	8 4	3.9	5.1[2]	18 3[2]	....	20 3	19.7
1878–1882	.....	6 6	....	5.6[2]	....	....	20 0	28 2
1868–1872	.....	.	....	5.2[2]	....	....	24.2	30.1
1858–1862	.....		...	11 2[2]				
1848–1852	.....	.. .	....	− 4 7[2]				
1838–1842	...	..	...	− 9 2[2]				
1828–1832	...	....	....	−20 0[2]				

[1] For the current data on birth rates the reader is referred to "Population Index."
[2] Austria, 1919 to 1922, Finland, 1935 to 1938; Poland, 1935 to 1938, 1919 to 1922; Rumania, 1920 to 1922; Russia, 1933 to 1935, 1928, 1920 to 1924, 1906 to 1909, 1876 to 1880, 1866 to 1870; Yugoslavia, 1935 to 1938, 1909 to 1912; Spain, 1935 to 1938; Argentina, 1915 to 1919, 1909 to 1913, 1899 to 1902; Canada, 1920 to 1924, 1911 to 1913; Honduras (British), 1835 to 1937, 1922 to 1924, 1909 to 1911; Jamaica, 1935 to 1938, 1906 to 1910; Puerto Rico, 1921 to 1925, 1894 to 1898; India, 1935 to 1938; Japan, 1935 to 1938; Philippine Islands, 1935 to 1937, 1903 to 1907; Algeria, 1931 and 1933 to 1935, 1901 to 1905, 1891 to 1895, 1881 to 1885, 1872 to 1876, 1861 to 1865, 1851 to 1855, 1841 to 1845, 1831 to 1835; Egypt, 1935 to 1938, 1905 to 1909, 1901 to 1904; Union of South Africa, 1910 to 1914.
[3] Irish Free State.
[4] Europeans only.
[5] Before 1917, Bedouins were not included in population estimates.

The time at which the maximum rate was reached varied considerably from country to country, but it remained fairly high in most western European lands until World War I. Since that time it has fallen almost everywhere and, in many lands, has now declined to a level well below that of 50 or 100 years ago, that is, below the levels prevailing before modern sanitation became an important factor in lowering the death

rate. A few concrete examples will help us to understand the general nature of this movement.

At the time that vital statistics were first gathered in England and Wales the rate of increase was 9.5 per 1,000. It is probable that it was actually somewhat higher than this because of the greater omission of births than deaths from the records. The rate increased rather steadily between 1838 to 1842 and 1878 to 1882. At the latter period it was 14.1 per 1,000, a rate at which the population would have doubled in about 50 years. After 1878 to 1882 it declined slowly until it was 11.0 just before World War I. After the war it declined rapidly, the rate for 1935 to 1939 being 3.0. German data are not available until 1848 to 1852, at which time the rate of increase was 9.1, just about the same as in England and Wales a decade earlier. With one setback, 1868 to 1872, this rate rose steadily until about 1900 (14.9) and then began to decline. In the period 1908 to 1912 it was 13.1. As in England the rate has fallen rapidly since the war, the rate for 1928 to 1932 being 5.5, but it has since risen to 7.5 in the period 1935 to 1939.

It is important also to note that during all this period emigration from a number of the countries of Europe was of such a nature that it tended to keep down the rate of natural increase. There is generally an excess of young unmarried women in countries of emigration because of the preponderance of males among emigrants. Besides, most of the women who do emigrate are young married women. The death rate is raised by the same movement because it increases the proportion of older people in the population; although where emigration affords relief from real population pressure, the death rate may be lowered by emigration.

The situation as regards natural increase during the latter half of the nineteenth century was much the same in most of the countries in western Europe as in England and Wales and Germany, France alone being an outstanding exception; here the highest rate attained since registration was undertaken was 6.4 per 1,000 in 1818 to 1822. This rate declined steadily until about 1880 (allowing for the Franco-Prussian War). Since that time France had an average natural increase of only about 1.0 per 1,000 until about 1934 and since 1935 has had a natural decrease.

The movement of the rate of natural increase in countries outside Europe settled by Europeans has been much the same as described above, so far as we can judge from the very unsatisfactory data available.

In the United States, where there are only the increase of population from decade to decade, the number of immigrants, and the ratio of children to women on which to base a judgment as to birth rates and rates of natural increase, we have estimated the latter as follows (VIII, 9, pp. 299–304): From 1790 to 1830 our natural increase was about 30 per 1,000 per annum; from 1830 to 1860 it fell to about 25 per 1,000; by 1890

it had fallen to about 15 per 1,000; and in the period 1910 to 1930 it was about 12 per 1,000. These are all crude rates, and prior to 1910 to 1930 they are only approximations; but even so it is unquestionable that the rate of natural increase in the United States has been falling for more than a century. The data on the ratios of children to women in the United States at the several censuses confirm this long-time downward trend in natural increase. They show an almost steady decline in the ratio of children aged zero to four to women aged sixteen to forty-four since 1800 (Table 97; X, 10). For recent years we have data on natural increase

TABLE 97.—CHILDREN 0 TO 4 PER 1,000 WOMEN 16 TO 44, UNITED STATES, 1800 TO 1940 (X, 11, P. 267)

Year	Number	Year	Number
1940	342	1860	714
1930	407	1850	699
1920	489	1840	835
1910	508	1830	877
1900	541	1820	928
1890	554	1810	976
1880	635	1800	1,000
1870	648		

for a registration area comprising a steadily increasing proportion of the population. All these data point to the fact that the same general downward movement of natural increase which we have observed in much of Europe is present in this country. People of western and central European stock settled in other parts of the world also show this steady decrease in the rate of natural increase.

The rates of natural increase for some of the countries of eastern and southern Europe and for the parts of Asia, Africa, and South America which have data do not show the same rapid decline as those of the lands just surveyed. There has been a small decline in some of them; others have had a fairly stable rate; while some have shown an increase. The chief point of interest is that different countries show quite different rates of natural increase and that the countries now having the higher rates are not the same countries that had the higher rates before World War I.

As was noted above with regard to crude birth rates and death rates, the crude rate of natural increase is not adequate to give the most accurate picture of the trend in natural increase. The reason for this is simply that in a population with changing birth rates and death rates, particularly with changing birth rates, the age composition of the population changes apace—the more rapidly the birth rate declines the more rapidly the younger portion of the population declines. This decline begins, of course, in the proportion of children and decade by decade affects the

proportion of youth, of young adults, and so forth, gradually leading to a reduction of numbers at all ages if the decline in the birth rate is such as to lead to an actual decline in the *number* of births.

Various methods have been devised to take account of these changes in age composition on the future rate of increase. It will not be possible to describe these methods here, but three which have been used rather widely in this country may be mentioned. Dublin and Lotka (X, 1) devised a measure of the "true" rate of natural increase which expressed the rate in terms of rate of increase per 1,000 of the population, as had been customary, but, instead of being based on a population having the current age composition, it was based on a population with the age composition that would arise when current age-specific birth rates and death rates had operated long enough to stabilize the age composition. Their calculations showed that the "true" rate of natural increase in the United States in 1920 was only about half the crude rate, that is, it fell from a crude rate of 11 to a "true" rate of 5.5. The writer[1] devised a replacement index using the number of children zero to four per 1,000 women twenty to forty-four in the actual population, divided by the number in a stationary population (life-table population), to secure the percentage by which the ratio of children to women in the actual population exceeded or fell below that in a life-table population. Since the children in a life-table population are just sufficient to maintain this population, the percentage thus secured is an index of the increase or decrease that would take place in the actual population in a generation, assuming there is no change in the age-specific death rates and in the ratio of children to women. Kuczynski (X, 2) has popularized a so-called "net rate of reproduction,"[2] which shows the number of daughters 100 women born at a given time will give birth to during their lives, age-specific birth rates and death rates remaining fixed. This number then shows the ratio of daughters in an actual population to daughters in a life-table population and thus arrives at the percentage increase or decrease of the actual population in a generation. The results of these three methods agree so closely that there is little to choose between them, but since "net reproduction rates" have been calculated for more nations than replacement indexes the former are used in Table 98. On the basis of these "rates" an attempt will be made to state briefly the probable future trends of population growth in the world.

[1] This method was used in the monograph *Ratio of Children to Women in the United States*, 1920 (XI, 18) and was worked out in 1925 and 1926, but the results were not published by the Bureau of the Census until 1931. It can be used readily whenever census age data and applicable life tables are available.

[2] These are not true rates but rather ratios of births in an actual population to births in a life-table population, age-specific birth rates and death rates remaining fixed.

TABLE 98.—RECENT "NET REPRODUCTION RATES" FOR COUNTRIES WHERE AVAILABLE[1]

Country	Date	Rate	Country	Date	Rate
North America:			Europe:		
United States	1935–1939	96	Latvia	1939	99
Whites	1935–1939	95	Netherlands	1937	112
Nonwhites	1935–1939	107	Norway	1938	83
United States, birth-registration area (whites)	1938	100	Poland	1934	111
			Portugal	1933	129
			Spain	1928–1930	124
Canada	1938	109	Sweden	1937	76
South America:			Switzerland	1939	79
Chile	1930–1932	130	U.S.S.R.:		
Europe:			R.S.F.S.R.	1926–1928	170
Austria	1939	100	Ukraine	1928–1929	151
Belgium	1936	83	United Kingdom:		
Bulgaria	1933–1936	119	England and Wales	1937	78
Czechoslovakia	1935	79	Scotland	1936	91
Denmark	1939	92	Asia:		
Estonia	1938	79	Japan	1937	144
Finland	1938	96	Africa:		
France	1937	87	Union of South Africa (whites)	1938	130
Germany	1939	98	Oceania:		
Greece	1930–1932	125	Australia	1938	98
Hungary	1938	100	New Zealand	1939	107
Irish Free State	1935–1937	116			
Italy	1935–1937	113			

[1] *Population Index*, April, 1941, pp. 154–158.

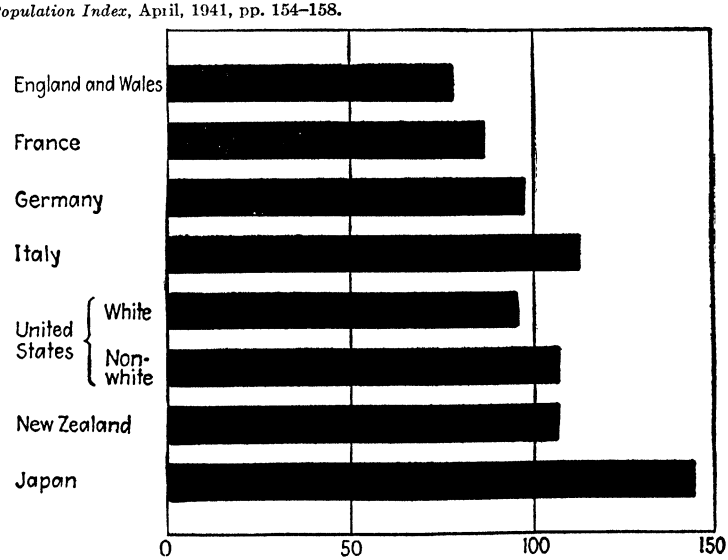

FIG. 37.—"Net reproduction rates," selected countries. (Based on Table 98.)

2. Probable Trends in Different Parts of the World

These rates of reproduction confirm the pattern of world population growth shown by the crude rates. A large part of western Europe not only will have no increase in a comparatively short time if the most recent age-specific birth rates and death rates persist but will shortly have a declining population. On the other hand, some of the southern and eastern European lands still have a birth rate high enough to ensure that they will continue to grow for several decades, although in most of them the rate is falling rapidly.

The countries settled by western Europeans show the same general trend in natural increase as western Europe but are not quite so far along the path to a stationary or declining population. But it can be said that, like western Europe, they cannot look forward to even a crude excess of births over deaths for any great length of time.

From the point of view of the probable increase in population in all the countries of the world neither crude rates of natural increase nor net rates of reproduction are sufficient, for the simple reason that no such data are available. However, it seems reasonable to assume similar reproduction rates in countries having similar vital conditions even though such rates cannot be calculated. This is particularly true where censuses also give indication of a rate of growth. Thus in South America Chile has a rather high reproduction rate, and, although Chile's data are not very satisfactory, there is no good reason to doubt that this rate is substantially correct. Furthermore, the estimates of population growth in South and Central America together with a census here and there make it reasonably certain that the increase in numbers in this region since 1900 has been fairly rapid and will continue to be so for some time. Indeed, there is some reason to think that it may even be more rapid than in the past as public health service grows and more and more people are employed in industry and commerce. This is what happened in Europe, as has been shown (Chap. VI), and there is good reason to suppose that the process will repeat itself in this region.

The small white population in South Africa still has a high rate of growth, and the censuses of Egypt and French North Africa prove that those lands are still increasing in numbers at a fairly rapid rate even though no reproduction rates are available. In the rest of the continent of Africa it is impossible to say what is happening, but it is reasonably sure that the rate of increase is determined by the current fluctuations in the death rate more than by the variations in the birth rate, or by any consistent trend in these rates. The rates are probably much what they have been for many generations past and will not change greatly until new conditions arise; let us say, those associated with a more rigid control by Europeans, involving a slow improvement in sanitary conditions.

The estimates of population growth in this region are even more uncertain than those for South and Central America. In general one would expect but a slow growth in most of Africa during the next few decades.

TABLE 99.—POPULATION OF THE WORLD BY COUNTRIES, 1900 AND 1938 (THOUSANDS)

Country	1940[1]	1900[2]	Increase
World	2,175,604	1,526,923	648,681
Europe[3]	540,113	390,179	149,934
United Kingdom[4]	50,528	41,471	9,057
France	41,980	40,681	1,299
Remainder of Western Europe[5]	38,508	28,051	10,457
Germany[6]	69,486	50,626	18,860
Remainder of Central and Southern Europe[7]	199,598	126,505	73,093
Russia[8]	175,982	125,640	50,342
America	275,710	150,968	124,742
United States[9]	131,669	75,995	55,674
Canada[10]	11,420	5,592	5,959
Remainder of North and Central America	40,955	28,634[11]	12,321
Argentina	13,130[12]	3,955	9,175
Brazil	44,116	17,319	26,797
Chile	4,684[13]	2,696	1,988
Peru	7,200	4,560[11]	2,640
Colombia	8,800	4,144	4,656
Remainder of South America	13,605	8,073[11]	5,532
Africa	155,500	140,700[14]	14,800
Egypt	16,380	9,715	6,665
Algeria, Tunis	10,190	6,543	3,647
Union of South Africa	10,070	5,176	4,894
Remainder of Africa	118,860	119,266	−406
Asia[15]	1,193,611	838,852	354,759
Japan	72,750	43,847	28,903
Korea and Formosa	29,550	13,236[16]	16,314
India[17]	405,000	294,361	110,639
China	450,000	357,250[11]	92,750
Netherland Indies	68,400	34,960[11]	33,440
Philippines	16,250	7,635	8,615
Remainder of Asia and Malaysia	115,692	64,768	50,924
Oceania	10,670	6,224[11]	4,446
Australia	6,930	3,774	3,156
New Zealand	1,618	773	845
Other Oceania	2,122	1,677	445

[1] League of Nations, "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940. 1938 estimate; territory as of Dec. 31, 1936, unless otherwise specified.

[2] Institut international de statistique: "Aperçu de la démographie des divers pays du monde," 1929–1936, the Hague, 1939, p. 30. 1900 population; territory as of Dec. 31, 1936, unless otherwise specified.

[3] Does not include Asiatic Russia, 35,969,000 in 1940 and 22,795,000 in 1900, although these numbers are included in population of Russia given below.

[4] Includes all of Ireland.

[5] Includes Denmark, Finland, Norway, Sweden, Switzerland, Belgium, Luxembourg, Netherlands (all 1938, 1939, or 1940 estimates).

[6] Census of May 17, 1939, does not include Austria or any part of Czechoslovakia.

[7] Includes all Europe not otherwise accounted for (obtained by subtraction of total).

[8] Census of Jan. 17, 1939 (plus 5,515,000 persons in Estonia, Latvia, Lithuania), European and Asiatic; 1900 excludes Polish Russia.

[9] 1940 census; 1900 census.

[10] Preliminary results, 1941; population of Newfoundland and Labrador estimated at 291,000 and 5,000, respectively in 1938.

[11] HÜBNER, OTTO, "Geographisch statische Tabellen, aller Länder der Erde," M. H. Keller, Frankfurt, 1901.

[12] 1939.

[13] 1940.

[14] "Bevölkerung der Erde," Justus Perthes, Gothe, 1904, Vol. 12.

[15] Does not include European Russia, 140,013,000 in 1940, 102,845,000 in 1900. Does include 35,969,000 Asiatic Russians in 1940 and 22,795,000 in 1900.

[16] Korea for 1900 from Otto Hübner; Formosa from Japan, Bureau of General Statistics, "Résumé statistique de l'empire du Japan," 1924, Tokyo, 1924, p. 5.

[17] Preliminary, 1941, includes estimate of 16,200,000 for Burma. Data for India alone (388,800,000) taken from letter from British Library of Information, New York, to author.

In Asia there is evidence in the replacement index for Japan that the present high rate of growth will continue for some time to come, although

the war will undoubtedly have a depressing effect. In 1930 Japan was growing at a rate which would increase the population by three-fifths (157) in a generation, and, although the rate fell to two-fifths (144) in 1937 and is probably still lower now, it still has a rapid increase. Korea and Formosa have also been growing rapidly in recent decades, and there can be little doubt that they will continue to grow quite rapidly for some decades unless sanitary conditions should deteriorate rapidly in the near future. There is also evidence in the censuses for the Asiatic portion of the U.S.S.R. that it is growing rapidly, and there is every reason to believe that it will continue to do so for some decades.

The censuses of India show that the total growth since 1901 has been more than 110,000,000 (Burma estimated at 16,200,000 in 1941). During the decade 1921–1931 the percentage increase was slightly in excess of 10 and during the last decade it has risen to over 14. India is still in the stage of development in which wide fluctuations in the death rate may and do affect population growth very greatly. Thus the influenza epidemic of 1918–1919 and a minor epidemic of plague practically wiped out India's natural increase between 1911 and 1921. To a population of 315,100,000 in 1911 only 3,800,000 were added by 1921, but the 318,900,000 of 1921 increased by almost 34,000,000 in the decade 1921 to 1931. The increase during the past decade (including the estimate for Burma) is over 52,000,000. Since there appears to have been no significant change in the birth rate since 1931, the higher rate of increase is probably due to improved economic and health conditions which result in a lower death rate. With more than 400,000,000 in India today, its absolute increase during the next few decades may easily dwarf that of the whole of Europe during the first half of the nineteenth century.

Although we know very little about China's population growth we are probably safe in saying that its general pattern of growth is much the same as that of India. Its population is probably increasing but from time to time it no doubt has violent setbacks in growth as India had in 1918 to 1920. In a small Chinese community studied under the author's direction for four years death rates fluctuated violently from season to season, from a low of 24 to a high of 52, average 38, while the birth rate fluctuated only between 40 and 48 (IV, 18). A great famine, a flood, an epidemic, a war, or all combined may change a large increase of one year into a deficit in the next. But as long as the birth rate remains 40 to 48, there is the potentiality of a great increase at any time the death rate can be controlled even to a moderate degree. It is not difficult to believe that China may have had a growth of 90,000,000 to 100,000,000 since 1900 (Table 99), but it must not be forgotten that this is an estimate and an estimate based on much less adequate information than is desirable. What will happen to population growth in China with even a small measure of sanitation, with peace, and with a strong centralized govern-

TABLE 100.—ESTIMATES OF FUTURE POPULATION, SELECTED COUNTRIES (THOUSANDS)

Country	Population, 1930	Population estimate, 1938 or latest census[1]	Estimate, 1940	Estimate, 1950	Estimate, 1960	Estimate, 1970
England and Wales ..	39,952('31)	41,300	40,828[2] 39,870('41)[3]	40,678 37,749('51)	39,468 32,878('66)	37,343 28,657('76)
Italy.....	41,177('31)	43,430	50,408('41)[4] 44,441('41)[5] 45,350('41)[6]	56,154('51) 46,010('51) 49,946('51)	62,963('61) 47,337('61) 55,008('61)	
Belgium	8,092	8,386	8,110[7]	7,910	7,680	7,255
Japan	64,450	72,750	71,846[8] 72,040[9]	78,355 81,840	83,594 92,758	87,753 104,797
German Empire .	72,790('33)	75,800	75,825[10]	79,059	80,230	80,535
Germany	66,029('33)		67,343[11]	69,098	69,750	69,486
Australia	6,630('33)	6,930	7,126('43)[12] 7,107('43)[13] 7,342('43)[14]	7,547('53) 7,385('53) 8,122('53)	7,788('63) 7,361('63) 8,612('63)	7,867('73) 7,105('73) 8,854('73)
France.....	41,228('31)	41,980	41,139[15] 41,249[16]	40,042 40,048	38,926 38,283	37,255 35,447
Denmark.....	3,551	3,793	4,062('41)[17] 3,822('41)[18] 3,745('41)[19]	4,453('51) 4,060('51) 3,877('51)	4,812('61) 4,228('61) 3,967('61)	5,174('71) 4,349('71) 4,002('71)
Ukraine	29,020('26)	31,901('33)	35,925[20]	41,094	46,137	

[1] League of Nations, "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940.

[2] Estimates assume fertility and mortality rates same as in 1933; no immigration. CHARLES, ENID, "The Effect of Present Trends in Fertility and Mortality upon the Future Population of England and Wales and upon Its Age Composition," Executive Committee of London and Cambridge, Economic Service, London, August, 1935.

[3] Estimates assume fertility rates will continue to decline as from 1924 to 1931 until 1944 and will then stabilize. Mortality rates based on 1924 to 1931 average; no immigration. LEYBOURNE, GRACE, "An Estimate of the Future Population of Great Britain," *Socio. Rev.*, Vol. 26, No. 2, 1934.

[4] Assumes fertility and mortality rates remain same as in 1928; no immigration. GINI, CORRADO, "Calcoli sullo sviluppo futuro della popolazione italiana," Instituto poligrafico dello stato, Rome, 1931, Series 6, Vol. 10.

[5] Assumes decline in fertility will continue as in 1922 to 1928 until 1948, then stabilize; mortality rates constant; net emigration would amount to 950,000 during 1921 to 1931 and to 400,000 in subsequent decades. *Ibid.*

[6] Natural increase assumed same as 1931 to 1935; no migration. SOMOGYI, STEFANO, "Prospettive demografiche dell regioni d'Italia," L, Economia italiana, Rome, 1937, XV.

[7] Fertility and mortality rates as in 1928, no immigration. BAUDHUIN, FERNAND, "L'Avenir de la population belge," extrait du "Bulletin d'information et de documentation" de la Banque nationale de Belgique, VI year, Vol. 1, No. 11, June 10, 1931.

[8] Constant fertility (2,100,000 births per year); constant mortality rate; no immigration. Dr. Teyiro Uyeda's estimates taken from Masaji, Inouye, "Population of Japan," Tokyo Bureau of Social Affairs, Kojimachi-Ku, 1937.

[9] Assume same trend of increase from 1873 to 1935 prevails in future. *Ibid.*

[10] Fertility and mortality rates same as in 1936; no immigration. "Die voraussichtliche Bevolkungsentwicklung in deutschen Reich," *Wirtschaft und Statistik*, 18 (23) 1, Dec. Heft 1938, p. 975. Includes Austria.

[11] Same number of births (1,162,000) as in 1927; same mortality rates as 1924 to 1926; no immigration. BURGDÖRFER, FRIEDRICH, "Volk ohne Jugend," Vowinckel, Berlin, 1935, p. 135. German territory as of 1936.

[12] Fertility and mortality rates as in 1932 to 1934; no immigration. WOLSTENHOLME, S. H., "The Future of Australian Population," *Econ. Record*, Vol. 12, No. 23 (December, 1936), p. 205.

[13] From 1938 to 1963 fertility rates decline at a rate equal to one-half of the decline experienced during 1925 to 1930, then stabilize; mortality rates as 1932 to 1934; no immigration. *Ibid.*

[14] Same fertility and mortality rates as in note 13; immigration commencing in 1938 at 40,000 a year. *Ibid.*

[15] Fertility and mortality rates remain same as in 1935; no immigration. SAUVY, ALFRED, "Perspectives statistiques sur la population, l'enseignement et la chômage," *Jour. de la société de statistique de Paris*, No. 6 (June, 1937), pp. 16–17.

[16] Fertility and mortality rates decline as from 1930 to 1935; no immigration. *Ibid.*

[17] Fertility and mortality rates as in 1921 to 1925; no immigration. JENSEN, ADOLPH, "Horoscope of the Population of Denmark," *Bull. de l'institut international de statistique*, Vol. 25, Part 3 (1931), pp. 41–49.

[18] Decline in fertility rates as from 1921–1925 to 1926–1929; mortality rates as in 1921 to 1925; immigration losses in same proportion as in 1921 to 1925. *Ibid.*

[19] Number of births (67,500) same as 1926 to 1929 average; mortality rates as in 1921 to 1925; immigration losses in same proportion as in 1921 to 1925. *Ibid.*

[20] Fertility rates of 1929 used; mortality rates of 1925 to 1926; no reference to immigration. PTOUKHA, MICHEL, "La Population de l'Ukraine jusqu'en 1960," *Bull. de l'institut international de statistique*, Vol. 25, Part 3 (1931), pp. 59–88.

ment can only be guessed at, but it is the author's guess that the absolute increase would exceed anything the world has ever known.

In addition to the evidence afforded by population growth in Japan and India regarding what happens when a nonindustrialized people adopts a measure of sanitary control and begins to industrialize, we have the evidence of population growth in the Dutch East Indies, Java in particular, and in the Philippines to show us what is likely to happen among the Malays when intertribal wars are stopped and a small improvement in sanitation takes place. Both of these areas have more than doubled in numbers since 1900.

It would appear from this brief survey of probable future population growth that far the greater part will take place in those countries and regions which are not yet heavily industrialized and which have not yet enjoyed the full effects of good sanitary control. Western and northern Europe, on the other hand, will soon cease to have any increase, as will the countries settled from this region.

This general picture of future population growth in the world is confirmed by the estimates of future population in several European countries and in Japan (Table 100). The point of most interest to us is not whether these estimates will prove to be highly accurate but that those countries which are now expected to contribute but little to the future increase of the world's population are the ones which contributed most during the last century or more preceding World War I. The growth of the future is to come from those parts of the world which prior to 1900 were not particularly conspicuous for rapid growth, although in total amount they made very large contributions to its growth even during the heyday of European expansion.

In order to make it clear why I am so certain that the population growth of the future will be more rapid in the extreme south and east of Europe, in Asia, in South and Central America, and possibly in Africa, than in other parts of Europe, North America, South Africa, and Australia, I will repeat certain matters already discussed elsewhere. In the first place, in the former group of countries better sanitary practices and medical care can accomplish much in reducing the death rates, just as they have reduced them in western Europe within the last 50 or 100 years; witness what is happening in Russia, Japan, India, and Java. In the second place, as economic conditions in these countries improve and as child care becomes a matter of more general concern, the death rate should fall to one-half or two-thirds its present level. In the third place, there is no good reason to suppose that the birth rate in these countries will come under voluntary control to the same extent as it already has in western Europe for several decades or perhaps for several generations. There are many obstacles to the rapid extension of contraceptive practices in this part of the world: A large part of the populations of all these

countries is illiterate; in several of the European countries the Church is strongly opposed to birth control and exercises a great deal of influence over the masses of the people; and in all of them agriculture is heavily predominant. It will require considerable time to build up a large urban and industrial population and spread its mental attitudes among the peasants. Just how long it will be before the existing peasant economy begins to be affected by modern industrial development no one can say, but certainly it will be several decades.

Without attempting to go into more detail regarding the probable future trends in population growth in different parts of the world, enough has been said to show that considerable and important changes in population growth are under way in different areas. These changes will almost certainly disturb the social and political equilibrium that has been achieved under the impulse of the very rapid growth of the Europeans, chiefly the western Europeans, during the last two centuries. Many new and difficult political and social problems will arise out of this new direction of population growth. The new alignment of political power which is foreshadowed in these newer tendencies in population growth will not be easily achieved. Some of the international problems associated with these different rates of population growth are discussed in the following chapter.

References

1. KNIBBS, GEORGE HANDLEY: "The Shadow of the World's Future; or the Earth's Population Possibilities and the Consequences of the Present Rate of Increase of the Earth's Inhabitants," 131 pp., Ernest Benn, Ltd., London, 1928.
2. KUCZYNSKI, ROBERT R.: "Fertility and Reproduction. Methods of Measuring the Balance of Births and Deaths," 94 pp., Falcon Press, New York, 1932.
3. PEARL, R., and SOPHIA A. GOULD: "World Population Growth," *Human Biology*, 8 (1936), 399–419.
4. SWEENEY, JAMES S.: "The Natural Increase of Mankind; a Study in World Population," 185 pp., The Williams & Wilkins Company, Baltimore, 1926.

Questions

1. Define natural increase. Work out the natural increase for your community and state, and compare with that of Australia or New Zealand.
2. Discuss the changes in the rate of natural increase during the past century in countries of western Europe or settled by western European colonists. How do you explain these changes?
3. Do the same for eastern and southern Europe and the Orient.
4. Discuss the probable trend of natural increase in the future in western and northern Europe. Does this trend seem satisfactory to you? Why?
5. Do the same for southern and eastern Europe and the Orient.
6. How is the political equilibrium of nations likely to be affected by present trends in population growth? Give reasons.
7. Do you believe World War II is in any way connected with the changes in rates of natural increase? If so, why?

CHAPTER XVI

POPULATION GROWTH AND INTERNATIONAL POLITICS[1]

The political problems arising out of the differential rates of increase of nations are among the important problems that the world faces today. What these differentials are has already been shown, and the data need not be repeated. The task before us is to investigate the way in which these differential rates of increase arising very largely out of differences in the birth rates are affecting and are likely to affect the relations between nations.

Unfortunately there is a very general impression that the problems of international politics are beyond the comprehension of most of us and that they are also of little concern to us. World War I did something to shake us out of our lethargy over international affairs, but we still feel that the complications of international affairs are so great that only the deeply initiated can hope to understand them. This may be true of certain diplomatic matters, but it is not true of the economic difficulties arising, and certain to arise, out of the fact that nations have different birth rates and, as a consequence, different rates of natural increase. These problems are not particularly difficult to understand, and the only hope of solving them without great suffering to all concerned is that we shall all interest ourselves in them and force statesmen and politicians to deal with them realistically in our interests. The essentials of the problem of national differentials in population increase can be stated very briefly and simply.

The two preceding paragraphs were written in almost this form more than a dozen years ago. They were used to introduce a chapter in the first edition of this work presenting a view elaborated in some detail in the author's "Danger Spots in World Population" (1929; VII, 9). Much water has passed under the bridge since 1929 and the attempts at a solution of the problems of population pressure, by force, which the author feared at that time might take place, have now taken place. The final step was taken by Japan in her attack on American and European possessions in the Pacific early in December, 1941. Under the influence of the passions engendered by war and the exigencies of carrying the war to a successful conclusion, there is great danger that the basic factors in the situation will be disregarded, or even forgotten, when the peace conference convenes. The author has long believed that the differential growth of

[1] General references: 9; XV, 1; IV, 15.

population leading to the increasing need by certain growing peoples of larger resources was a basic factor in international relations and as such could be ignored only at great peril. But since he did not believe that the great colonial powers would take any measures adequate to relieve the pressure of population in Japan, Italy, and Germany, he expected that these countries would try to enlarge their resources by war. It seemed to him that this was inevitable under the existing conditions; inevitable not in the sense that it could not possibly be avoided, but in the sense that the people in power in Great Britain, France, and Holland, in particular, would not be willing to make the sacrifices of power necessary to alleviate the situation. Time has, alas! proved this view correct, even though it was abundantly clear that the cost of a war, for a larger "place in the sun" on the part of the growing peoples, for the maintenance of the *status quo* on the part of the peoples already in possession, would many times exceed the national economic loss involved in making adjustments peacefully. The cost in blood and suffering, of course, is beyond reckoning.

It should be said at the outset of this discussion that the view presented here is not *universally*, perhaps not *generally*, accepted even by those whose knowledge and experience entitle them to have opinions on this matter. Many of them hold that Japan, Italy, and above all Germany had no basis in fact for their demands for more ample resources; that the outcry against "the dog in the manger" attitude of the great colonial powers—Great Britain, France, and the Netherlands in particular—was only a "blind" to conceal the real purposes of world domination, or at least regional domination, by which certain peoples were guided. In support of this view they cite the efforts of these "have-not" peoples to increase their birth rates and then to use their increasing numbers as a reason for demanding larger space (1).

Those who do not believe that changing population pressures are of any great significance in determining the efforts at territorial expansion now in progress also deny that the possession of great colonial areas by the "haves" places any restriction upon the economic use of these areas by the "have-nots." This question cannot be argued here, but it may be asked, why, if this is the case, the British and the Dutch are so anxious to retain possession of the great areas now under their control which they are unable to exploit because of lack of colonists, or capital, or both. According to this argument the Japanese or the Germans are just as free to exploit territory under British or Dutch control as the nationals of these countries. They are equally certain, however, that, conditions being reversed, they could not thrive in German or Japanese colonies. The great difficulty, of course, is that no nation trusts another to treat it fairly in the use of the natural resources of an area over which a foreign flag flies. There are a thousand ways, many of which do not appear on the statute books or in the executive orders and administrative regula-

tions, of hampering the economic activity of a rival when one also has political control. The most convincing proof that political control is generally believed to give an economic advantage to the nationals of the governing country is the reluctance to hand over this control to another country or to an international authority even when it is clear that the governing country cannot or will not settle the colony with its own people.

The author's thesis here is that the changing rates of population growth are an important factor in creating changing pressures of population on the resources available to different peoples and that these changing pressures if disregarded are almost certain to lead to violent attempts to effect new adjustments more favorable to the growing people. It is the author's belief that the present war is in large measure the consequence of past disregard of these changing pressures of population on resources and that if in the peace conference which is to come this situation is not faced frankly and honestly the war will have been fought largely in vain. With this introduction we shall proceed to examine the facts on which this conclusion is based.

1. Lands Held Out of Use

The expansion of Europe's population which has taken place since about 1700 has been accompanied by a preemption by certain European powers of vast areas of the earth's surface which previously were under the control of tribal peoples or of agricultural civilizations which had comparatively little power of military resistance to European encroachments. In some cases European settlers have migrated in rather large numbers and have taken complete possession of the land, carrying on agriculture, establishing industry, and developing trade with their own labor. The United States, Canada, and Australia, and to a lesser extent South Africa, are examples of the settlement and exploitation of new lands by Europeans by their own labor.

On the other hand, European peoples have occupied by military force great areas which they have never made any attempt to settle. In these areas they have generally depended on native labor of the colored races for the exploitation of the natural resources. One need only mention the occupation of India, Burma, and the Malay peninsula by the British, the parceling of the important islands of the western Pacific (except the Philippines) between the Dutch and the British, the conquest of Indo-China by the French, and, finally, the dividing of practically the whole of Africa among the interested European powers, to realize the extent to which the control of Europe over the resources of the world grew as its population increased.

In this expansion of European control in Africa, Asia, and the neighboring islands the British came out a long first, with France and Holland

getting huge areas also. Belgium and Portugal also received not inconsiderable territories in Africa, while Germany and Italy, at that time not great military powers, were later given a few scraps of territory which were of little value either militarily or economically.

The Americas were also included in this European expansion but, with the loss of the thirteen British colonies which became the United States, a process of disintegration set in which resulted in the practical elimination of European control in the Western Hemisphere by the middle of the nineteenth century. Indeed, since the Monroe Doctrine has been in effect European political influence has amounted to little in this hemisphere, except in Canada. Hence, this region has not been directly concerned in the politics of European expansion for more than a century. The situation in this respect is less settled today than it has been for some time because the totalitarian powers are looking with covetous eyes upon the raw materials of America. But since the Western Hemisphere has been outside the political control of Europe for so long its situation vis-à-vis the expansion of European peoples and more recently of Japan will be mentioned only casually in this discussion.

Of all the territory in Africa and Asia and in the western Pacific which has come under European control only Australia and New Zealand, and to a lesser extent South Africa, have actually been settled and developed by Europeans. Other areas are located largely in the tropics, and up to the present the European has made no settlement there which can be compared to those he has made in the temperate parts of North and South America, South Africa, and Australia. In the tropics the white man is an exploiter pure and simple; he takes what he can and goes back to Europe to enjoy his spoils. With only a few exceptions he does not make his home there and become a true settler interested primarily in the welfare of his adopted home (7).

The result of the colonial policies followed by the European powers and the reluctance of Europeans to take up permanent settlement in the tropics is that a large part of these tropical possessions in Africa and in the Pacific islands is still very thinly peopled by the indigenous inhabitants, who wherever possible are exploited by the white man (11). But the European has not hesitated to bring in other colored laborers, chiefly Chinese and Indians, wherever his exploitation would be made more profitable thereby. He has, however, been reluctant to open these areas to people having strong national sentiments which might in time lead them to oppose the present political control, even though there are vast areas whose settlement and use might be hastened by the encouragement of such immigration.

Regardless of the absence of definite prohibitions against the settlement of the Japanese and the Indians and the Chinese in most of these colonies, the practical effect of their control by Europeans has been to

exclude these peoples from many areas and to make the exploitation of their natural resources more difficult to non-Europeans than to Europeans and more difficult to Europeans who were not nationals of the governing power than to those who were. Thus it has come about that great areas of the world are practically being held out of use by European powers, which even while their populations were still increasing rapidly showed no ability to settle these lands and which now have no increase in population to send out to settle anywhere.

So far as Europe is concerned this situation is further aggravated by the fact, as shown above, that there are still several European peoples which are growing at a fairly rapid rate but have no place to which they can migrate, as has been possible in the past. Furthermore, in almost all cases these are peoples having no colonial possessions, and, even though they are not excluded by law from taking part in the exploitation of the European-held colonies of other powers, they are not welcomed and they labor under many handicaps as compared with the nationals of the controlling power. There are, then, peoples who are still growing in numbers and those whose industrial resources are limited, who feel that they are being unfairly handicapped in their efforts to make a better living because of the political control of great and largely unused areas of land by the powers that were on the ground early and took for themselves those areas which the natives were too weak to defend. As was said above, this is too large a subject to discuss adequately in less than a book but it is also too important to ignore in a general survey of population problems. Hence the situation of two countries which, in the writer's opinion, have urgent population problems arising out of their growth of population will be discussed briefly. These countries are Japan and Italy. They still have a fair natural increase of population but have only meager resources on which to employ these growing numbers. Their situation merits some analysis, even though it must be inadequate. By way of calling attention to the nature of population pressure the situation in China will be mentioned in passing.

2. Japan (3; 12)

Japan's economic situation has been growing increasingly difficult for the past two decades at least. Her population has been growing rapidly and she had but meager resources with which to support these increasing numbers. (8; 15). From an estimated population of about 33,000,000 in 1872 Japan had grown to 64,450,000 by 1930 and to 73,114,000 by 1940. In 70 years she more than doubled in population. In the first half of the decade just passed her population increased by an average 1.5 per cent, or 15 per 1,000 per year, but in the second half of the decade this fell to a little over 1 per cent. Although it cannot yet be said with certainty just how much of this decline can be attributed to

the lowering of the birth rate and how much to the raising of the death rate, it appears highly probable that both are operating strongly under war conditions. This is shown by the fact that the estimated increase for the year ending Oct. 1, 1940, was only 239,000 as compared with an average of over 1,000,000 a year prior to 1937.[1] Japan is but a small country—147,652 square miles—and not more than one-fifth of this area can ever be cultivated. Only a little over one-sixth of it is now being tilled. Japan is, therefore, the most densely crowded country in the world, if we measure density by the number of persons per square mile of arable land (Table 101). On the average, all her arable land has to carry as dense a population as does the best land in China, India, and Java.

TABLE 101.—PERSONS PER SQUARE MILE OF ARABLE LAND, SELECTED COUNTRIES, 1937 TO 1939[1]

Country	Persons per square mile	Country	Persons per square mile
Canada	121	Greece	796
Australia	137	Germany	927
United States	259	Belgium	2,126
Spain	427	Switzerland	2,153
Sweden	442	Netherlands	2,210
New Zealand	537	Great Britain	2,421
France	524	Japan	3,131
British India	780	Java and Madura	1,394
Italy	883		

[1] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok for Sverige," 1941, Stockholm, 1941, pp. 342–347, 366.

3. POSSIBILITIES FOR AGRICULTURAL EXPANSION IN JAPAN (13)

As has been said, there is little opportunity for the expansion of agriculture in Japan proper. Indeed it is highly probable that the use of fairly level land for the expansion of city areas, the establishment of airfields, and the modernizing of main highways will equal or exceed the area that can be added to the tillable land. Hence, one is justified in saying that Japan has reached the practicable limits of agricultural expansion. This does not mean that yields per acre cannot be somewhat increased as better varieties of rice, fruits, wheat, and so forth, are developed and as more fertilizer is used, but it does mean that additional yields will be gained only at the price of an amount of labor even greater than that now being employed per unit of production.

As regards agricultural possibilities in her colonies, Japan has nothing that is of much value to her as a place for the settlement of her excess

[1] This decline in population growth during the past three or four years has aroused much interest in population questions in Japan and led to the proposal of a national population policy, as will be noted later.

numbers, and this holds even if we consider Manchukuo an integral part of the Japanese Empire (14). Korea is increasing in population at an even more rapid rate than is Japan, for exactly the same factors that have cut down the death rate in Japan have been working in Korea since Japanese occupation became effective. Internal dissensions have been quelled, a certain amount of modern sanitation has been insisted upon, and, in general, the economic conditions of the people have been improved. Furthermore, a transportation system adequate to the present needs of the country has been provided, and this, together with the growth in efficiency of agriculture and industrial production, has rendered famines a negligible factor in keeping down the growth of the people. In 1930 Korea's population was growing at a rate that would double it in about 36 years. At the moment, as in Japan proper, the rate of growth seems to have slackened appreciably (9 per 1,000). Probably this decline is more or less closely associated with the war in China, but in any event it has been clear for some time that a rate of 16 to 18 per 1,000 per year could not long continue in Korea simply because there is not sufficient land to support such an increase for more than a few years. In the meantime Japan derives but small benefit from Korea as a colony (except as a source of food), for the Japanese have not been able to settle any appreciable number of their own people on the land of Korea.

The reason that the Japanese have not settled in Korea to any large extent is not because there is any legal restriction upon their doing so, nor is it because of the strong attachment of the people for their homeland, though all peoples who have been long settled in a given place have this attachment. The Japanese have shown very clearly that they will migrate when the conditions of migration are satisfactory and the chance of economic improvement is good. The influx into Hawaii and California and now into Brazil seems to prove that the Japanese are much like the Europeans in the conditions governing their migration.

The real reason why there has been but little migration from Japan to Korea is that the economic opportunities open to the Japanese in Korea are few. The Japanese have a higher standard of living than have the Koreans. For this reason they cannot compete with the Koreans in those occupations in which ability to turn out a large amount of hard work on a small income is the chief factor in success. Naturally they will not go to Korea to engage in occupations in which they must enter into open competition with the Koreans. People always migrate in the direction of what they believe to be larger economic opportunities. How little chance there is for the Japanese in Korea is also shown by the fact that the Japanese industrialists have occasionally brought Koreans into Japan to use for cheap labor to underbid the natives when the latter attempted to organize or became otherwise obstreperous and insub-

ordinate. There is, therefore, not the least likelihood that the Japanese can find any appreciable relief for their surplus population in Korea.

Only a few hundred thousands of Japanese lived in Korea in 1940. About one-half of these were found in the eight larger cities; and although statistics of the occupations of the other one-half are not available the author has been told by men he considers well informed—foreign missionaries, Koreans, and Japanese—that nearly all of them are engaged in government service, in trade, and in mechanical occupations where they are practically free from competition with the Koreans; in other words, the Japanese in Korea engage in sheltered occupations. They can no more compete with the Koreans in heavy hand labor or in agriculture than native Americans can compete with the Japanese on the farms of California, or with the Poles in the steel mills of Gary, Ind. The story is the same the world over.

In like manner the Japanese find no outlet in Formosa. The total number of Japanese living there in 1940 was less than half that living in Korea. Most of these live in the cities and are engaged in government service, in the professions, in trade, or in the skilled mechanical work needed on the railroads and about the ports. The native agricultural population of Formosa is largely of Chinese stock and is even more difficult to compete with economically than the Korean population. Besides, Formosa is only a small island—13,890 square miles—a considerable part of which is rough and mountainous. It already has a population of about 5,500,000 people and a density of about 400 per square mile. Since a considerable part of Formosa is mountainous the effective density on tilled land is certainly more than twice as great. Of course much of this land—about half—yields two crops a year; but even so the population of Formosa is already quite dense, and the area of cultivation can scarcely be extended more rapidly than it is needed to care for the increase of the natives. Indeed, it is doubtful whether it can provide for them at their present rate of increase, 20 or more per 1,000 per year, for any great length of time. It is no exaggeration, then, to say that there is almost no opportunity for Japanese expansion in Formosa, although Japan will continue to get large amounts of sugar and rice from there.

What has been said about Japan's opportunities for expansion in her colonies applies equally to Manchukuo. The Japanese cannot compete in the agriculture of Manchukuo with the Chinese. The total number of Japanese in Manchukuo, outside Kwantung—the leased territory—was only about 229,000 in 1930 and the total in 1940 is not much in excess of 500,000. Most of these, like their fellow countrymen in Korea, are in the cities, engaged in trade or in skilled work in Japanese industrial enterprises. They have not entered agriculture, and there is not the least likelihood that they will. The simple fact is that they know nothing of

Manchukuoan agriculture; they do not like the severe winters; they are not accustomed to eating its crops; and they have a higher standard of living than the Chinese. The Japanese have no chance as settlers in Manchukuo. The correctness of this judgment of the possibilities of Japanese agricultural settlement in Manchukuo is borne out by the virtual failure of the grandiose settlement schemes laid out since Japan took over the country in 1931. Only about 25,000 families have actually been colonized there during this period, while the gross immigration of Chinese was approximately 1,000,000 in 1939, the net amounting to almost 500,000, and in 1940 it was expected that the gross of Chinese immigrants would amount to 1,400,000. It may be noted in passing that the large areas in Manchukuo open to immediate settlement are in northern Manchukuo and in Inner Mongolia. The Japanese do not like these regions and are not settling there in any significant numbers. It may be that the ease of securing employment in Japan since the beginning of the China war is a retarding factor of some importance, but it should not be forgotten that even before 1937 there was no appreciable migration of Japanese agriculturists to Manchukuo.

At the present time (March, 1942) it is impossible to do more than guess at the position which Japan will occupy in China at the close of World War II. But whatever this position may be it is quite certain that the Japanese will not be able to settle many colonists there. They have a higher standard of living than the Chinese and cannot compete with them in actual cultivation of the land. If Japan is to secure land suitable for agricultural colonization it must be found in the islands of the western Pacific which are now rather thinly settled and which were controlled by European powers. At the best, all Japan can hope for from her colonies and from China is what the British and the Dutch and the French have got from India, Java, and Indo-China, not a new home for millions of Japanese colonists, but easy berths for a few hundreds of thousands of businessmen, government officials, and clerks until such time as the natives can take over these jobs and starve out the "foreigners," and cheap raw materials for her industries.

4. Possibilities for Industrial Expansion in Japan

For some time past many well-informed Japanese have realized that there was little opportunity for Japan to expand agriculturally at home, in her colonies, or on the mainland of China. They also realized that they could only secure colonies in the Pacific islands by war, hence, many such people came to look to industry and commerce to provide for Japan's surplus population. They pointed to the huge exports of manufactured goods sent out by Great Britain and the fact that with these exports she buys over half of the food consumed by her people, as well as much of the raw material for her factories, to show what it would be

possible for Japan to do along this line. They also pointed with pride, and wholly justifiable pride, to the rapid industrial and commercial development that had already taken place in Japan, and they did not believe it unreasonable to assume that it could continue to increase at its present rate.

This line of analogical argument was apparently convincing to many people. For my own part, however, I do not consider it sound (Chap. VII). The comparison between the situation of Great Britain and that of Japan is misleading in a number of respects. In the first place Japan does not have natural resources comparable to those of Great Britain on which to base a large industrial development. She has but very meager supplies of coal, iron, and other important minerals (2). Without doubt the rich mineral deposits of Manchukuo constitute one of the chief attractions of this area, although the possibilities of an increase in trade with its 30,000,000 to 35,000,000 people were not without influence in her decision to take over this region.

In the second place Great Britain developed her industrial strength in a world that was predominantly agricultural. She had but little competition to meet in placing her products on the world markets. Besides, she had a large and rapidly increasing body of English-speaking people abroad that looked to her for manufactured products. Japan, on the other hand, has to meet very keen competition and has no appreciable body of Japanese living abroad who prefer to buy Japanese products. Even now, early in her career as an exporter of manufactured goods, she is threatened with very serious trade wars because it is believed she is using unfair methods of competition in placing her goods on foreign markets.

In the third place both capital and technical knowledge and skill are more mobile and more abundant today than in the days when Great Britain was establishing her industrial supremacy. This fact makes it increasingly difficult for any nation to retain markets, even if once gained, because the development of national self-sufficiency is everywhere increasingly easy if there are any natural advantages present, such as good deposits of coal and iron, copper, tin, oil, or if agricultural raw materials are cheaper.

In the fourth place there is a very marked tendency in the world today to foster home industry by raising protective tariffs or by "safeguarding." In almost every country, even in Great Britain, the manufacturers are demanding that they be protected—safeguarded—from the dumping of cheap goods into their markets by peoples who can produce more cheaply than they. Of course this tends to make the expansion of foreign trade slower than it would otherwise be, because it fosters home industry. Japan has to face a much more difficult situation in expanding her industry and commerce than Great Britain did a century ago and,

hence, will find the extension of her foreign trade beset with many difficulties not encountered by the latter. Even the retention of what she already has is likely to require great skill and shrewdness. Furthermore, Japan's own experience in the development of machine industry is the best proof we possess that under modern conditions industrial techniques very rapidly become the common property of all peoples. A study of our exports to Japan in recent years shows that machine tools have become increasingly important, while many finished products are vanishing from the list. If Japan can do this with her relatively meager natural resources it seems reasonable to assume that many other as yet non-industrialized areas can also do it and, hence, will not need many types of manufactured imports from either Europe, America, or Japan, in the near future. The hope that Japan can care for her growing population by the expansion of her industry and trade is not being realized as far as one can judge. Even before the "China Incident," it appears that the standard of living in Japan was deteriorating. In view of these conditions one must conclude that it is highly questionable whether Japan can increase her manufactures and maintain a level of foreign trade sufficient to care for her growing population at customary levels of living.

The uncertainties of industry and commerce as the bases for population support are discussed more fully in Chap. VII but in terms of what *has been* not in terms of what *will be.* What conditions *will be* when this war is over cannot even be guessed at. Some way may be found to give Japan access to the resources she needs to support her growing population at an improving level of living. If this is not done the population pressure which has been developing during the last two or three decades in Japan will continue to increase and another explosion may be looked for, as soon in the future as it can be prepared.

In 1935, after the seizure of Manchukuo, the author wrote the following four paragraphs in the second edition of this work and he cannot improve on them today as a general statement of the situation, although our war with Japan may make them appear out of date at first reading.

The tension in the Far East arising from the rapid increase of Japan's population without a corresponding increase in her resources has already caused Japan to upset the *status quo* in eastern Asia and is likely to lead to even more serious disturbances in the near future. Reference is here not only to the possibility of the Japanese conquest of China but also to the likelihood that Japan will set out to take some of the more thinly settled islands in the western Pacific when their present owners become involved in, or rendered weak by, another war in Europe. European peoples are holding some hundreds of thousands, perhaps a million, square miles of tropical lands south and east of Asia which they cannot settle and which they cannot even exploit for lack of labor and capital, while the Japanese, who are chiefly of Malay stock and are consequently able to live and work in the tropics, are largely excluded from these lands as settlers and thus from the effective exploitation of their resources.

It requires little imagination to picture the state of mind which will develop among the Japanese when the facts of this situation are fully realized. Imagine the feelings of a proud people of warlike traditions as they come to realize the injustice of being kept from using parts of the earth which they greatly need, simply because other peoples who do not really need them wish to preserve them for exploitation by children whom they will never have. None of us likes the dog in the manger which, though not able to eat the hay himself, will not let the horse eat it. This must be exactly the way that the Japanese are coming to feel about the Europeans who hold vast areas of unused land which they certainly do not need now, which it is more than doubtful whether they can ever use. It is quite likely that they also feel the same way about the open-door policy in China, while trade preferences are being built up within the possessions of the great European colonial powers, and tariffs are being levied with the idea of making nations more and more self-sufficient.

When the situation is presented to Europeans the reply is frequently made that the Japanese should cut their birth rate as the Europeans have already done, and then they would not need these new lands with their larger resources. This, of course, is what must ultimately happen, but it is at present a counsel of perfection. It is not within the realm of the practically possible and, therefore, cannot be considered as a solution of the immediate difficulties that Japan faces. A people with the traditional background of the Japanese cannot possibly be expected to adopt the practice of birth control universally in the space of a few years. It runs counter to many of their most cherished beliefs and seems to many of them a craven type of conduct. In the course of time birth control will become general among the Japanese; but only those who have never studied the processes of social change can really hope for a sudden change in the reproductive life of a whole people. Even in the West it has been more than 50 years since the knowledge of birth control became fairly widespread and means for its accomplishment became fairly easy to secure, yet its practice is by no means universal today. Certainly as long a period, and perhaps an even longer one, must be granted to Japan because its social organization is, on the whole, less congenial to such innovations than our own was 50 years ago.

In the meantime, while the Japanese are learning to control their growth, their need for more land and larger resources may well lead to war if this is the only way in which it seems likely that these can be secured. So far as one can see there is but one alternative to war in this case, and that is the voluntary cession to Japan by Europeans of lands not used and not needed by them. How likely it is that Europeans will alienate lands that they now hold to avoid war no one knows. We only know that such alienation is contrary to the nationalistic and imperialistic spirit prevailing among Europeans and that war is usually preferred by the statesmen to any action which appears to them to compromise "national honor." It does no good to blink these facts. They are ugly, but they must be faced just as the Japanese must face the fact of increasing intensity in the struggle for life within their present narrow confines.

In the judgment of the writer this statement of the case will continue to hold good when the present war is over if, as said above, some way is not found to give Japan ready access to the resources she needs to support

her people. It is not improbable that the Japanese birth rate will decline after this war but it can scarcely be hoped that it will drop low enough to prevent a considerable increase in numbers for the two or three decades immediately following. More ample resources or a growing population pressure which will again issue in an explosion seem to be the only alternatives until the birth rate comes more completely under control.

5. China (5; 6)

China's population problem is not of such immediate seriousness from the standpoint of world peace as that of Japan. There are several reasons why this is the case. In the first place it is not likely that there will be any such rapid increase in China's population as has taken place in Japan in recent decades. The improvement in economic conditions and consequently in health conditions which has been the important factor in lowering Japan's death rate will almost certainly proceed much more slowly in China; hence population growth will also be much slower.

In the second place there is room for some expansion by the Chinese into outlying parts of the empire. Manchukuo and Inner Mongolia will still accommodate some millions of settlers, and it is said that there is also a considerable area that can be brought under cultivation in the southwestern part of the country, in Yunnan, Kweichow, and Kwangsi provinces. In addition many people well acquainted with Chinese agriculture believe that there is considerable opportunity to improve tillage, since it is still much inferior to that of Japan, to use the land already in farms more fully, and to add to the tilled area by better drainage and irrigation works and by use of the gentler slopes of the hills for nonirrigated crops and orchards. In a word, there can be no reasonable doubt that China is not nearly so close to the practicable limits of food production as is Japan. The author's personal observation leads him to agree with the above evaluation rather than with the view widely current, that Chinese agriculture represents the ultimate human achievement in food production. But it should be made clear that increased food production in China along the lines suggested above does not mean any appreciable improvement of the general level of living as long as the birth rate remains as high as it is. It would merely enable the country to support a larger population at about the present level of living (IV, 18).

Finally, the most important factor preventing the pressure of population in China from becoming a matter of world concern in the near future is that China's government is not yet strong enough to unify the country and develop the spirit of nationalism which would support any aggressive action. It will probably be some time before China becomes strong enough militarily to undertake an aggressive war to secure new territory and larger resources. China has a long hard road to travel before she can become a nation in the Western sense. Her people are illiterate;

they do not know what is happening in the world; they are accustomed to dire poverty and a very high death rate. No very serious international complications are likely to follow from China's being kept within her present boundaries during the next few decades.

6. Italy (4; 10; 11)

The following paragraphs on Italy were written in substantially their present form in 1930, but the situation will remain much the same at the close of the present war with the exception that the birth rate of the country steadily declined until about 1937. Since then it has risen a little. But the age composition of the Italian population is such that there will be a substantial increase for some time even after the net rate of reproduction falls below 100. Hence, the general economic situation in Italy is quite likely to deteriorate appreciably if at the close of the war she is not given the means to employ her population to better advantage than is possible with her own resources.

Italy, like Japan, is a small and a poor country. It is even more destitute of the basic resources of modern industrial life than is Japan. It has no important mineral resources, except building material, in abundance. Nor is it a rich agricultural land. Not only is a considerable proportion of its area rough and mountainous, but the seasonal rainfall also definitely limits its productiveness. Life is extremely hard for a very considerable part of the Italian people. The government has done much in recent years to expand the agricultural area by drainage and by building irrigation works. But not a great deal of additional land can be gained in this way. The latest data available indicate that Italian population has a net rate of reproduction which will lead to a 12 to 15 per cent increase in a generation and in actual numbers the excess of births over deaths was nearly 450,000 in 1939.

There is some outlet for Italians through emigration, although this has been quite restricted since World War I, chiefly because of the immigration policy of the United States and, in recent years, the rather severe restrictions placed on the migration of Italians into Argentina and Brazil. Even the rather large seasonal movement of Italian laborers to neighboring European countries was largely cut off during the depression years, as was that to South America.

It was hoped that the conquest of Ethiopia would open up a large amount of land for settlement to Italians, but up to the outbreak of the present war this hope had not become an actuality. The Italians are well aware that, while they are yearly becoming more crowded and need new lands for settlement and freer access to mineral resources, other European nations have both in such abundance that they cannot use them. England and France, in particular, own outright or control (under

mandate) lands not far distant in Asia and Africa which Italy really needs and could settle to good advantage. The African lands which Italy held prior to the conquest of Ethiopia were almost valueless from the standpoint of settlement, nor did they possess the needed minerals.

As was shown above, France's population has been practically stationary for some time; consequently France has had no people to spare for settlement in colonies nor for the development of her mandates. Any increase in the French population in northern Africa must come from the French already settled there and not from the homeland. The French are no longer a swarming colonizing people. In this respect they are quite different from the French that we know in Canada. In Tunis, which is under French control, the Italians already outnumber the French and would soon possess the country if events were allowed to take their natural course. There can be little doubt that but for the military power of France in the past, her colonies around the Mediterranean would have been swallowed up in a comparatively short time by Italy, through colonization and the consequent expansion of the race. Both the French and the Italians know this, and it has worked to increase the feeling of insecurity in France and of irritation against the *status quo* on the part of Italy. Much of the antagonism between Italy and France is readily understood in the light of these facts. France has felt the need for strengthening her military position by alliances with people who also have something to fear from Italy's expansion, for example, the Little Entente, while Italy has felt that most of her efforts toward expansion in the Mediterranean area were being frustrated by France.

England, too, has come in for a share of Italian resentment, since she also possesses lands that Italy could use advantageously and was also in part responsible, so the Italians believe, for keeping Italy from securing more substantial rewards at Versailles in 1919. The traditional good feeling between Italy and England has been dissipated by this situation. Furthermore, England possesses large colonies in tropical Africa which she has done but little to develop and some of which the Italians feel they could exploit to good advantage. In any event the Italians have come to feel that their legitimate aspirations to empire are being thwarted by France and England, and they resent this opposition and look upon the situation as something which can be righted only by force. This seems to be the basis of much of the saber rattling and fiery oratory of the Fascists for the last 15 years.

The attitude of Italians is not difficult to understand, nor are their feelings difficult to sympathize with, if we ask ourselves how we should feel if we were densely crowded together in a small area and our neighbors, Canada and Mexico, for example, would not allow us to settle on some of their unused lands so that we could till them and thus make a decent living for ourselves and our children. Meekness in the face of

manifest injustice has never been a distinguishing trait of the American, and there is no reason to expect it of other people or admire it in them.

As in the case of Japan, it will be said that the Italians should use birth control to solve their population problem. They are already doing so, if one may judge by the decline in the birth rate during the last 40 years. But again we must call attention to the fact that the general adoption of birth control necessarily takes some time; it cannot be accomplished overnight, and even after the movement is well under way, as it appears to be in Italy, the death rate declines so rapidly that for several decades there is little if any decline in the rate of natural increase.

Of course there have been and probably still are many people in Italy who want a large population and a dense one so that there will be plenty of soldiers. But there are plenty of such people in most other countries, too. Italy is by no means alone in having had an active and powerful group of jingoes. But it seems to the writer there is a real difference between the jingoism of imperialism and the consciousness of national necessity arising out of a growth in numbers which, under existing conditions, cannot be controlled by public authority. There is a very real basis for Italian resentment against France and England, and it will not be dissipated by Italy's defeat in the present war. It will remain in the future as it has been in the past a potent source of unrest. Like Japan, Italy, unless given resources with which her people can make a decent living, will remain a danger spot and will have to be kept in complete military subjection. The writer believes these to be the only alternatives to another attempt by Italy in the not-distant future to secure larger resources by force of arms.

7. The Slavs of Central Europe

As we have shown above, the people of central Europe are still growing rapidly although their rates of natural increase have begun to fall in recent years. The latest data preceding World War II indicated that the peoples of the Balkans and Poland were increasing by from 10 to 25 per cent in a generation. Obviously there is no chance for the extension of the boundaries of any of these countries save at the expense of their neighbors, who probably are increasing at about the same rate. Just as obviously this would afford no real relief to population pressure in this area. But if population pressures continue to increase, as is practically certain to happen unless large-scale emigration is organized, there can be little doubt that existing political frictions will increase and thus heighten the instability of the European situation. A traditional war settlement will not greatly change this situation. Fortunately the birth rate is declining in this region and, judging from what happened following World War I, it is probable that this decline will be great enough to prevent as rapid an increase in the future as seemed probable only a few

years ago. But it should be remembered that here, too, the population is young, and with its present age composition it will continue to increase for some time even after the net rate of reproduction falls below unity (100). The death by war, disease, and starvation of some millions of Poles and of the peoples in the Balkans would, of course, ease the pressure for a while and if the decline of the birth rate continues it might lead to a more or less permanent relief of population pressure. But one can only guess at what will happen in this respect.

8. Felt Pressure and Actual Pressure of Population as a Cause of War

The author would call attention here to the fact that it is not the absolute pressure of a population on its resources which makes an explosion probable. A country may be very densely settled and the people may be extremely poor, but there may yet be little danger that they will go to war in the effort to expand. In the writer's judgment this is the situation in China today. When, however, a people comes to feel that it is being kept from lands and resources it really does need by peoples who are not using them and do not need them, we have a dangerous situation. It is the feeling of the pressure of population on resources rather than the intensity of the actual pressure that stirs up trouble. When the Japanese, the Italian, or any other people which has to struggle to make a bare living sees other peoples living in comparative ease because of larger resources it very naturally comes to feel that it is being unjustly treated because it is not allowed to share nature's bounty. When circumstances are such as to make this difference keenly felt, we have the makings of a conflagration. It is not *actual* pressure but *felt* pressure that creates the international political problems arising from the differential birth rates of nations. The people of Java, although densely crowded and poor, do not now present any very serious population problem to the world, because it does not occur to them that there is anything they can do to better their situation. Certainly, they would not go to war to get more raw materials or more land, if for no other reason than simply because they are not politically and economically organized to use force on their neighbors. Thus we need not be greatly concerned from the standpoint of the maintenance of peace over the sufferings of the poorest peoples. They are too weak to undertake the conquest of other lands. The Japanese, the Italians, and the Germans, on the other hand, believe that there is a way out, but that it will never be granted them freely. They believe that they will only get justice by force of arms; hence, they are out to take what they want. They feel the pressure of population far more than the Chinese or Indians not because they are as poor but rather because they have had a taste of better living and want more. They want to secure the comforts of life which have come to those peoples

who have been fortunate enough to secure larger resources, and, since they have also learned by experience that force is the only means by which the *status quo* can be changed, they have not hesitated to use it and the writer believes that they will use it again in the future under conditions similar to those that have prevailed during the last two or three decades.

I would not give the impression that I believe the poverty of resources in relation to population is the only cause of war or that it may not be a minor factor under certain conditions, but I do believe that many of the more obvious sources of international friction rest on the economic differences between nations and that these economic differences in turn often arise out of the changing ratio of population to resources.

9. The Way Out

There is a way out of the immediately pressing problems of differential population pressures other than war, but I am not very hopeful that it will be adopted. Stated very briefly, the only way to avoid war is for those powers which hold land that they are not using and that they are not likely to use in the near future, if at all, voluntarily to cede some of this to the crowded peoples. Japan might well be given large areas in the East Indies and New Guinea without in any way injuring the economic position of the European powers that now possess these lands. There is a very good reason to believe that the Japanese can make good use of tropical lands—see what they have done in Hawaii—and they are in sore need of the minerals which some of these islands contain.

The situation is much the same as regards Italian expansion. There is land in North Africa and in Asia, on the Mediterranean, which could be given to the Italians, and they could also be given some tropical colonies. France and England cannot use this land well, and the native populations will grow only as they are taught the elements of sanitation by some outside people. No injustice would be done them by allowing the Italians to settle on unused lands and to carry on reclamation works to provide additional areas for settlement.

In central Europe, the way out is probably more difficult in many respects, but, if only a tithe of the cost of the next war and of the energy that will be spent in planning it were devoted to finding a way to avoid it, much could surely be done to ease the present strains and to prevent new ones from developing.

Will these things be done? No one can tell. The outlook is not particularly hopeful. Imperialistic and nationalistic attitudes have a mighty grip on the world in this age, and we shall probably wait until war comes and then try to adjust matters at another Versailles Conference which will probably be no more successful than the last in removing the underlying causes of war.

Finally, another word about birth control. If man is determined to control his death rate, there is only one enduring solution of the problem of differential national pressures of population. It is birth control. For the present there is room to allow Japan and Italy and various other peoples to expand, but in 50 years, perhaps, there will be no more room. It behooves us to realize this and to see that all people are made aware of the fact that man can live decently and in peace only if he deliberately undertakes to control the growth of his numbers so that they will not exceed his ability to provide for them at such standards as he deems desirable.

Again I have allowed what I wrote a dozen years ago to stand substantially as written. Today we are in another war "to preserve the freedom of mankind." In referring to the Versailles Treaty above I do not, for a moment, grant the German thesis that it is the cause of the present war. But I do believe that, if we fail to recognize when this war is over that a Germany with 65,000,000 people needs a larger backlog of natural resources than a Germany of 40,000,000, that a Japan of 75,000,000 needs more land than a Japan of 50,000,000, and that an Italy of 45,000,000 is different from an Italy of 30,000,000, we shall only be preparing trouble for ourselves and the world in the future. Merely to damn Hitler, Mussolini, and the Japanese military clique and to exterminate them and their inner ring of supporters will not guarantee a peaceful world. Most of the population gains in these lands have come about as the inevitable consequence of the lowering of the death rate which has accompanied economic improvement. Very little of it can be attributed to the encouragements to larger families definitely undertaken in these lands. In the course of time it may well be that population will become stabilized in all lands and that it will be nicely adjusted to the means available for its support, but such an adjustment will not take place automatically. It must be made by man using the best information available and a large measure of good will. It is this I am urging as the way out. If we are unwilling to face the facts and make substantial concessions to the peoples who are growing and are bound to grow for some time to come, we shall have to go the hard way—the way of war—the way we are now traveling, and when it is all over we shall find that we have been moving in a circle. For years I have held that the territorial *status quo* could not be maintained as long as great changes were going on in the relation of these populations to their resources. I have also argued that, since population growth had not yet come under man's control, to any great extent, except as he lowered the death rate, the sensible thing to do was to make territorial and economic adjustments to take care of these changes in numbers until such time as man did purposefully control his numbers. In my opinion the alternative to making these adjustments voluntarily is war, which not only seldom solves the problems

which have led to it but is an extremely costly process both economically and spiritually.

References

1. ANGELL, NORMAN: "The Great Illusion, 1933," 308 pp., G. P. Putnam's Sons, New York, Part 3, The Verdict of the Events, 1933.
2. BAIN, H. FOSTER: "Ores and Industry in the Far East," 288 pp., Council on Foreign Relations, New York, 1933.
3. BLAND, J. O. P.: "China, Japan, and Korea," 327 pp., Charles Scribner's Sons, New York, 1921.
4. CIPPICO, ANTONIO: "Italy; the Central Problem of the Mediterranean," 110 pp., Yale University Press, New Haven, Conn., 1926. (Institute of Politics Publications.)
5. DUTCHER, GEORGE MATTHEW: "The Political Awakening of the East. Studies of Political Progress in Egypt, India, China, Japan, and the Philippines," 371 pp., Abingdon Press, New York, 1925.
6. EAST, EDWARD M.: "Mankind at the Crossroads," 360 pp., Charles Scribner's Sons, New York, 1923.
7. HUNTINGTON, ELLSWORTH: "Man and Nature in Hot Climates. How a Tropical Setting Affects Racial Culture and Density of Population," *Asia*, 27 (1927), 822–829.
8. INOUYE, MASAJI: "Population of Japan," 27 pp., Bureau of Social Affairs, Tokyo, Japan, 1937.
9. KIMBLE, GEORGE H. T.: "The World's Open Spaces," 189 pp., Thomas Nelson & Sons, Ltd., London, 1939.
10. MUSSOLINI, BENITO: "Mussolini Asserts Italy Must Expand or Suffocate," an interview, *New York Times*, July 24, 1926, p. 1, col. 1.
11. ———: Text of speech before Chamber of Deputies, May 26, 1937, *New York Times*, May 29, 1927, p. 12.
12. OSEKI, K.: "The Economic Geography of Japan," *Scot. Geog. Mag.*, 31 (1915), 449–465.
13. PENROSE, E. F.: "Population Theories and Their Application with Special Reference to Japan," 347 pp., Food Research Institute, Stanford University, Calif., 1934.
14. SEMPLE, ELLEN CHURCHILL: "Japanese Colonial Methods," *Bull. Amer. Geog. Soc.*, 45 (1913), 255–275.
15. THOMPSON, WARREN S.: "Population Pressure in Japan," *Eugenics*, 3 (1930), 363–371.

Questions

1. What relation does a differential birth rate between nations have to international politics? Illustrate. Review briefly the facts regarding the differential birth rates of nations. What do they indicate regarding their relative future growth?

2. Discuss the growth of population in Japan and its probable trend during the next few decades. Do you believe that there is any possibility of Japanese settlement on the mainland of Asia? Give reasons.

3. Discuss the possibilities for the agricultural expansion of the Japanese (*a*) in Japan proper; (*b*) in Korea and Formosa.

4. Discuss the outlook for the industrial expansion of the Japanese. Do you believe that the Japanese are justified in drawing a rather close parallel between their position in the Pacific today and Great Britain's position in the Atlantic a century ago? Why? Will Japan's industrial expansion encounter any obstacles which Great

Britain's did not? How are they likely to affect her industrial life? Justify your answer.

5. Discuss the population problem of China. Is there any solution for it? If so, what? Is it less serious than that of Japan? From what standpoint?

6. Why is the population problem of Italy more urgent now than it was before World War I? What outlets has Italy for her surplus numbers?

7. Discuss the population problems of the Slavs in central Europe. How, if at all, are they likely to affect the maintenance of peace? Give reasons.

8. What is meant by "felt pressure" and "absolute pressure"? Which is the more serious from the standpoint of peace? Why?

9. Discuss some means for the relief of population pressure. Do those suggested seem adequate to meet the situation? Why? Can you suggest others?

10. Is the community in which you live one of emigration or immigration? Why? Describe the conditions which make it one or the other. Do you suppose that these conditions are essentially different from those which bring about a surplus of emigrants or immigrants in a nation? Why?

CHAPTER XVII

THE FUTURE GROWTH OF POPULATION IN THE UNITED STATES AND ITS CONSEQUENCES[1]

1. Value of Estimates of Future Population as a Basis for Long-time Planning

The probable future growth of our population is of interest from many different angles. Obviously any long-time plans for national development must rest on estimates of our future population. When we talk of a system of inland waterways, of the extension of railways, of the highway system 30 or 40 years hence, of a land-use program, or, indeed, of any future development we must necessarily be assuming a population of a fairly definite size, for obviously what we shall need at that time will depend in large measure on how many there are of us. Again, many of our cities have "planning commissions" which are presumably laying out the future city as they believe it will be and ought to be. Unfortunately this cannot be done satisfactorily except on the basis of estimates as to how many people the city will have and where they will live at given periods in the future and, since such estimates depend for validity upon many unforeseeable factors, there must always be a large "factor of safety" in such planning. But, of course, carefully considered estimates are to be preferred to those based on the mere extension of past trends. In addition, the provision of adequate educational facilities, the expansion of our public utilities, the extension of our communication service over a period of time, the policies of state welfare departments charged with the custodial care of the socially inadequate, and numerous other projects which will be vitally affected by the size and the composition of the population in a given area 10, 20, or 50 years hence, must make use of some kind of estimates of future population (VIII, 9, Chaps. 10 and 11).

2. The Future Population

Table 102 gives several calculations for the future population of the United States, each based on certain definite assumptions regarding the behavior of birth rates and death rates and the number of foreign-born immigrants to be added annually. This method of calculating probable future population has the advantage of permitting rather easy adjustment of population estimates to the changing conditions of the future (8).

[1] The estimates used in this discussion are the joint work of the author and his colleague Prof. P. K. Whelpton (XI, 21). General references: 4, 5.

In the very nature of the case one cannot foresee the precise course of the birth rate or the immigration policy which will be followed. Even the exact trend of the death rate is uncertain, although the error likely to

TABLE 102.—FUTURE POPULATION ACCORDING TO CERTAIN ASSUMED TRENDS OF NET IMMIGRATION, SPECIFIC BIRTH RATES, AND EXPECTATION OF LIFE, UNITED STATES, 1940 TO 1980[1]

Year	*A* Medium fertility and mortality and no net migration of foreign born	*B* Same as *A* with net immigration of 100,000 annually after 1940	*C* Low fertility, high mortality, and no net migration of foreign born	*D* Low fertility, medium mortality, and no net migration of foreign born	*E* High fertility, low mortality, with net immigration of 200,000 annually after 1940	*F* Same as *E* and no net migration of foreign born
			Future population (thousands)			
1940[2]	132,630	132,629	131,749	131,902	133,282	133,282
1945	137,096	137,607	134,712	135,163	139,938	138,916
1950	141,213	142,301	136,725	137,636	146,829	144,627
1955	144,732	146,458	137,688	139,244	153,605	150,082
1960	147,612	150,010	137,570	139,947	160,246	155,297
1965	149,957	153,054	136,478	139,832	166,923	160,469
1970	151,783	155,601	134,473	138,889	173,657	165,608
1975	153,043	157,610	131,621	137,091	180,325	170,575
1980	153,628	158,967	127,947	134,381	186,713	175,151
			Decennial increase (thousands)			
1940–1950	8,583	9,672	4,976	5,734	13,547	11,345
1950–1960	6,399	7,709	845	2,311	13,417	10,670
1960–1970	4,171	5,591	−3,097	−1,058	13,411	10,311
1970–1980	1,845	3,366	−6,526	−4,508	13,056	9,543
			Percentage increase			
1940–1950	6.5	7.3	3.8	4.3	10.2	8.5
1950–1960	4.5	5.4	0.6	1.7	9.1	7.4
1960–1970	2.8	3.7	−2.3	−0.8	8.4	6.6
1970–1980	1.2	2.2	−4.9	−3.2	7.5	5.8

[1] These estimates were made by Scripps Foundation for the National Resources Committee, "Population Statistics, National Data," 107 pp., Government Printing Office, Washington, D.C., 1937. The assumptions used are set forth in detail in this publication.

[2] Census population in 1940, 131,669,000.

arise from this source is not great. In presenting figures of probable future population, therefore, it should be made clear that they are not real estimates but rather are calculations showing what population will be if the assumptions used are actualized.

It is frankly recognized that none of the calculations given is likely to prove altogether correct, but from a combination of the assumptions one may arrive at an approximation that is within the realm of probability at any given time, and this is perhaps all that should be asked of any forecast.

Obviously these calculations are of value only insofar as the assumptions on which they are based are realized. Therefore, it is of the utmost importance to keep careful track of birth rates, death rates, and immigration and to adjust the calculations to changes in these basic factors if they are to be kept close to the actual. These calculations were made several years prior to 1940; hence, none of them can be expected to correspond exactly to the 1940 enumeration. Moreover, these estimates include all children zero to four, whereas the census enumeration of such children is incomplete by perhaps 5 per cent. Bearing in mind that these estimates include about 500,000 children zero to four who probably were not enumerated by the census, it appears that the average fertility during the decade lay about midway between the "low" and the "medium." The mortality corresponded rather closely to the "medium" and there was a slight net immigration during the last two or three years of the decade. The actual 1940 population, therefore, lay between calculations *A* and *D*, probably being somewhat closer to the latter than the former. At the time of writing (early 1942) it appears that fertility is now about "medium," as is also mortality. If nothing were to interfere with these trends the population in calculation *A* would probably be realized by 1950. However, since we are now at war it is likely that the birth rate will fall toward the "low" and, aside from war deaths, that mortality will not fall significantly below "medium." The actual increase during this decade may, therefore, be expected to fall between the *A* and *D* calculations. Whether it will approach *A* or *D* more closely will depend upon the length of the war and the severity of the economic pressure felt, as well as upon the number of war deaths. The effects of these factors can only be guessed at.

From what has been said above it should be abundantly clear that population estimates even for large populations are quite uncertain and need to be revised frequently in the light of unforeseen changes. Certainly no definite formula can be devised which will be of any value in estimating future national population so long as birth rates and death rates and amount of migration are unknown quantities which have to be guessed at, even though the guesses are based on the best information available. Past trends are of interest, but it is what happens to the birth rate, to immigration, and to the expectation of life during the period under consideration that counts, and even the most careful student can only guess on these points. His guess should be worth more than that of the sales manager whose wish for more customers is father to his estimate of

future population, but it should not be forgotten that it is a guess. It is particularly needful to bear in mind the difficulties inherent in forecasting population when calculating future populations for particular communities, for the past growth of many of these has been the outcome of peculiar circumstances which are unlikely to be duplicated in the future.[1] It is slowly being recognized not only that estimates for particular localities based on past numerical growth, or past percentage growth, must be reconsidered in the light of the present certainty of slower national growth, but that due weight must also be given to the particular circumstances likely to affect the growth of that community. It may not be out of place, therefore, to make a few suggestions which may be useful in considering the future growth of particular communities, before passing on to the discussion of the consequences of the slower growth of population in the nation.

As long as the nation's population was growing by 15,000,000 or more in a decade and as long as a smaller and smaller proportion of the population was needed in agriculture, it is not surprising that many of our cities grew at a tremendous rate. But between 1930 and 1940 our total growth was not much over one-half of what it was between 1920 and 1930. The result was that we simply did not have enough more people in the country to maintain the past increase of numbers in the cities. It was not surprising, therefore, to those of us who had been studying our population growth to learn that many of our larger cities actually lost population during the decade and that still more of them had a small increase as compared with their past growth. It was more surprising, however, to find that in many cities the loss of population or the slow increase was not compensated for by the growth of the suburbs. It appears, then, that not only is there a lack of people to supply the customary growth of cities but there is also developing a somewhat different pattern of the distribution of our increase than we have had in the past. This probably means that as population growth still further declines the growth of particular cities and localities is likely to become more and more uncertain. If it is not safe now to project the growth of a city, or state, on the basis of its past performance it will be even less safe in the future. When estimating its future population a community should ask: What conditions make it reasonable to suppose that X will grow faster, or slower, than the nation, the region, or the state? Only a careful evaluation of these conditions furnishes a sound basis for a local estimate. The fantastic nature of some of the estimates made in the past can be seen from examining some of them. The Port of New York Authority issued an estimate for the New York City district in which the increase between 1960 and 1970 was equal to about three-fourths of what now appears to be a reasonable estimate for the entire United States (3). Chicago in a semi-

[1] For a discussion of some of these matters see (2).

official estimate claimed more than the remaining one-fourth, and Los Angeles also claimed that one-fourth. It is hardly likely that any of these communities still harbor such expectations of future growth, but they still clung to such estimates years after it was clear to the student of population that they were fantastic.

3. Some Problems of a Stationary Population

Ever since the first settlements of white men on this continent, our population has been growing at a rate never known in the world before. If we go back to the time of our first census, 1790, we find that our population must have doubled every few years during the entire colonial period in order to have amounted to 3,929,000 by that time. Since then we know that it has doubled in comparatively short periods, for it was about eight times as great in 1860 as in 1790 and about four times as great in 1930 as it was in 1860. In the 70-year period following 1930 it will almost certainly not increase more than 25 per cent and it may be even smaller than at present.

One of the first effects of the slowing up of our population growth will be the intensification of competition among businessmen for customers (7). Until World War I our population was growing very rapidly, and every decade saw an increase of from 20 to 35 per cent in customers. Businessmen could reasonably expect that the increase in numbers would alone be sufficient to ensure them a fairly rapid growth in trade. At the same time there was an increase in individual purchasing power, so that the volume of business expanded from this cause also. In the future the second of these two sources of increased trade must more and more be relied upon, if business is to keep on expanding even at a moderate rate. There will be no other source of expansion of much importance upon which domestic trade can depend.

If it is suggested that the expansion of our foreign trade may take up this slack in domestic trade, it must be pointed out that until some effective system of international economic cooperation is developed the prospects of making gains in this field are not very promising (Chap. VII). Certainly, when our own export trade is examined, there is nothing to encourage the belief that foreign trade can be relied upon to grow fast enough to make up for the decline in the expansion of domestic trade due to a population growth only one-half or one-third as fast as we have been accustomed to. It is up to our businessmen, therefore, to give far more attention to increasing the purchasing power of their present customers than they have been doing in the past. In other words they must come to rely upon better, rather than upon more, customers.

There are many other problems which will arise as population grows more slowly and then becomes stationary. Farming has already felt the slower growth of population. At the same time that population

growth was declining we lost much of our foreign market for agricultural produce, and farmers began to feed more hogs and cattle and sheep because they were supplanting horses with automobiles and tractors. That the agricultural depression following World War I has been aggravated by the slower growth of population admits of little doubt. The long-time prospect for agriculture is far from encouraging, although the war may give rise to a temporary boom, simply because agricultural produce falls largely into the "necessity" class and its use increases in rather close proportion to the increase of population. This situation may be changed, of course, by the use of agricultural products for new industrial purposes, for example, plastics, alcohol for fuel, synthetic rubber, and so forth, but, barring such a development, agriculture will expand slowly, if at all, in the next two or three decades, unless general economic conditions make better customers of our present population. Again, if the use of agricultural products does not expand it is reasonably certain that the price of farm lands will change but little or it may even decline. We may have reached the end of speculation in farm land.

City real estate will also feel the effects of a slowly growing population (6). Already it has been greatly deflated, but there is still the belief in many quarters that our cities will again grow much as they have in the past and that realty values will again soar. The fact is that city real estate values have in some cities already discounted growth for some years to come, perhaps for decades, and there is little likelihood that these values will become greater in the near future. Besides, there is the possibility, discussed more fully later, that the highly centralized city of today has outlived its usefulness and will shortly begin to disintegrate. This together with slower population growth will almost certainly affect city realty values.

It would be folly to attempt even to hint at the effects of slower population growth on particular industries, since in almost all cases there are so many "ifs" and "provided thats" that nothing definitive can be said. One may point out, however, that the building industry is likely to be especially hard hit by slower population growth unless vast housing projects are undertaken by public authorities, or unless the real wages of workers are so greatly increased that they can afford to rent much better quarters than heretofore, thus abandoning much of the poorer housing now in use which would, in turn, have a very depressing effect on real estate values in certain localities. What will actually happen is anyone's guess.

Most industries could, of course, sell greatly increased quantities of goods if only their workers could purchase them. Whether an organization of industry such as that sponsored by the NRA, or that necessitated by national defense, can actually increase real wages and thus assist in the more equitable distribution of a larger national income remains

to be seen. But if we do not plan for better customers we are quite likely to have poorer ones, and this will mean lower standards of living, which in turn will mean stagnant business and still lower standards.

4. Slower Population Growth and Social Attitudes

The mental attitudes of people are also likely to be changed by slower population growth. Nothing very positive can be said on this matter, but it seems not unlikely that the spirit of optimism and progress which has characterized Americans in the past is in part, if not chiefly, the consequence of our rapid growth. In some way we have come to associate happiness and progress with increase in size. When we can no longer assure ourselves of progress by counting noses will we be as sure as we have been that all is going well, and will we be as ready to gamble on the future as we have been? Probably not; probably we shall be more cautious, less enterprising, have more misgivings, and, withal, be more disposed to accept a fixed status than in the past. If so, this will undoubtedly have a dampening effect on our economic life. This need not be the case, but when we lack quantitative proof of progress how are we to retain our assurance that we are on the right track? Certainly we must admit that much of our optimistic spirit is closely associated with our rapid growth in numbers and our youthful population.

Perhaps as the quantitative measures of success become less important we shall turn to the qualitative aspects of living and come to think more in terms of human values. This would be a great gain in many respects; but I have not much faith in the development of a finer type of human values in a population which has not been freed from the necessity of constant worry about its material existence. In my opinion the best way to keep a people from being too greatly engrossed in material interests is to make a decent living so certain of attainment by all who will work that it can be taken for granted. Since the slowing up of population growth in the Western world can be made to contribute substantially to the certainty of securing a decent living, it seems reasonable to hope that we shall soon be in position to have more time to devote to nongainful pursuits than has been the case hitherto. Whether or not we shall actually derive this benefit from slower population growth will depend on our willingness and ability to reorganize our economic system to make better customers of the majority of our people.

5. The Problems of an Older Population (VIII, 7)

The age composition of our population in 1940 (census) and of the *A*, *B*, *C*, and *D* calculations (Table 102) for 1950 to 1980 are shown in Table 103.

The important changes during this half century are the decline in the proportion of children and adolescents and the increase in the middle-

aged and old people. In 1930 the young persons under twenty constituted 38.8 per cent of the total population, by 1940 this had fallen to 34.5 per cent, and by 1980 this same group will constitute only 26.0 per cent of the total according to the *A* calculation. On the other hand persons over forty-five who now comprise but 26.5 per cent of the total population will comprise 40.3 per cent in 1980. These are very significant changes, and there can be little doubt that they will affect many of our social and economic problems in a rather profound manner.

TABLE 103.—PERCENTAGE DISTRIBUTION BY AGE, UNITED STATES, 1940 TO 1980[1]

Year	Population (thousands)							Percentage distribution					
	Total	0–4	5–19	20–29	30–44	45–64	65+	0–4	5–19	20–29	30–44	45–64	65+
Medium fertility and mortality and no net migration													
1940[2]	131,669	10,542	34,764	22,684	28,576	26,084	9,019	8.0	26.4	17.2	21.7	19.8	6.9
1950	141,213	11,182	32,540	23,775	32,254	30,259	11,203	7.9	23.1	16.8	22.9	21.4	7.9
1960	147,612	10,538	32,721	21,064	34,135	34,336	14,818	7.1	22.2	14.3	23.1	23.3	10.0
1970	151,783	10,155	31,238	21,556	31,538	39,301	17,995	6.7	20.6	14.2	20.8	25.9	11.8
1980	153,628	9,906	30,047	20,665	31,152	39,807	22,051	6.4	19.6	13.4	20.3	25.9	14.4
Medium fertility and mortality and net immigration of 100,000 annually after 1940													
1950	142,301	11,281	32,736	24,231	32,543	30,299	11,211	7.9	23.0	17.0	22.9	21.3	7.9
1960	150,010	10,756	33,202	21,672	35,034	34,504	14,842	7.2	22.1	14.4	23.4	23.0	9.9
1970	155,601	10,453	32,067	22,300	32,778	39,959	18,044	6.7	20.6	14.3	21.1	25.7	11.6
1980	158,967	10,305	31,135	21,666	32,581	41,091	22,189	6.5	19.6	13.6	20.5	25.8	14.0
Low fertility, high mortality, and no net migration													
1950	136,725	9,448	30,521	23,700	32,062	29,992	11,002	6.9	22.3	17.3	23.5	21.9	8.1
1960	137,570	8,211	27,738	20,233	33,751	33,597	14,040	6.0	20.2	14.7	24.5	24.4	10.2
1970	134,473	7,166	24,307	18,561	30,342	37,910	16,187	5.3	18.1	13.8	22.6	28.2	12.0
1980	127,947	6,306	21,193	16,360	27,153	37,941	18,994	4.9	16.6	12.8	21.2	29.7	14.8
Low fertility, medium mortality, and no net migration													
1950	137,636	9,521	30,623	23,775	32,255	30,259	11,203	6.9	22.3	17.3	23.4	22.0	8.1
1960	139,947	8,319	27,980	20,359	34,135	34,336	14,818	5.9	20.0	14.6	24.4	24.5	10.6
1970	138,889	7,304	24,654	18,785	30,851	39,301	17,994	5.3	17.7	13.5	22.2	28.3	13.0
1980	134,381	6,465	21,628	16,652	27,779	39,807	22,050	4.8	16.1	12.4	20.7	29.6	16.4

[1] National Resources Committee, "Population Statistics, National Data," 107 pp., Government Printing Office, Washington, D.C., 1937.

[2] Census population.

There were actually fewer children under five in 1930 than in 1920 and there was a still further decline by 1940. The number will continue to decrease steadily if the birth rate follows either the *C* (low) or the *A* (medium) calculations. The consequences of this decline in number of children are already being felt in the schools. Most of the communi-

ties in which school facilities are now adequate will have little need for additional buildings, equipment, or teachers in the grade schools, although there will be some that will outgrow their present facilities. In the country as a whole the "medium" population will have almost 5,000,000 fewer youths five to nineteen in 1980 than it had in 1940, while in the "low" population there will be almost 14,000,000 fewer. This does not mean, however, that there will be this many fewer children in school. Increased attendance and the raising of the age at which children may begin work may keep the total numbers in elementary and secondary schools from falling off to any appreciable extent for several years, but

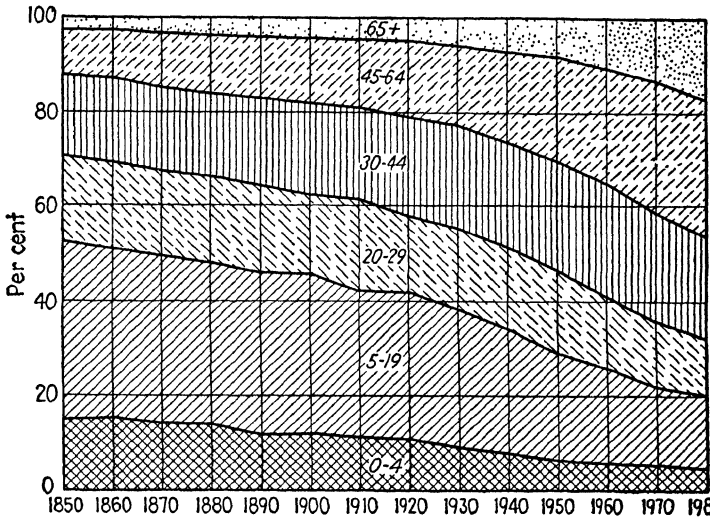

FIG. 38.—Per cent distribution of the population, by age, 1850 to 1980. ("D" calculation, Table 103.)

certainly little or no increase in the numbers can be expected. However, if present public school attendance is maintained there must be a marked shift in its distribution within the school system, issuing in fewer children in the grade schools and a large increase in the high schools and junior colleges.

Whether there will actually be much increase in attendance at high schools and whether this increase will also extend to the colleges will no doubt depend in large measure upon the future economic condition of the community. Both high schools and colleges are much more expensive to maintain than elementary schools, and besides college attendance requires living away from home for a large proportion of the students. This added cost of increased secondary and college education may in part be met by savings arising from smaller elementary schools, but it does not seem likely that these will go far in support of increased higher education.

It also seems probable that as families become smaller and the number of children declines the amount of child welfare work needed will decrease. Parents should be able to give their children better care as the size of the family is more and more carefully adjusted to the income. This in turn should decrease the need for children's homes, the work of child-placement agencies, and other services dealing with defective, dependent, and delinquent children. On the whole, therefore, it would seem that fewer children would result in the better care of children and in their better preparation to meet the problems of living as normal members of a community.

But if the problems of child welfare become easier of solution as the numbers and proportion of children in the population decrease, the problems of caring for an older population will increase to about the same extent. This is clearly shown in the preceding table. From forty-five onward there will be a very rapid increase in both numbers and proportion no matter whether the population grows according to the medium or according to the low calculations. The proportion of old people, of course, increases most rapidly when the population grows most slowly, because those who will be old in 1970 and 1980 are already born and their numbers will not be affected by future birth rates, while their proportion in the population will be much affected by the number of children born between now and 1980 as well as by the number of immigrants admitted.

The social and economic effects of an older population cannot be foretold with any high degree of assurance, but it may be interesting to speculate a little on what may happen when 40 per cent of all of us are over forty-five as compared with 26 per cent at the present time. Some changes in educational problems as we adapt ourselves to fewer children have been mentioned above. What a larger population over forty-five will demand in the way of education is harder to foretell. Almost certainly adult education will become a regular department of public education. This becomes more probable in view of the rapid changes in industrial processes and business techniques which necessitate a large amount of retraining for middle-aged workers. But aside from vocational adult education smaller families and better incomes will leave many middle-aged and older people with an amount of leisure greater than they are now prepared to use advantageously. It is not unlikely that this group will demand opportunities for study such as have not been provided hitherto. They are likely to want a variety of cultural opportunities for which there has been almost no demand in the past and which it has, therefore, never occurred to the public school authorities to provide.

More old people, particularly over sixty-five, will almost certainly increase the demands of the aged upon the community. More old

people's homes will be needed, more money will have to be spent for old-age pensions, and more of the social service of the community will have to be devoted to the aged. In a word, any lessening of welfare work for children will be counterbalanced by an increase among older people. For example, if we assume that 75 per cent of the people over sixty-five need pensions of $500 a year to ensure decent living, the sum needed for this purpose in 1930 would have been $3,317,000,000; but by 1980 it would rise to $8,600,000,000, although the total population would be larger by less than 7,000,000.

Then, too, we hear much today about the difficulties of men over forty finding jobs. If it is true that they are not wanted in industry and in offices, we certainly shall face an increasingly difficult task in keeping them employed satisfactorily, for the proportion of persons forty-five to sixty-four will probably increase one-half or more during the next 50 years. Labor policies which work a hardship on this group now may be unendurable when it comprises over one-fourth of the total population, as it will in 1980 if we follow the low rate of growth.

But not only will business be confronted with new employment problems because of our growing older; it will also be confronted with considerable changes in our habits of consumption. Persons under twenty have quite different consuming habits from those over forty-five or fifty. The consumption of children up to perhaps fifteen years of age is largely confined to necessaries. For the fifteen years from forty-five to sixty most people buy as much in the way of luxuries as their incomes allow, and their standards of comfort tend to reach a maximum. Besides, the decline in the size of families undoubtedly permits of a larger luxury expenditure in the average family than was formerly the case, and, if incomes increase, the proportion thus spent will continue to grow. But just what changes in our buying habits will result from these age changes we cannot say in any detail. If, however, remunerative employment is found for the older people, it is likely that the net effect of these age changes upon individual purchasing power will be to increase it.

As an example of possible changes in spending habits, it is quite conceivable that we shall spend considerably more on our leisure than has been customary in the past. If average incomes go up this is almost certain to be the case. It is also probable that the increased proportion of our incomes spent on leisure will be spent in quite different ways from those in which it is now being spent. A population averaging ten to fifteen years older than our present one may possibly support less generously certain types of amusement—roadhouses, with their dance halls and jazz orchestras, college football, vaudeville, and sensational movies—and pay more for the enjoyments of middle life and old age, such as books, concerts, lectures, travel, and the comforts of substantial living. Older people will not, as they become an increasing part of our popula-

tion, allow their enjoyment of leisure to be dictated by the young to the extent that they now do. Besides, as the great preponderance of the young people in our society passes away, the psychological prestige of the young will decrease, and people will be less afraid to avow their age after fifty and to insist upon living as they wish, just as the young people are now doing.

Another possible consequence of our growing older will be its tendency to render us a more conservative people. In both politics and economics we may become less tolerant of change than we have been in the past if our social system continues to be based primarily on private property. If we have an increasing proportion of the population whose security depends on the maintenance of the *status quo*, we can expect greater pressure to see that it is maintained. If, however, security were made dependent upon continuous adaptation rather than maintenance of status, we could reasonably hope for a more rational attitude toward change to develop among the older people as well as among the youth.

If we become more conservative in our economic life, we are also likely to become more conservative in our political life. It may seem that it would be rather difficult for politics to serve economic power more faithfully than it has in the past, but I do not believe that this is the case. We do not yet acknowledge openly that the *raison d'être* of politics is the maintenance of property rights. We still believe that the underdog can protect himself through political activity. Besides, we do not have the deep reverence for property that the true European conservative has. Our attitude toward private property is that of the dog guarding a bone; we regard it as a personal possession for which we have fought, and we intend to keep it because we have gained it. The conservative European, on the other hand, looks upon private property with reverence because he believes it the keystone of the arch of social order. He believes that the removal of this keystone means the collapse of civilization. His feeling about private property is not so intensely personal as is ours, but he is more certain than we are that the maintenance of these rights lies at the base of all that is good in human existence, hence that it is the purpose of politics to see that this peculiar institution is not fundamentally altered. This is probably the true conservative's attitude and the attitude which is likely to grow among us as we become older. More and more we shall come to feel the inherent excellence of things as they are and struggle against disturbing the fundamentals.

This attitude will tend to permeate all our thinking far more than it does at present. The inevitable result of this conservatism will be to preserve institutions and customs long after they have ceased to have any real significance for us. This will probably tend to make our country a less interesting place in which to live to those people who have the

pioneer temperament. Will many such migrate to other lands, if such there still be, where things are less rigid and fixed and where energy can more nearly create its own opportunities? This may well happen, and we may suffer from this emigration as England no doubt has suffered to a certain extent in the past.

Thus far little has been said about the effects of slower population growth on the most productive groups, those containing the people twenty to forty-four (1). These groups will change less both in proportion and in numbers during the next two or three decades than either the younger or the older groups. As a result the productive capacity of the community will remain high for several decades. Indeed when production and consumption units are weighed against one another with allowance for age and sex changes it seems probable that the ratio of consuming to producing units will decline from 1:1.67 in 1930 to 1:1.62 in 1950 and rise to 1:1.63 in 1980 (VIII, 9, p. 169). From the standpoint of available labor, therefore, standards of living should improve slightly even though there be no improvement in methods of production. The stability of this group should also tend to give stability to consuming power since it largely controls the spending of the younger groups as well as its own.

Since this is also the group that is rearing families, the decline in the birth rate very directly affects the proportion of the income that goes for different types of goods. The larger the family the larger the proportion of the income that goes for necessities, while the smaller the family the more there is available for comforts, luxuries, and savings. It cannot be proved, but it is not improbable that the rate of capital accumulation is rather directly affected by the height of the birth rate. It may be, too, that, as more income becomes available for luxuries, the expenditure of the community on consumption goods tends to fluctuate more widely and thus to increase the violence of depression and boom (Chap. XVIII).

It should be made clear that the age changes which are taking place in the United States are by no means peculiar to it. The same process of aging is going on in all the countries of the Western world and is beginning in Russia and Japan. Wherever the birth rate and death rate are declining the proportion of children and youth is also declining and that of middle-aged and older people is increasing. At present France has a larger proportion of old people than any other nation and Japan stands near the bottom of those nations for which we have data; but just as fast as Japan's birth rate declines its proportion of older people will go up. This is just as inevitable as is the succession of the seasons. Therefore, all that has been said about the problems arising from the aging of our population applies to all lands where man is acquiring control over his birth rate and his death rate.

6. Other Characteristics of Our Future Population

In the future we shall probably be a more urban people than in the past even though we may not live in the same type of urban community as at present. Does this mean that urban attitudes of mind will become increasingly predominant? Does it mean an intensification of the urban-rural conflict? Does it mean that we shall come to look upon the farmer as nonfarm Europeans do the peasant? No attempt will be made to answer these questions here. It will merely be pointed out that we possess the means of developing a better understanding between urban and rural dwellers than any people has possessed heretofore. It remains to be seen whether we use our greater mobility and our excellent means of communication to develop a sympathetic understanding between urban and rural dwellers or merely to arouse new antagonisms. Certainly the growing preponderance of city people will not of itself allay the urban-rural conflict, which appears to be as old as the growth of towns.

As a consequence of the differential increase in our population referred to above and of the smaller number of immigrants being admitted, our population will tend to become less heterogeneous as time passes. Not only will there be fewer foreign born and their children, but those who do come and probably their children also will intermarry more readily with the children of older arrivals, thus tending to produce a more homogeneous people. The very great mobility of our people will hasten this process, so that it is likely that we shall have few of the "little Italys" and "little Polands" which we have had in the past.

Such an increasing homogeneity will undoubtedly have the effect of making some of our social and political problems easier to solve. It will be less easy to deal with people by national blocs for political purposes than has been the case in the past. It will also simplify the task of social workers, who will have fewer highly differentiated groups to deal with. In general this will probably be considered a desirable condition of affairs. It is not at all certain, however, that we shall not lose a considerable amount of the cultural value of having well-differentiated groups in our population. This is probably inevitable under our conditions of life. We have made little or no effort to profit by these cultural differences in the past and are in no mood to do so as yet.

When, however, the time comes that we can take a longer view we may yet be able to salvage some of the cultural heritage of the various groups that are being welded together here and profit by the variety of culture which they bring. This would certainly be the desirable consummation. It may be, however, that with our great passion for uniformity we shall crush out all these differences and with growing nativeness shall become an even more highly stereotyped people than

we now are. This would appear a real calamity. But it is to be feared that we are moving in this direction rather steadily, and no counteracting force strong enough to stay our course is discernible.

If there are those who fear or hope that all our population problems will soon be solved, they need look only at the changing composition of our people to be made aware there is little chance of their wish being realized. Our children will probably, nay, certainly, have problems different from ours to cope with, but these problems will be no less urgent, nor will their personal and social welfare be less affected by the solutions at which they arrive.

References

1. Bowley, A. L.: "Estimates of the Working Population of Certain Countries in 1931 and 1941," 19 pp., submitted to the preparatory committee for the International Economic Conference, League of Nations, Geneva, 1926.
2. Houser, G. C.: "How Accurately Can Engineers Predict Future Population Growth of Cities?" *Amer. City*, 39 (1928), 124–126.
3. New York. Regional Plan of New York and Its Environs: "Population, Land Values, and Government. Studies in the Growth and Distribution of Population and Land Values; and of Problems of Government," 320 pp., Regional Plan of New York and Its Environs, New York, 1929 (Regional Survey, Vol. 2).
4. Pearl, Raymond, and Lowell J. Reed: "On the Rate of Growth of the Population of the United States since 1790 and Its Mathematical Representation," *Proc. Nat. Acad. Sci.*, 6 (1920), 275–288.
5. Reed, Lowell J.: "Population Growth and Forecasts," *Ann. Amer. Acad. Polit. Soc. Sci.*, 188 (1936), 159–166.
6. Thompson, Warren S.: "Future Population Growth and Real Estate Values," *Jour. Real Estate Appraisers*, 3 (1934), 34–41.
7. ——— and P. K. Whelpton: "Counting Tomorrow's Customers; How Will America's Growth Affect Your Business?" *Nation's Business*, 17 (February, 1929), 41–42, 154–155.
8. Whelpton, P. K.: "An Empirical Method of Calculating Future Population," *Amer. Stat. Assoc. Jour.*, 31 (1936), 457–473.

Questions

1. Why should we be interested in knowing what the future growth of population will be? Is the rate of our growth likely to affect you personally? If so, in what ways?

2. Discuss some of the different methods of estimating future population. What are the advantages and disadvantages of each?

3. Do you know of any population estimates for your own community? Were they reasonably accurate for 1940? If not, why?

4. Estimate the growth of your home community for 20 years in advance. Enumerate in detail the factors you have taken into account in making this estimate, and give your reasons for the weight or importance you have assigned to each.

5. Discuss the true rate of natural increase in the United States, and compare it with the crude rate. Why are they different?

6. Define net reproduction rate and replacement index. Can you get a replacement index for your home community?

7. Discuss the effects of a slower natural increase upon some business with which you are familiar, and suggest ways in which this business may make satisfactory adjustments to this slower growth of population.

8. What are some of the problems that will arise from changes going on in the age composition of our population? What is the attitude of businesses in your own community toward the employment of men over fifty? Do efficiency methods in the businesses you know tend to wear men out at an early age? Give detailed reasons for your belief.

9. Discuss: "Homogeneity of population is desirable in the United States, for then there will be more 100 per cent Americans." Would you distinguish between types of homogeneity? If so, which would you call desirable and which undesirable? Give reasons for your preferences.

CHAPTER XVIII

FURTHER COMMENTS ON THE ECONOMY OF A STATIONARY OR DECLINING POPULATION[1]

As has already been said, a rapidly declining birth rate is showing its effects in two rather distinct demographic changes: (*a*) in a marked and increasingly significant change in the age composition of our population, and (*b*) in a population rapidly ceasing to grow in numbers or in some places in a declining population (France). These two changes are certain to affect our whole social organization and its functioning in a variety of ways. Several of the more obvious effects of these changes have been mentioned in the preceding chapter. The more fundamental changes cannot be foretold with any great degree of accuracy but even though this is so it is worth while to comment on some of them, particularly on some of the probable economic effects.

1. Our Economy and the Decline in Number of Children

The proportion of children is declining in almost all Western lands and in many of them the absolute number is also declining. This decline in children is steadily raising the proportions in the older age classes of the population. The median age in the United States increased by about 2.5 years between 1930 and 1940—from 26.4 years to 28.9 years. This is a large increase for one decade, about twice as large as during the three or four decades preceding 1930. This increase is probably exaggerated somewhat by the unexpected increase in persons over fifty-five years of age between the last two censuses, an increase due in part to people in 1940 reporting themselves older by more than 10 years than they reported themselves in 1930. But even when allowance is made for this we face the fact that we *are* an older people, that we have fewer children and more old people than in the past, and that this trend will continue at a fairly rapid rate for some decades.

Certain aspects of these age changes were discussed briefly in the preceding chapter, others somewhat more basic will be treated here. For one thing, it seems reasonably certain that all the social and economic institutions dealing with the needs of children will have many important adjustments to make. Let me cite some facts regarding our child population. In 1921 there were 2,950,000 babies born in the United States; in 1940 there were only 2,580,000—a decline of 370,000. This

[1] General references: 3, 4, 5.

decline is somewhat more than the entire number of births in the Netherlands, Belgium, and Norway (354,000) in 1938. But even the 2,580,000 of 1940 is almost 300,000 higher than the number in 1933. The result of this decline in births, most of which has taken place since 1925, is that the number of children under fifteen years of age in 1940 was less than the number of the same age in 1928 by 2,465,000. Thus we have 7 per cent fewer children (under fifteen) to provide for in 1940 than we had in 1928, although we have about 12,200,000, or 10 per cent, more people in the total population. As indicated above, the elementary educational facilities needed by this 1940 group will be considerably less than those needed by the 1928 group, assuming that both groups are equally well provided for in this respect. Add to this all the other expenses involved in rearing children—doctors' fees and hospital and nursing expenses, children's clothing and food, housing and fuel, and so forth—and it will be apparent at once that this deficit in children is a by no means negligible factor in our economic life.

If we assume that the *average* child under fifteen has $300 a year spent on the goods and services essential to its welfare, then our children of this age needed about $740,000,000 less in goods and services in 1940 than in 1928, the year in which they were most numerous. This amounts to about 1.0 per cent of our national income in a reasonably good year. Since such an expenditure per child provides for little but necessities, education being included in this category, the producers and purveyors of such goods and services must have had to contract their operations by about 7.0 per cent during this 12-year period. This contraction of operations would apply especially to such things as education and all the supplies and equipment needed to carry it on at the level of 1928, to babies' supplies (layettes, perambulators, and so forth), to children's clothes, food, toys, and so forth, to additional housing and heating which would be required with larger families, and to essential medical services for children. In addition the mere decline in the annual average number of births for the years 1922 to 1940 as compared with 1921 (about 400,000) would enable us to dispense with the full-time services of about 1,000 physicians.

In view of these facts it does not seem unreasonable to assume that this decline in number of children has already had an appreciable effect on the need for new investment in certain types of goods and services. Not only has this decline in number of children rendered additional investment in certain lines of enterprise unnecessary but it has also rendered investments in existing enterprises of more doubtful value because of their reduced volume of business. This particular change in age make-up may not appear of much significance in its effect on our total economic life, but the writer believes that when this effect is added to those of other changes in population discussed below the total effect

is far from negligible. For the moment it will suffice to point out that any additional labor and new capital which would have been needed to increase the volume of goods and services for children in a child population increasing as ours had been doing, by over 2,440,000 between 1920 and 1930, will now have to be used in other fields, for example, in providing new comforts and luxuries for fewer children or in adding to the stock of goods and services used by adults to raise the general level of living.

2. Our Economy and the Increase in the Adult Groups

Although the child population has decreased in recent years most other age classes have continued to increase. The most rapid increase proportionally has been in the group aged sixty-five and over, about 35 per cent between 1930 and 1940, but the middle-aged group (forty-five to sixty-four) has also increased very rapidly (over 20.0 per cent) and the younger adult group (twenty-five to forty-four) has continued to increase but much more slowly (about 10.0 per cent) and will almost cease growth by 1960.

As a result of these age changes the demand for goods and services used primarily by older people should increase rather rapidly for the next few decades. Here would be a field into which the capital accumulated in supplying children's goods but not needed for expansion in this field could be shifted. Even some of the capital now employed in making school supplies, perambulators, toys, layettes, and so forth, might be shifted into printing books and magazines for older people, to the making of playing cards and canes, to building small efficiency apartments, and in providing other goods and services used largely by older people. But insofar as the capital which would formerly have gone to supplying the wants of a growing child population seeks investment in industries supplying the wants of these older people, the capital normally flowing into this latter field will meet increased competition from this new source of investment and may become less profitable than formerly.

As has just been noted, the changes in our population at the extremes of life where dependency is very high just about balance. Old people are taking the place of children. There is, however, a very substantial increase in the population at the most productive ages. This would lead us to expect a larger producing capacity per capita for two or three decades to come than in the past and should make possible a higher level of living for the nation as a whole even if there were no further technological advances. In all probability this would also issue in a larger fund of savings seeking investment, since it is this group, and particularly the middle-aged portion of it (forty-five to sixty-four), that provides most of the nation's savings and is growing most rapidly. The

younger and more productive portion of this working group, that twenty to forty-four, cannot long keep on growing in numbers, however, with a declining birth rate. It, too, will begin to decline before many years and is already becoming a smaller proportion of the total working population. Here again the economic problems raised by age changes merge into those consequent upon the approach of a stationary or a declining population, as we have seen in discussing the changes in the child population.

The aging of laborers just referred to is likely to intensify the efforts of the older established workers to keep the better jobs for themselves—to monopolize skilled work. Already many labor-union rules and regulations are designed to ensure the better jobs to the older men already in them, to give certain laboring groups a monopoly of the kinds of work they are doing. As these older workers come to feel that they have a right to monopolize their jobs they also come to feel that in a not inconsiderable number of cases they and their employers have a common interest in establishing a monopoly which will ensure the *status quo* to both parties. The realization of the mutual advantages of monopoly to both capital and labor in certain fields is almost certain to increase as the average age of workers and employers rises. But, important as the aging of the population may be in the furthering of monopoly practices, other problems associated with an aging population will probably exercise more influence on our social and economic system than this and the attempt to establish monopolies will receive far more powerful support from other sources. I am thinking particularly of the increasing political power of older people and the practical certainty that they will use this to retain and obtain economic advantages for themselves and their property.

Probably the most significant direct economic effect of the rapid growth in our population over forty-five years of age is that the control of property is rapidly passing into the hands of these older people. It is a matter of common observation that the accumulation of property is slow during the early years of adult life even in the classes which ultimately do accumulate appreciable amounts. But, in addition to the rapid increase in the numbers and in the proportion of the population over forty-five, which would of itself increase the economic power of this age group, the better paid and more ambitious portion of it has greatly increased its property holdings by keeping the number of children in the family so small that a relatively large part of their incomes could be saved for investment. The result is that the older people of the upper middle class and the wealthy class are acquiring more and more control over our economic life through their possession of an increasing proportion of our property. In 1890 about 17 per cent of our population was forty-five or over, while in 1940 this proportion had increased to

about 26 per cent and in another 20 years will amount to about one-third of the total population and to almost one-half of the voters.

Another significant aspect of this increasing economic control of the older group arises from the very common practice among men whose property accumulations are modest (say $100,000 and under) of leaving the entire estate, or a large part of it, to the widow. Since widows are from two to three times as numerous as widowers at all ages over forty-five, there can be no doubt that older women are steadily coming into the possession of an increasing portion of the nation's property.

Under these conditions it would seem only reasonable to expect that investment and the direction of economic enterprise would tend to assume patterns calculated to assure the comfort and stability of life of these older people for the few years they expect to live. Just what forms investment will take as an increasing proportion of people with capital aim at security rather than at entrepreneurs' profits can only be guessed at. It may strengthen the basically conservative tendencies of private capitalistic economy or it may possibly give our economy a strong push in the direction of state capitalism. This latter could easily come about if there were a growing feeling that government bonds offered greater security than the bonds or stocks of private business so that the returns over a period of years were likely to be almost as large. Thus the increasing control of older people over investment does not necessarily mean the strengthening of the hold of private capitalism over our economic life. In any event investment and the direction of economic activities are almost certain to lose much of the spirit of adventurous enterprise which has characterized our life in the past.

The desire to keep things much as they are is by no means confined to older people who depend chiefly on their property for support. Older workers who have very little property become more tenacious of their jobs as jobs become scarcer. This is quite apart from the tendency of unions to create a labor monopoly which was discussed above. It is quite probable that a part of the difficulty of youth coming of working age in recent years in finding steady jobs which offered a prospect of future advancement has arisen from the greater necessity of older workers to retain their places. In a rapidly expanding economy the older workers not only could expect to retain their jobs but many of them could expect to be advanced to supervisory and managerial jobs and to get better remuneration in these jobs, which were also lighter and better suited to their advancing years. But in an economy expanding slowly, or not at all, the older workers not only cannot expect better jobs, but are hard put to it to retain the jobs they already have or to get any job at all once they are out.

As a consequence of the keener competition between youth and older workers many people are convinced that an increasing proportion of the

youth of today are being forced to take temporary jobs and jobs with no future in them (1, Chap. 4). This, it is said, is one of the chief reasons why there is so much feeling of hopelessness and frustration among youth today. Certainly this feeling that youth has no chance, that this is "an old man's world" has had its influence in the development of the interest in totalitarian government among European youth. In a rapidly growing population, with abundant economic opportunity for the ambitious youth, the control of the system by older men is not only actually less than in a stationary or declining society, but it is less apparent than it actually is. In a slowly growing population this control becomes increasingly evident as young people find it increasingly difficult to get established in life.

3. A Stationary Population and Free Economic Enterprise

While the writer is convinced that the economic consequences connected with the age changes now going on are of great significance, he believes that they are of minor importance as compared with those arising from the slowing up of population growth. Here we are interested not in the direct effects of a stationary population upon particular business enterprises but rather in its effects upon the whole liberal democratic system of free economic enterprise, hence the discussion will be confined to some considerations of a general nature. However, the writer disclaims any attempt at a general theoretical analysis of the economics of a declining population, and what he has to say applies primarily to the United States.

In the United States, even more than in most other Western countries, we have taken it for granted that economic activity would expand steadily and at a fairly rapid rate. This has been an axiom of our economic thinking, not always, perhaps not generally, in the forefront of consciousness of the businessman and the politician, but just for this reason all the more basic to all our economic thinking and activity. It is probable that very few people have fully realized how much the belief in a constantly expanding economy rested on the assumption of a growing population, since the assumption that a rising level of living is man's normal state was even more explicit in our economic thinking.

Once the belief in a steadily and automatically expanding economy becomes general a number of corollary beliefs follow inevitably. The one we are most interested in here is the belief that the need for capital will continue to expand indefinitely and at so rapid a rate that savings will always be inadequate and will be immediately put to use to provide additional capital goods. The existence of such a belief is abundantly attested by the great virtue attaching to thrift and saving not only in copybook maxims but in economic theory as well. Such an emphasis on saving as a primary virtue and as an essential to economic progress

could only have developed in a society in which there was large opportunity for the profitable investment of all available capital. The high interest rates which prevailed here until about 1930 also attested to the fact that new capital was greatly needed to expand our industry and commerce.[1] In retrospect this belief in the naturalness, indeed, the inevitability, of a steadily expanding economy and the very general economic optimism it engendered appear to be in large measure the logical consequence of a steady and rapid population growth rather than a quality inherent in the nature of our economic universe, as many people still seem to think. The point which the author wishes to raise here is whether an economic system which has arisen in connection with a rapid and continuous growth of population and which has, on the whole, worked well will work so effectively when population growth suddenly slows, ceases, or, perhaps, declines. He does not expect to answer this question; at most, he hopes to convince a few readers that an automatically expanding economy is closely related to a growing population and that when the latter ceases to grow the economy can only be kept expanding by conscious community effort; that the success of our laissez-faire economy owes far more than is generally realized to the fact that it operated in a rapidly expanding population; that many of its qualities are not inherent in the nature of economic activity but are to a very significant extent an outgrowth of the great expansion of population which has taken place in the Western world since 1700. Since this expansion of population is nearing an end in many countries, he would argue that our economy must undergo much change to keep it functioning effectively in the new stage of human growth into which we are entering.

In support of this view it may be well to expand a little on the general theme of population growth and investment. Investment is selected for attention in the belief that the effectiveness of this system of free enterprise in contributing to human welfare depends to a very significant extent upon how well the investment of the savings of the community is handled. If the savings of the community can be transmuted rapidly into useful producers' goods, into durable consumers' goods, and into trained personnel, in the proper proportions, in all probability the decline in population growth will not only not affect the level of living of the community adversely but will improve it. If, on the other hand, anything seriously interferes with the investment process, if savings cannot be transmuted quickly and efficiently into the goods just mentioned, then the whole economy becomes relatively inefficient.

[1] In this connection it should be noted that our exports of capital during the 1920's were large and undoubtedly helped to maintain our firm belief that there was no danger of an oversupply of funds seeking investment, as well as to mask the early effects of the decline of population growth on the whole investment market.

4. Economic Overexpansion and Population Expansion

It does not need to be argued that as long as population grew rapidly (one-sixth to one-third each decade) the nation needed more land in farms, more or larger flour mills, more textile mills, more shoe factories, and so on ad infinitum. We needed an increase in all these enterprises proportionate to population growth even if there were no improvement in the general level of living, while a much larger investment was needed if the level of living of any appreciable portion of the population were also to be raised. Even with a rapidly growing population there were times when investment (new capital) exceeded the effective demand for more or additional products. This resulted in general economic stagnation, unemployment, and loss to investors because the accumulation of savings and the rate of investment were based on the belief in an even more rapid expansion of demand than took place. A similar situation was always present with regard to particular enterprises. However, as long as population was growing rapidly even an expansion which was not justified by its immediate full use as a part of the community's economy became useful after a few years just because there were then enough people to employ these facilities and to demand more. Many mistakes in individual judgment were rendered of little consequence for the same reason. If a flour mill were made too large, it was not long until the increase in population brought this excess capacity into use; if a city were overbuilt and extended its utilities and services too rapidly, the increase in the city's population would soon fill up the vacancies and use these services; if a store provided more floor space than could be used profitably at the moment, time would cover the mistake by the steady and rapid growth of customers within the area it was planned to serve. One might continue such an enumeration almost indefinitely but these few examples will serve to make the point. It is not that in the past the growth of population has rendered general economic overexpansion harmless and all unwise investments sound, but that it did much to soften the bad effects of too great savings and of a too rapid investment on the economic life of the community, and to preserve the faith of the individual in the basic soundness of the system as a whole. In thus making sound many extremely optimistic calculations of future needs, the growth of population encouraged much daring enterprise which was successful only because of this growth. Many men who had not really shown very good judgment in investment came to be looked upon as wizards of foresight and enterprise in whose hands the direction of our economy could safely be left.

Under these circumstances it is not surprising that the significance of a growing population in keeping our economy expanding and healthy was largely overlooked and the role of individual enterprise was greatly

exalted. Population growth had come to be taken for granted, while the expansion of particular economic enterprises was very apparent and always seemed to be associated with the initiative of individuals. This encouraged the belief that a system of free individual enterprise was the only rational economic system, the only one that would ensure steady and rapid progress. On the whole this system has built up efficient institutions to collect savings, to make investments, and to translate investments into production; it encouraged individual thrift, foresight, and initiative in large groups of our population; as a consequence it has been able to supply an increasing quantity of necessities and an increasing variety and quantity of nonnecessary goods; it has, in other words, put men's productive power to reasonably good use, probably to better use than any other system could have done under the existing conditions. There is, however, much reason to think that it will not operate so effectively in the future with a stationary or a declining population.

What has been said above about the enterprises serving the needs of children becomes more or less true for all enterprises as population growth becomes slow, disappears, or becomes a minus quantity. As population growth declines the first enterprises to feel the pinch of slow growth will be those engaged in providing the basic necessities, since the per capita consumption of these is less elastic than that of comforts and luxuries. Consequently the growth of the necessity-supplying enterprises will tend to conform more closely to the growth of population than that of other types of enterprise. It need scarcely be argued, therefore, that these necessity-supplying enterprises are already being much affected by the rapid decline in our population growth which set in very definitely in 1926.

In the five years and three months, Jan. 1, 1920, to Apr. 1, 1925, there were 14,966,000 births and 7,179,000 deaths in the United States and net immigration amounted to 2,061,000. Thus the net increase in population in this period was approximately 9,848,000. In the five years, Apr. 1, 1925, to Apr. 1, 1930, the number of births was 13,355,000, and the number of deaths was 7,271,000, while the net immigration declined to 1,301,000. The net incease in this period was only 7,385,000. For the entire census period (123 months) the growth was over 17,000,000 (equal to the entire population of both Belgium and Holland), the largest absolute increase the nation had ever had, but about 57 per cent of this took place before April, 1925. In the decade 1930 to 1940 the annual increase was more uniform than in the preceding decade but the total was only a little over half as great (8,890,000). This means that as compared with the 1920 to 1930 census period the population growth during 1930 to 1940 fell short by an amount approximately equal to the entire population of Belgium in 1938. Thus we have needed to add

to our economy during this last decade by an amount only sufficient to build and maintain a complete Holland as compared with the need to build and maintain a complete Holland plus a complete Belgium during the 1920's.

5. Investment in a Declining Population

It would be expected that such a slowing up of growth in a single decade would produce severe shock in an economic system fully geared up to care for twice this increase. This point can be made more concrete if we consider how the increase of population is related to the new capital added to our national stock during the 1920's. The net addition to our capital during this decade amounted to $7,500,000,000 annually (2). This does not include the maintenance of the existing stock of capital. Our population increase averaged 1,700,000 each year. Thus about $4,400 in new capital was added for each person added to the population. Of course not all this new capital was used to supply goods to the additional population. A considerable proportion was used to supply goods for a higher level of living in the existing population. If as much as 50 to 60 per cent, or $3,750,000,000 to $4,500,000,000, of this new capital was needed on account of increase in numbers during the 1920's, then during the 1930's we would need to invest only $2,000,000,000 to $2,500,000,000 annually to care for our population increase with the same per capita investment.[1] It would seem rather obvious that such a declining need of additional capital to maintain a given level of living could not fail to have rather far-reaching consequences on the whole investment market.[2] Not only is it likely that increased competition between existing enterprises would render the return on investment in them less certain, so that they would become a less desirable field for additional investment, but it is also inevitable that funds which would have gone into expanding existing types of enterprise if population had continued to grow would be compelled to turn to other fields and to compete with the funds normally destined for investment in new enterprises.[3]

[1] These figures are not meant to be definitive. They are only intended to illustrate the importance of population growth in creating the need for new investment at a given level of living.

[2] The author is not arguing that so large an amount of new capital as was used during the 1920's could not have been used during the 1930's but only that for this amount to be used would require changes in the allocation of capital and in the distribution of the goods produced which our system was not prepared to care for automatically, as population growth was cut in half.

[3] How far foreign investments and the possible increase in foreign commerce after the war will be able to absorb any surplus funds that may be available in this country is impossible to say. If there should be a peace settlement which gives confidence in foreign investments it is possible that large amounts of capital will flow abroad and thus curtail that available for domestic use. This would mean that the decline in our

Under these conditions there is practically certain to be less assurance than in the past that investment in any and every type of enterprise will be profitable. It soon becomes apparent that it is not an inherent quality of our economy to expand steadily. Savings seem to be in excess of the opportunities individuals can find for profitable investment. Thus the whole structure of a liberal laissez-faire economy is being undermined, for it rests basically on the ability of the individual to use savings profitably and in so using them to create employment for all, which, in turn, leads to the greatest welfare for all members of the community. Again the writer would emphasize the fact that the disappearance of the ability of the individual to invest his savings profitably weakens the basic organizing principle of our whole economy. The motives which have heretofore been sufficient to assure the reasonably efficient operation of our system are being rendered inoperative by the mere fact that the expansion of economic activity guaranteed by population growth is passing, while we have not yet found anything to put in its place.

6. Stationary Population and a New Type of Economy

One need not claim any unusual power of prophecy to see in the situation just analyzed the beginnings of a new type of economy. On the side of large investors and management the first effects are probably already noticeable in the increasingly widespread and more determined attempts of powerful aggregations of capital to create monopolistic or semimonopolistic conditions within the fields where they are active. It appears to these people that only by controlling additional investment in the type of enterprise in which they are operating can they hope to maintain their flow of profits. The methods used to prevent free competition are many and varied. They run all the way from direct action to destroy the business of new and "uncooperative" competitors to powerful sales campaigns calculated to induce the consumer to use only the product of the big advertiser. Unfortunately many of these methods are proving quite effective. Of course, the attempt to monopolize enterprise in any field stirs up opposition, and more and more the public demands the right to regulate and control the actions of individuals and corporations which might result in the stifling of competition. Thus increasing governmental regulation would appear to be the inevitable corollary of an increasing tendency of businesses to ensure profit by

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population growth would have less effect on our investment market than would otherwise be the case. But it is far from certain at this writing that the private investor will care to send his funds abroad after the war. If this is to be done at all it may fall to the lot of the government to manage it and to issue its own bonds as security, thus hastening the movement toward state capitalism which was mentioned above as a possible consequence of the demand of older investors for security.

preventing competition. It is the author's contention that the decline in the growth of population is an important factor in curtailing the customary profits of business and thus in intensifying the urge toward monopoly. As long as there is ample opportunity to invest profitably all the savings one can make, or can get hold of, there is little incentive to stifle competition; but when savings exceed profitable investment the intensity of the monopoly urge increases greatly and it is by no means confined to big business. Many trade associations, real estate owners' associations, and other organized groups of small owners devote most of their efforts to preventing either public or private competition which would adversely affect their capital holdings and their returns on these.

The writer believes, therefore, that the economic and social changes associated with a slowly growing or a stationary population will tend to render a laissez-faire system of economy more and more inefficient in providing for the general welfare. As already has been said, the organizing principle in such a system was the continuous investment by the individual in enterprises intended to supply the community with the goods and services it demanded, with profit as the driving force. Of course, this did not always work out to the greatest common good; but it did work pretty well as long as all procurable capital was needed to produce larger and larger amounts of the goods in more or less general use, a condition which was quite easily maintained as long as population was growing rapidly and the level of living was also rising steadily and rapidly. Thus our expanding economy rested on two pillars: (*a*) the unprecedentedly rapid growth of population, and (*b*) the equally unprecedented increase in the use of nonnecessities (comforts and luxuries).

At present and rather suddenly, one of the pillars supporting a rapidly expanding economy, namely, a rapidly growing population, is being withdrawn, or, perhaps it would be more accurate to say, is being weakened by decay. It will no longer support a growing superstructure. More and more any expansion in economy must rest on the remaining pillar, namely, increased demand from the existing population, that is, upon a rising level of consumption. If this single pillar is to support the rapidly increasing volume of economic activity we have become accustomed to, it must be greatly buttressed by raising the level of consumption in the one-third to one-half of the population which now lacks the means of decent living.

In the past much improvement in this respect has actually taken place, but, in the writer's opinion, as population ceases to grow and the automatic increase in economic activity arising from this source fails, there must be more conscious management of our economy in order to assure a steady and rapid expansion of consumption which will, in turn, ensure the efficient use of our savings and our labor. This increased management of the economic system as a whole can come either from

the activity of individual enterprisers organized in the public interest or from the organized public, that is, the government. Since the writer believes that the profit motive which dominates the private enterpriser cannot be organized in the public interest without a large measure of public regulation, he is forced to conclude that the operation of our economy will more and more be directed by public bodies. Thus it is that the slowing up of population growth will, in the judgment of the writer, have as one of its most important economic and political consequences the development of an increasing public regulation of our whole economic system.

References

1. Bell, Howard M.: "Youth Tell Their Story," 273 pp., American Council on Education, Washington, D.C., 1939.
2. Kuznets, Simon: "National Income and Capital Formation," 86 pp., National Bureau of Economic Research, New York, 1937.
3. Myrdal, Gunnar: "Population: A Problem for Democracy," 237 pp., Harvard University Press, Cambridge, Mass., 1940.
4. Reddaway, W. B.: "The Economics of a Declining Population," 270 pp., George Allen & Unwin, Ltd., London, 1939.
5. Thompson, Warren S.: "The Economic Consequences of Slow Population Growth in the United States," *Proc.* of the 1939 Ohio Conference of Statisticians on Business Research, Ohio State University, Columbus, Ohio, 1940, pp. 3–11.

Questions

1. Do you believe that the decline in the number of children will create any economic problems? If so, what are they and how are they likely to affect us?

2. Do you think of any ways in which the increase in older people will affect our economic life? Why do you think so? Give evidence.

3. Will a stationary population create any problems in the investment of savings? If so, what are they? Do you believe they are likely to affect our general welfare, and in what ways?

4. How does the growth of population affect the expansion of business? Illustrate with examples from experience if possible.

5. Can you think of any social effects likely to follow on the increase in age in our population? If so, do they seem to you to be good or bad, and why?

6. Do you believe there is any connection between a declining population and monopoly? a system of free enterprise? governmental regulation? Give reasons and illustrations.

CHAPTER XIX

FACTORS IN THE GROWTH OF THE MODERN CITY[1]

The growth of urban population and of large cities is one of the distinctive characteristics of the present industrial age. Nothing like it has ever been witnessed by man (9). We can say this with assurance, even though we do not know with any certainty the size of most of the larger cities of the past. We do know, however, that the technological conditions essential to the existence of really large cities, swift and cheap transport and communication and efficient sanitary engineering, are of recent development. We also know that the economic organization which would enable any considerable part of the population to make a living in cities is peculiar to our own era.

So far as one can judge, every people has developed cities or towns, or some equivalent form of agglomeration, to the extent that its productive technique and economic organization have permitted. Even the size of the tribal group and the degree of its stability in a given locality seem to have depended to quite an extent upon the amount of the agricultural surplus available for the support of nonagricultural workers. But tribal aggregation, even though at times showing some of the characteristics of the town or city, generally lacks sufficient permanence of location to encourage the complexity of civic organization that towns and cities have. The retinues maintained by the more important tribal chiefs do show us, however, that man has a natural tendency to form towns and cities and to avail himself of the benefits of specialization in occupation to the extent that his mode of life permits. The city appears to be as *natural* in any significant sense of that term as a thunderstorm or as sheepherding. Man apparently never loses an opportunity to use any surplus above mere necessity to establish more or less permanent centers where he can trade and where he can employ his fellows in specialized occupations to make things which satisfy his craving for greater variety. This, I take it, is the natural basis of the city.

1. The Growth of Cities since the Use of Steam

All civilizations have had their cities. Indeed the only evidence we have today of the existence of many civilizations is the ruins of their cities, so that we have almost come to think of the city and civilization

[1] General references: 1, 2, 5, 6. 7. 8, 9.

as synonymous terms. It is obvious, of course, when one thinks of it that the city must always subsist on the surplus drawn from the earth by the tillers of the soil, the miners, the fishers, and the foresters—unless and until we find cheap methods of synthetically producing these basic resources. The efficiency of these basic extractive industries, therefore, determines the proportion of the people in any civilization which can live in towns and cities. It is because of this necessary connection between the efficiency of the basic extractive industries and the size of cities that we can say with absolute assurance that nothing like the growth of modern cities has ever been witnessed by man. We can also be certain that even the largest of cities in older civilizations could not have approached in size our largest cities of today because they did not have the mechanical means of supplying the necessities of life to populations such as we find in New York, London, Berlin, Paris, and other of our larger cities.

We may perhaps get some notion of the limits to the size of cities imposed by the use of the packsaddle, the cart, and the canal boat from the populations of the larger cities in China and India before the era of steam transportation. A survey of Peiping (4) gives reason to assume that in the heyday of the Manchus this great capital could not have housed many more than 1,000,000 people. Canton and Hankow may have been somewhat larger, because they had good water communications, but it is extremely doubtful whether any of these cities reached this mark before modern steam transport came to their aid.

In India we have more precise information regarding the size of the large cities about the time that steam transport came into use. At the census of 1881 Calcutta, with suburbs, had 829,000, and Bombay had 773,000 inhabitants. Calcutta and Bombay had already begun to depend somewhat upon steam transport when this census was taken; hence, we shall not be far wrong if we assume that the largest cities India supported in presteam days had not much in excess of 500,000 to 600,000 inhabitants. This number also probably represents not far from the maximum for the greatest cities of antiquity; although we cannot be sure that Rome under Augustus or Babylon at the height of its power did not approximate the 1,000,000 mark, which, as we have seen, the largest Chinese cities may have attained. But certainly 1,000,000 represents about the upper limit in size for cities in the presteam age. The problem of supplying an appreciably larger number of people, living in a compact group, with food, fuel, and the materials of manufacture was unsolvable so long as transport depended upon man and his domestic animals and the boats that he could navigate without steam on both natural and artificial waterways. Thus the conditions of transportation limited the size of the individual city, and the economic system prevailing determined within rather narrow limits the size of the nonagricultural

population in any society. It is quite safe, therefore, to say that large cities are phenomena unique to our own age.

In Table 104 the growth of the world's largest cities since 1800 is shown in such detail as the available data permit.

TABLE 104.—POPULATION OF THE WORLD'S LARGEST CITIES, 1800 TO 1940[1]

City	1940[2]	1930	1900	1850	1800
New York	7,454,995	6,930,446	3,437,202	696,115	79,216
Tokyo	5,875,667	2,070,000	1,819,000		
Berlin	4,251,000	4,227,000	2,712,190	429,217	172,846
London	4,094,500	4,396,821	4,536,267	2,363,341	959,310
Moscow	3,641,500	2,781,000	1,174,673	332,878	188,654
Shanghai	3,489,998	3,000,000	457,000		
Chicago	3,396,808	3,376,438	1,698,575	29,963	
Osaka	2,989,874	2,453,000	996,000		
Paris	2,829,746	2,891,000	2,660,559	1,053,262	547,756
Leningrad	2,739,800	2,228,000	1,439,613	487,300	220,200
Buenos Aires	2,317,755	2,100,000	821,293	76,000	140,000
Philadelphia	1,931,334	1,950,961	1,293,697	121,376	41,220
Vienna	1,874,130	1,836,000	1,727,073	446,415	231,949
Rio de Janeiro	1,756,080	1,469,000	687,699	166,419	43,376
Detroit	1,623,452	1,568,662	285,704	21,019	
Peiping	1,556,364	1,297,718	1,000,000		
Los Angeles	1,504,277	1,238,048	102,479	1,610	
Cairo	1,307,422	1,103,196	570,000		
Tientsin	1,292,025	1,387,462	750,000		
Sydney	1,279,080	1,254,000	487,932	53,924	2,537
Rome	1,257,890	1,008,000	463,000	184,000	153,000
Warsaw	1,225,451	1,178,000	638,000	160,000	100,000
Calcutta	1,193,651	1,485,582	1,145,933		
Milano	1,188,200	992,036	489,220	206,763	134,528
São Paulo	1,167,862	962,295	240,000		
Bombay	1,161,383	1,161,000	776,000		
Barcelona	1,148,129	991,262	533,000	175,000	115,000
Hamburg	1,097,000	1,147,000	721,744	194,000	
Glasgow	1,119,900	1,088,000	761,709	344,986	77,385
Nagoya	1,082,816	907,404	289,000		
Kyoto	1,080,593	765,142	381,000		
Budapest	1,059,287	1,005,000	732,000	178,000	54,000
Madrid	1,048,072	896,511	540,000	281,000	160,000
Birmingham	1,029,700	1,002,000	522,000	242,000	71,000
Mexico City	1,029,068	1,007,672	345,000		
Melbourne	1,024,000	1,033,000	496,079	39,000	
Nanking	1,019,148	633,452	270,000		

[1] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1940, Stockholm, 1940, pp. 354–355.

[2] 1940 or latest available.

This table gives us a fairly adequate picture of what has been happening in city growth during the period characterized by the application

of steam to transport and to the operation of machinery. This does not imply that the use of steam is the sole factor in this very rapid growth of the cities. But it should be clear from what has already been said that the great agglomerations of human beings found in our larger cities today could not possibly come together and survive except for the increased speed and efficiency of transport arising from the use of steam. For this not only ensured a more certain supply service for large cities by increasing the number, the variety, and the size of the areas from which they could draw food and raw materials, but at the same time made it possible for these cities to sell their goods and services to people scattered throughout the world.

TABLE 105.—PERCENTAGE DISTRIBUTION OF GAINFUL WORKERS 10 YEARS OF AGE AND OVER BY OCCUPATION, UNITED STATES, 1820 TO 1940

Year	Agriculture	Manufacturing and mechanical pursuits	Trade and transportation	Domestic and personal service	Professional service	Mining
1940[1]	18.8	28.0	28.7	8.9	12.1	2.0
1930	21.4	28.9	28.6	10.1	6.7	2.0
1920[2]	25.6	30.8	25.1	8.1	5.2	2.6
1920[3]	26.1	30.6	24.9	10.1	5.0	2.6
1910	31.2	28.4	21.3	11.3	4.6	2.6
1900	36.8	27.0	18.7	10.6	4.2	2.0
1890	41.9	25.6	15.6	10.3	4.1	1.8
1880	48.9	24.1	12.2	9.3	3.5	1.5
1870	53.4	21.2	10.4	10.2	2.9	1.4
1860	59.7	18.4	7.4	9.5	2.9	1.6
1850	64.5	16.4	5.4	9.6	2.7	1.2
1840	68.6	14.6	3.8	9.6	2.7	0.3
1830	70.4	13.3	3.1	9.8	2.8	0.3
1820	71.9	12.2	2.5	10.0	2.8	0.3

[1] Not exactly comparable to previous figures because of difference in classification. The "professional service" group is probably affected the most. A recent census release (Mar. 28, 1942) gives the proportion of the nation's labor force engaged in agriculture as 17.6 per cent, but other groups have not been adjusted to this new classification.

[2] According to the 1930 census classification.

[3] The data for 1820 to 1920 are from (VIII, 11).

Before proceeding to discuss the role of steam in the building of our modern city let us notice briefly the shift of population from the country to the city which has been so characteristic of our time (Table 14). Urbanization has proceeded at a very unequal pace in different lands. A veritable rural exodus has been going on in recent decades in most Western lands. It is also getting under way in the Soviet Union and in parts of the Far East, as appears from the growth of some of the Oriental cities (Table 104).

Perhaps the meaning of this movement from country to city can be made even more clear if we notice the broad changes in occupational groups in our own country. It is hard for us to realize today the extent to which agriculture occupied the time and attention of our grandparents and great-grandparents (see also Chap. VIII, p. 104).

In 1820 almost three-fourths of our employed people were engaged in some form of agriculture, while in 1940 only a little over one-sixth were so employed. In many other countries the same type of change—from agriculture to manufacturing and commerce—has taken place (Table 106). Russia (1897 data of doubtful value), India, and Bulgaria are still predominantly agricultural countries, in strong contrast with most Western lands, but even there the change is under way.

TABLE 106.—PERCENTAGE DISTRIBUTION OF GAINFUL WORKERS BY OCCUPATION, SELECTED COUNTRIES[1]

Country	Year	Agriculture, forestry, and fishing	Manufacturing and mining	Trade and transportation	Army and navy	Public and professional service	Domestic and personal service
England and Wales	1931	5 7	46.6	27.2	1.3	9.6	9.6
	1871	16.7	51.8	8.2	1.4	5.5	16.5
Germany	1933	28.9	40.4	18.4	...	8.4	3.9
	1882	44.7	37.4	10.5	5.2	....	2.2
Australia	1933	19.3	31.3	22.8	0.2	18.2	8.2
	1891	25.4	37.0	19.4	...	6.3	11.8
United States	1940	18.8	30.0	28.7	[2]	12.1	8.9
	1910	33.1	30.4	21 0	...	5.6	9.8
France	1931	35.6	33.7	18.3	1.9	6.4	4.1
	1866	41.2	28.8	8.2	2.5	4.1	15.3
Italy	1936[3]	48.2	29.3	12.6	1.1	5.2	3.6
	1881	58.7	28.6	4.1	1.1	3.4	4.1
Bulgaria	1934	76.3	10.4	4.9	1.5	6.0	0.9
	1900	83.5	7.6	3.7	1.6	2.3	1.2
Russia	1926	87.6	6.2	3.0	0.7	2.5	
	1897	60.8	18.7	7.4	3.8	3.9	5.4
India	1931	71.5	10.9	7.1	0.6	2.2	7.6
	1901	72.4	17.0	2.8	0.1	3.8	3.9

[1] Sweden, Statistiska Centralbyrån, "Statistisk Årsbok för Sverige," 1941, Stockholm, 1941, p. 355.

[2] Included in public services.

[3] Italy, Instituto centrale de statistica: "VIII Censimento generale della popolazione," Apr. 21, 1936, Vol. IV, Part II, pp. 2–66.

No other data are needed to call attention to the great change in the distribution of population between town and country which has taken place in Western lands since about the beginning of the nineteenth century. We are all aware of this change because most of us need go

back only a generation or two to find forebears who tilled the soil or who lived in rural villages and supplied the farmers with the few and simple things they could not make for themselves. But in spite of this consciousness of having detached ourselves from the soil only a few years or a few decades ago, most of us do not realize the fundamental changes in our mode of life which have resulted from this detachment from the soil. If we would envisage our social order of only a few decades ago, we must think of Russia, or of India, where a large proportion of all workers are still to be found on the land. Today the occupational distribution in these countries is not greatly different from that which prevailed among us less than a century ago. The mode of life which was common at that time is difficult for us to visualize.

It is not exaggerating to say that the changes in the social order which have occurred since the beginning of the nineteenth century in western Europe and the lands settled from western Europe are much greater and more profound than those which occurred in Europe from the time of the Greeks down to 1800. We cannot attempt here even to enumerate these changes, to say nothing of discussing them. It will be necessary, however, to discuss briefly the chief factors that underlay these changes and to show how they affected the distribution and growth of population and led to the development of the modern city.

2. The Agricultural Revolution

We need not enter here upon the discussion of the effects of the use of steam upon our industrial life in the large, as this topic has been amply treated on many occasions; but it will be necessary, in order to make our point, to show how the use of steam determined the particular form of our modern urban-industrial civilization and led to the development of many of the difficult problems which it now presents to us. It is also incumbent upon us to explain how it came about that we could have such enormous populations freed from the land. We shall undertake this latter task, very briefly, before essaying to explain the reasons for the particular form of our modern cities.

It is not generally realized that what was equivalent to a revolution in agricultural production preceded the Industrial Revolution to a certain extent and at other times went hand in hand with it. The art of agriculture in Europe apparently remained almost unchanged for some centuries during the Middle Ages and early modern times. In many respects it was less efficient then than it had been during later Roman times. The numerous and fairly large cities of the Roman Empire attest the fact that there was a larger surplus of agricultural produce, over and above the needs of the cultivator of the soil, at that time than at any later time until the beginning of the modern industrial era. We must not forget, as was pointed out above, that man always seemed to build

cities up to the limit of the population that could be supported by the agricultural surplus available. If, on the average, it takes four Indian peasants to produce enough surplus above their own necessities to provide for one city dweller, then not more than 20 per cent of India's population can be urban. If India's agricultural efficiency increases until three peasants can produce enough surplus for one city person, then 25 per cent of the population will probably be found in towns and cities engaged in nonagricultural pursuits.

It appears that throughout the Middle Ages and into early modern times the agricultural surplus produced by the western European peasant was very small indeed. His tillage practices were quite primitive. He knew little or nothing of fertilizing his fields, and he kept a considerable part of them, one-fourth to one-third, fallow; he did not know how to select good seed, and he knew almost nothing about animal breeding; he knew just as little about producing milk and meat efficiently with the crops that he did raise; while he never dreamed of more satisfactory crops, either for human or for animal food, to replace some of those he was accustomed to raising. In a word, his ignorance of agriculture was profound; nor were most of the lords of the manors, their bailiffs, or other landed proprietors much better than the peasant in any of these respects. The landlord all too often encouraged thriftlessness and ignorance by appropriating to himself all the benefits of any improvements in production which were made.

Each country, of course, had its own peculiar agricultural problems. Those of France were different in many respects from those of Germany, and these in turn differed from those of Italy or England. But everywhere in Europe agriculture was extremely inefficient and, therefore, could support only a very small urban population. No matter how well better manufacturing processes might be known, or how much people might desire to enter trade, little development along these lines could take place until the agricultural surplus was increased, so that a smaller proportion of the workers could produce the agricultural necessities needed by any given population. Without going into much detail it may be interesting to indicate some of the improvements in English agriculture which made it possible for England, while still self-supporting agriculturally, to employ a larger and larger proportion of its population in nonagricultural pursuits. Lord Ernle says of English agriculture in the eighteenth century:

> The gigantic advance of agriculture in the nineteenth century dwarfs into insignificance any previous rate of progress. Yet the change between 1700 and 1800 was astonishing. England not only produced food for a population that had doubled itself, as well as grain for treble the number of horses, but during the first part of the period became, as M. de Lavergne has said, the granary of Europe. [The advances in agriculture during this period] may be summed up in

the adoption of improved methods of cultivation, the introduction of new crops, the reduction of stock breeding to a science, the provision of increased facilities of communication and of transport, and the enterprise and outlay of capitalist landlords and tenant farmers (3, p. 148).

We cannot take time to show how these improvements in agriculture enabled a smaller proportion of the people to produce the food and clothing of the nation. Suffice it to say that improved methods of tillage literally caused two grains of wheat, or two tons of hay, to grow where one had grown before, new crops provided better feed for cattle, and, in conjunction with better breeding of cattle, produced two pounds of meat or milk or wool where one pound had formerly been produced. Enclosure of open fields accompanied these changes in agriculture and drove many people from the rural districts to the towns and cities, since they were no longer needed on the land. Thus it came about that an agricultural revolution in England to a certain extent preceded and made possible the Industrial Revolution. Too often this fact is overlooked, and it is not realized that the improvement in standards of living and comfortableness of life for the masses of the people was inaugurated by this improvement of agriculture some decades before the Industrial Revolution, with which this improvement is generally associated, got under way.

As Lord Ernle says, the improvements in agriculture accomplished during the eighteenth century, though great, were almost as nothing compared with those of the nineteenth. The consequence is that we have had a constantly diminishing proportion of the population in Western lands needed to produce our agricultural necessities. Today only about 20 per cent of the gainfully employed workers in Australia are engaged in agriculture. In this country the proportion is even less, and we may assuredly look forward to the time when not over 15 per cent of the adult male workers of the country will actually be engaged in tilling the soil, if farmers continue to work the hours they now do, and if agriculture is not called upon to produce more of the raw materials of industry than it now produces. Even today this agricultural revolution continues, and the agricultural economists of our U. S. Department of Agriculture estimate that the efficiency of farm labor has increased over one-third since World War I.

It is no wonder, then, that the last century or century and a half has witnessed changes in the distribution and occupations of people in the West which are without precedent in human experience. The movement from agriculture to the nonagricultural industries is a natural movement in the sense that it is the inevitable effect of changes in productive processes under our present social order. Those who bemoan this movement and see in it some perversion of human nature fail to

understand the nature of our social order and do not sufficiently appreciate the strength of the economic forces at work. It is a movement which will continue as long as improvements in agriculture render fewer workers necessary to produce the agricultural products that we desire and as long as farmers work from sunup to sunset. It is quite possible that under existing conditions as few as one-sixth of the people of any country using modern agricultural machinery will be required to produce an abundance of the agricultural goods needed.

3. The Nature of Urban Growth

Having noted briefly the changes in agriculture making urban growth possible, let us now turn our attention to the more detailed consideration of the factors giving our urban communities the particular form that they have assumed today. The modern city may be called a mononucleated community without doing great violence to the facts. It always has one nucleus which is far more important than any of the others, and indeed as a rule it has a "downtown" area in which are congregated most of the important offices, stores, hotels, amusements, and public buildings. This form of structure necessitates the coming together of great numbers of people during the working hours of the day. The modern city has kept on growing in this form long after it became a very uncomfortable place for the mass of its people to live and work in. Why have our modern large cities assumed this mononucleated form?

It may be pointed out that the larger cities built in presteam days were not mononucleated in the same way that our modern cities are. One can see this very clearly by studying the life of some of the older European cities, as well as that of Oriental cities, where the tendency to concentrate the leading stores, banks, offices, and so forth is not nearly so marked as among ourselves. In Paris and Naples, for example, there is a far larger proportion of the people that has no reason to go to the downtown section of the city than is the case in our cities. This is also true of London, but not to the same extent as of the cities of the Continent. The fact is that in these older European cities, which were generally built up of rather distinct units that were themselves old, the separateness of these units has never been entirely effaced, so that they still retain an individuality and an economic and social independence which can scarcely be found in any of the quarters of the more recent industrial and commercial cities.

But it is in the Orient that we see the large city of the past best exemplified. Where modern means of transport were lacking, the large city was necessarily organized so that most people could work either at home or in their immediate neighborhood. Furthermore, before the days of steam power the factories were small, and the amount of office work involved in carrying on the business of any particular firm

was very little; hence, there was no economic reason for the concentration of any large number of people in a given place for work. So it is that we can see today, in some of the large cities of China, the city much as it must have been at all times and in all lands until the development of steam transport and steam-driven machinery. In wandering about these cities one is impressed with the lack of a central business area, with the large amount of home manufacturing, and with the resultant uniformity of all parts of the city. The highly differentiated sections—business, retail and wholesale, factory, railroad, residence, and so forth—to which we are accustomed are largely lacking, and one gets the impression of going through a series of small cities rather than one large city, although there is a very considerable amount of differentiation of areas for the production and sale of jewelry, furs, textiles, pottery, and other major types of goods. It is only where Western influence is decidedly marked that large factories and department stores are springing up.

Steam transport and the application of steam to the driving of machinery have led to a great differentiation in the various quarters of the city and have tended to concentrate great numbers of people in small areas for their working hours. Thus we come to have the modern city with a structure quite different from anything that has existed in the past. Not only do we have larger cities than were possible when trade could be carried on only within a comparatively small neighboring area, but we have very marked differentiation of areas within the city. The life of the city has more and more come to center in the downtown business area—the real nucleus of the modern city.

Little space need be devoted to pointing out how the city was affected by steam transportation. The area with which it could trade was greatly extended both at home and abroad. In the course of a day's wandering in any large city one can see goods being unloaded from ships or railway cars, or both, which come from every part of the earth. And, of course, goods are being sent out in exchange for them. This is too commonplace to attract attention, but we must not forget that it has made possible a new kind of urban life which is exerting a profound influence upon our social order today.

Of no less importance, although its effects upon the form of our cities is less generally realized, is the application of steam to the driving of machines. It is in the very nature of steam power that it is more economical when applied in rather large units to machines concentrated within a comparatively small area. When used directly for power, as it has been until quite recently, steam cannot be carried any considerable distance, and it cannot be applied economically to the operation of individual machines. The large factory is the natural development of the direct use of steam for power. When the owner of the small water-power cotton mill changed to the use of steam, he found that an

increase in the number of units in his mill was accompanied by lower costs. He was thus in a more favorable position to undersell his competitors and still have a nice profit. Naturally he was encouraged to increase still further the size of his factory. The situation was much the same if he occupied a water-power site capable of furnishing large additional power. The use of steam and water power encouraged the development of great manufacturing plants in which an almost unlimited growth in the number of producing units of machinery was profitable, and, of course, the number of employees who had to get to these factories for work increased apace.

The more economies this large-scale steam plant made possible the more successful the business was, as a whole, and the more funds there were available for its extension. Nothing was more natural, then, if business expanded, than the building of an addition to the existing plant and the employment of still more workers at this point. It is easy to see that the very nature of steam as direct motive power encouraged the concentration of population in comparatively small areas where the workers could get to the factories without too much delay. At first it also encouraged the development of the business offices near or in the plants, where the owner or manager, generally the same person in the early days, could have both the manufacturing and commercial ends of his business under his immediate control.

It must be remembered, if we would understand the nature of our urban growth, that quick local transportation and communication were rather slow of development. Long after it was possible to get cotton from the United States for the Lancashire mills and to sell the product in all parts of the world it was rather tedious and difficult for the factory owner to look after his affairs very satisfactorily, if he lived at any considerable distance from his factory and office. As for the employees, they must live within a few minutes' walk of their work. As business expanded, the office work of business grew even faster than the factory work, and both factory and office demanded a population living close by which exceeded the capacity of the customary type of homes that could be built within a reasonable walking distance. This resulted in the tenement type of building, the lack of open places, the terrible room crowding, and most of the other hideous features of congestion with which we are only too familiar today. In its early days the steam factory continued and in some respects intensified the concentration of population which was characteristic of the walled city.

In the days when our modern cities were taking form there was probably no alternative to this crowding. The growth of industry and trade necessitated it. It could never have occurred to most of the men who were the enterprisers in this movement that growth of their business meant anything but an addition to their present plant and office space.

But after a time, when rail transport between cities became more efficient, it did occur to many men that these industrial cities that they had created were not very pleasant places for them and their families to live in. They began to find it possible to live in some more congenial locality some distance away from the factory. They also found that they could turn the technical work of manufacturing over to some engineer or technician and need not visit the factory every day. But as a rule they still thought of an enlargement in output as necessarily connected with an addition to the existing plant. Furthermore, once the actual owners had left the plant, they forgot how bad were the living conditions that had grown up around it, and they did not realize how the new addition was going to make living conditions still worse for their employees. Consequently they did not stop to consider whether the form in which their enterprises were developing needed to be overhauled and changed.

When the owner moved away from his factory he took part of his office force with him. At first he frequently visited the factory. If he had moved to Boston or London or Paris or New York he found that he could still get to his factory in a few hours and spend a day there occasionally. This worked well, because by this time he had found it impossible to keep up with the technical developments in his industry in any event and had had to turn this over to men who were experts in this field. Almost without realizing it, he found that his visits to the factory were becoming less frequent, and so it seemed advisable to call more of his office force to him. Thus grew up the very common practice of almost complete separation between factory and office which is so common in large business today.

It was also found that there were certain advantages in the owners and general managers of a particular firm living in the neighborhood of other owners and managers with whom they did business. It is easy to see how this was the case in the pretelephone days and even in the days when the telephone first came into use. At that time the telegraph also was slow and costly, and most business had to be transacted in person or by letter carried by train. In other words steam placed limitations upon commercial transactions and stamped certain forms of urban organization as more efficient than others, in the same way that it determined the size and concentration of factory production. It requires but little imagination to see how the owner of mills at Lawrence might, in pretelephone days, profit by living in Boston, where he was in close touch with the men who were likely to buy his goods. If he remained in Lawrence, he had to depend largely on letters to keep in touch with his customers, and he was at a distinct disadvantage as compared with his competitor, who had moved to Boston and maintained close personal contact with his customers. To sell his goods effectively he needed instant and certain communication with customers and immediate

access to his accounting department. This could be secured only by living and working in close proximity to one's customers and by increasing one's immediate office staff. As businesses increased in size and the amount of capital needed increased, it also became important for the industrialist to keep in close touch with his banker. More and more the expansion of enterprise came to require the concentration of capital in large amounts and the banker organized the service by which this could be done. In all these financial arrangements personal contacts played a large part so that it was often of distinct advantage for the enterpriser to live in the financial center.

It is out of this general situation that the habit of concentrating offices in downtown areas under the immediate supervision of the "big boss" became general. As the business of a firm grew, the amount of office work in many cases grew even more rapidly, so that today we have some truely prodigious offices that have apparently grown up just as the factories did, that is to say, without much consideration on the part of the men in charge as to whether it was better to add another floor or another building to their present office or to attempt a new form of decentralized office organization. The invention and use of the skyscraper in this country apparently has solved the problem of increase in office staffs, so far as our managers are concerned. It seems never to have occurred to them that they were rapidly making the large city of today an almost impossible place for the masses of the people to live in. What the factory did in the way of crowding people together and making life hideous for the handworking people—so hideous that the enterpriser moved away—the skyscraper is doing for the white-collar workers in our offices, in spite of very much improved transport facilities within the city.

4. Disappearing Need for the Present Organization of the City

It is hard to understand today the need for such a great number of people working in downtown areas in our larger cities. The conditions which originally gave impetus to this crowding together in centralized districts no longer exist, but still it goes on. It seems quite probable that mere inertia is responsible for this continued development of the mononucleated city at the present time. Recently, many firms have found out that there are advantages in building branch factories instead of adding more to the original plants, although the movement of factories into more favorable localities has not yet gone very far; but the development of branch offices in smaller communities where the workers will have a chance to live comfortably and yet not be far from their work has scarcely started. The men who are responsible for the location of offices do not seem to realize that the conditions of communication which made

it advantageous for them to be near buyers and bankers, as well as to have their office staffs close at hand at all times, no longer prevail. When, except for personal contact, the letter was the only means of keeping in touch with the data of one's business—just as it was the only means of keeping in contact with the most important buyers—there was much reason for keeping the office downtown. But with the development of the telephone, the telegraph, and air mail this need no longer exists. It is difficult, however, to discover any tendency toward decentralization in office work.

It should be clear from what has been said that the actual form of the modern city derives largely from the direct use of steam for power and as the agent of communication. If electricity and methods for its use had been discovered simultaneously with steam, it is quite probable that our whole industrial-urban civilization would have assumed quite a different form of organization. Some of the possibilities inherent in electricity and the gas engine will be discussed later, as will also some of the other reasons for the continuation of our urban development in the direction given it by the use of steam.

TABLE 107.—PERCENTAGE INCREASE IN TOTAL PERSONS GAINFULLY OCCUPIED AND IN THOSE OCCUPIED IN THE GENERAL DIVISIONS OF OCCUPATIONS, IN LARGE CITIES, 1920 TO 1930[1]

Occupation	New York	Chicago	Philadelphia	Detroit	Los Angeles	Boston	Cleveland	St. Louis
Total	25.9	26.6	8.7	48.2	118.2	1.5	13.7	3.7
Manufacturing and mechanical industries	7.2	15.3	−7.9	27.9	80.8	−12.1	−4.9	−5.9
Transportation and communication	23.4	29.9	15.8	66.7	89.0	1.3	48.0	1.6
Trade	41.1	27.9	25.8	80.5	155.4	8.7	25.2	13.3
Public service	11.9	22.6	22.5	117.8	108.0	3.9	27.2	4.0
Professional service	51.7	48.9	37.3	97.0	142.3	28.4	47.1	24.8
Domestic and personal	46.5	65.8	32.6	108.7	155.7	13.0	67.5	12.3
Clerical	33.0	21.4	12.6	38.4	147.7	2.9	10.1	7.7

[1] Owing to a change in classification, it is impossible at the present time to compare 1940 data with that for earlier decades.

There is one other factor in the situation which seems to me of considerable importance in encouraging the growth of great businesses in large cities. There is little doubt that in the early stages of modern industrial development there was a very close connection between the size of the plant and office and the efficiency of the business as a whole. The really efficient producer was then, as has generally been the case, the one who made the greatest financial success in his business. He

was, therefore, the one who had the most capital to spend upon the expansion of his enterprise and the one who could most easily raise additional capital through the banks. Expanding size, therefore, was a proof of success, and great size in itself came to be regarded as one of the most important factors making for success, if indeed it was not an indispensable factor. In the course of time any business or city that had grown to large proportions came to be regarded as better and more progressive than one that was smaller, and having an office in a large city, perhaps at some distance from the plant, also came to be a visible badge of success. There cannot be the least doubt that the prestige which has come to attach to mere bigness has driven or drawn many men who have developed their enterprises in smaller communities away from their factories into the larger cities. When they make this change they very frequently take with them their offices and office staffs and most of the professional workers needed to carry on all those phases of business not directly concerned with factory management. Table 107 shows the occupational trend in some of our larger cities.

These data prove that it is not the growth of manufacturing and mechanical pursuits, in spite of the increase in automobiles, radios, and other mechanical gadgets, that is responsible for the growth of population in these cities. In none of them have the numbers in manufacturing and mechanical pursuits increased nearly so rapidly as the total of the gainfully employed. On the other hand, in trade, in clerical work, in domestic and personal service, and in the professions the increases have been far more rapid than in the total. Two of these groups, namely, the clerical and professional, undoubtedly owe a large part of their growth directly to the concentration of offices in the city. The increase of those engaged in trade also, in considerable measure, arises from the same source; while the growth in domestic and personal service is the result of the presence of men drawing good incomes in these offices. Thus our larger cities are no longer growing because they are the sites of efficiently managed workshops but rather because the men who control large enterprises prefer to live in them and to have near themselves the people who perform the manifold services that they need, both to carry on their businesses and to live in comfort and luxury.

It may seem that this discussion of the development of the large modern city is somewhat beside the point. But this is not the case; it is very much to the point if we would understand the population problems which now confront us. As was said above, a larger and larger part of our people are going to work at nonagricultural tasks for some time to come. Are these people going to live in large cities of the present type, or is some new form of economic organization going to change the basic structure of our present urban-industrial order? I do not claim that any definitive answer can be given these questions, but the discussion

of how we came to have our present cities and an attempt to appraise some of the newer elements in our economic and social life will at least be of use to us in thinking about the distribution of population in cities and its relation to our welfare. It appears to be high time to consider cities as places in which people are to live rather than merely as places in which to make goods to sell for money to enable us to make more goods to sell for more money and so on ad infinitum.

In the not distant future the distribution of the population over the face of the land will come to be regarded by social scientists as one of the major problems of the age. The horror, the strain, and the inhumanness of living in modern large cities, where 75 to 90 per cent of the people have too little space in their homes and too little room about their homes for play and recreation, where they have the constant irritation of noise and dust and smoke, where going to and from work—instead of providing wholesome exercise and relaxation—is the most wearing part of the day's work, and where the commuter seeking space in which to live has almost no time to become acquainted with his family, are so clearly evident that we cannot much longer ignore their effects upon the quality of our civilization. The time has come when we must begin to ask ourselves whether we cannot organize our nonagricultural life so that people will not need to be crowded together, either at work or at home, as is now the case. Instead of judging a city by the number of its inhabitants, we shall ask what part of its people have a chance to develop real homes in which a wholesome family life is possible and in which they will be willing to breed at least enough to replace themselves. For, of course, a city civilization in which the deaths exceed the births—a condition which has already come to pass in many quarters of our larger cities[4]—cannot long endure and can be regarded only with misgiving by those who look some distance into the future (XI, 19). A civilization whose most perfect fruit is the modern large city is certainly doomed to early decay. Some of the reasons for this judgment will be given below.

References

1. BEARD, CHARLES A.: "The City's Place in Civilization," *Amer. City*, 39 (1928), 101–103.
2. BURGESS, ERNEST W., ed.: "The Urban Community," 268 pp. (Selected papers from the proceedings of the American Sociological Society, 1925.) University of Chicago Press, Chicago, 1926. See pp. 122–132, H. B. Woolston, American City Birth Rates; pp. 133–138, C. E. Gehlke, Some Economic Factors in the Determination of the Size of American Cities; pp. 139–143, Hornell Hart, The Expectation of Life in 2000 A.D.; pp. 144–150, Ernest P. Goodrich, Statistical Relationship between Population and the City Plan.
3. ERNLE, ROLAND EDMUND PROTHERO, First Baron: "English Farming, Past and Present," 504 pp., Longmans, Green and Company, New York, 1922. See Chap. 15, pp. 290–315, The Rural Population, 1780–1813.
4. GAMBLE, SIDNEY D.: "Peking, a Social Survey," 538 pp., Doubleday, Doran & Company, Inc., Garden City, N. Y., 1921.

5. McKenzie, Roderick D.: "The Metropolitan Community," 352 pp., McGraw-Hill Book Company, Inc., New York, 1933.
6. Mumford, Lewis: "The Culture of Cities," 586 pp., Harcourt, Brace and Company, New York, 1938.
7. Park, Robert E., Ernest W. Burgess, and Roderick D. McKenzie: "The City," 239 pp., University of Chicago Press, Chicago, 1925. See Chap. 2, pp. 47–62, Ernest W. Burgess, The Growth of the City; an Introduction to a Research Project.
8. Thompson, Warren S.: Urbanization, "Encyclopaedia of the Social Sciences" (I, 4), Vol. 15, pp. 189–192.
9. Weber, Adna Ferrin: "The Growth of Cities in the Nineteenth Century; a Study in Statistics," 495 pp., Columbia University, The Macmillan Company, New York, 1899. (Columbia University Studies in History, Economics, and Public Law, Vol. 11.)

Questions

1. What factors determined the growth of cities in the past? Give some examples showing the method in which these factors operated. Why was Rome a great city?

2. Discuss the changes in the distribution of population in Western lands since the beginning of the nineteenth century. What factors were operative in bringing about these changes? Rate these factors in importance, and justify your answers.

3. Discuss the importance of the agricultural revolution in producing the present distribution of population. What were the chief characteristics of the agricultural revolution of the nineteenth century? of the present agricultural revolution?

4. Contrast the structure of the modern city with that of the ancient one. How do you account for these differences? What is meant by mononucleated city?

5. Describe the process by which the modern city acquired its present form. What does this indicate regarding the possibility of controlling the form of urban development in the future? Explain your answer.

6. Why does the present organization of the city persist? What do you consider are the most important factors in the continued growth of big cities? Explain fully.

7. Do you believe it would be possible to build a different kind of city? What kind?

CHAPTER XX

THE FUTURE OF THE LARGE CITY[1]

In what kind of cities or communities will our nonagricultural workers live in the future? No doubt all of us have seen sketches of the future city, with hundred-story buildings and two or more levels of streets, moving sidewalks, and several levels of tracks for trolleys and trains. If all Manhattan were built up in this fashion, it could no doubt house from one-third to one-half of the present population of the country, and the engineer would have proved his prowess in construction. It is extremely doubtful, however, whether the human race could survive under such conditions, and it is also doubtful whether many people would want to survive, even if they could. Indeed, to judge from birth performance today, a rather small minority of the dwellers in large cities, as they now are, manifest an effective desire to survive, that is, have enough children to ensure their own replacement in the next generation. The building of such supercolossal cities would, therefore, probably prove a major catastrophe to man, just as Frankenstein's monster proved his undoing. Furthermore, it is becoming increasingly questionable whether the present large city is the most efficient type of economic organization, and the war is showing the military dangers in such huge concentrations of population and industry.

1. The Future City

This whole matter of city living and what it means to man economically, socially, culturally, and morally has attracted much attention recently. Chase (2) has pointed out that even the engineers are beginning to question their ability to build ever more and larger structures on a limited area and ensure these modern cliff dwellers the goods and services essential to decent living. The problem of servicing the modern great city is becoming so complex that real catastrophe due to a breakdown in these services because of increased congestion is by no means impossible. To this has now been added the threat of aerial bombardment, which seems not unlikely to gain more consideration for the decentralization of cities than all the social and economic factors stressed by sociologists and economists. But even though military considerations prove to be of vital importance they cannot occupy our attention here

[1] General references: the general references given in preceding chapter plus 1, 3, 4, 5, 7, 8, 9, 10, 11.

because we do not yet know what kind of a community can best be defended against aerial attack, nor whether this threat is to remain a relatively permanent factor in national planning. Leaving aside for the present, therefore, the military considerations affecting the organization of the modern city, we shall confine our discussion chiefly to the more permanent factors indicating the need and the possibility of reorganizing the structure of the large city.

Mumford (XIX, 6) is convinced that the physical difficulties arising with increasing congestion which Chase emphasizes are of little import as compared with the impoverishment and the warping of the human spirit which inevitably accompany congestion. He believes that the large city sets up values and modes of living which are basically opposed to those humane and biological values by which man must guide his conduct if he is to survive. Man must choose between reconstructing the city so that it will provide the essentials of the good life or dying out. The modern city is destroying him both in body and in spirit.

The writer has shown (Chap. XI) that modern city people do not reproduce and has long questioned whether any civilization which so nearly sterilizes a large portion of its citizens can long survive. Mumford says, "No!" and to the writer his arguments are convincing, although in the very nature of the case they cannot be called proofs. But our discussion here must be confined largely to those factors which may affect the distribution of population as between larger and smaller cities and between urban and rural areas, even though in so doing we ignore many of the most interesting aspects of city life (1).

2. The Present Form of the City and Steam Power

In the preceding chapter the writer has argued that the use of steam as the direct motive power in industry and communication has largely determined the present pattern of population distribution in the Western world, with the modern mononucleated large city as its most distinctive characteristic; that the physical pattern of the present economic and social structure of society has been shaped in large measure by the direct use of steam; and that the form of organization thus engendered continues to flourish today in spite of the fact that we might now substitute electricity for most operations where steam has been used directly, employing steam chiefly for the production of electricity.

It is not particularly strange that the type of city developed at the time of the direct use of steam should still be with us, for it is only about 20 years or a little more since the significance of using electricity for industry and communication began to be realized even by the initiated, and it is only now that we are beginning to understand how electricity and the use of the internal-combustion engine may contribute to the enrichment of life for the masses of the people.

3. The Qualities of Steam and Electricity Contrasted

Even though it involves some repetition I wish to contrast very briefly the qualities of steam and electricity before undertaking to point out the possibilities inherent in the wider use of electricity for the improvement of human living by making possible a more rational distribution of population.

a. Steam, if used directly, must be used quite close to the place where it is produced. Its power must be transmitted through shafts, pulleys, and belts, and high-pressure steam cannot be carried any great distance from the source of generation. On the other hand, electricity need not be used at or near the source of production, for it can be distributed at comparatively small cost over considerable distances, at least 200 miles. Consequently, considerations of efficiency do not necessarily demand the same type of physical organization either for industry or for commerce where electricity and the internal-combustion engine are used for power and communication as where steam is used directly.

b. As a means of communication the steam engine was, of course, a vast improvement over the stagecoach and the sailing vessel; but as compared with electricity, steam power is extremely slow and cumbersome and does not provide for direct personal communication, as does the telephone. This point needs no elaboration.

c. In transportation, steam holds its own better than in power application to machinery and to communication, but it is, of course, far less satisfactory than electricity for railways in regions of dense traffic and is far less flexible than the internal-combustion engine for highway traffic.

Bearing in mind these differences between steam and electricity—with the latter of which the gas engine might be classed for certain purposes—let us turn our attention to some of the possibilities of these newer types of power in effecting a redistribution of population.

4. Size and Efficiency

The very nature of steam power made it inevitable that economy and great size in an undertaking should come to be closely associated in the minds of men in the early days of the Industrial Revolution. With the increasing use of electricity it is quite probable that bigness of plant and office will come to have less and less connection in our minds with the general efficiency of a business. If we add to the use of electricity in the plant the flexibility of transportation resulting from the use of the automobile, the truck, and the airplane and the rapidity and cheapness of communication by electricity, it seems that we have the basis for a complete reorganization of the physical form of our economic system which will in turn result in a redistribution of our nonagricultural population.

5. Possibilities of Decentralizing Industry

The use of the electric motor, the internal-combustion engine, and the telephone opens up possibilities of decentralizing our economic life which are only now beginning to become apparent. A single power station, advantageously located, may supply power to industries within a fairly large radius at rates which almost equalize power costs between the small plant using a few thousand units a day and the large plant using tens of thousands of units daily, or between the plant next door to the power station and that many miles away. Thus the large factory with its own efficient steam plant, whether steam is used directly to drive machinery or whether it is used to produce electricity which is then used for power, loses much of the advantage of lower power costs which it formerly possessed. Besides, this ability to buy cheap power from a central station saves the man who may want to establish a small factory the capital expense of installing a power plant of his own.

But perhaps of greater significance than the equalizing of power costs between the small and the large producer is the fact that the large producer can now break up his factory into smaller units and place them at strategic points as determined by other considerations than power costs and nearness to his place of residence—for example, by nearness to markets or raw materials; by the relation of size of plant to costs of management and to the ease of securing good managers; by the efficiency of workmen living under different conditions; by rentals; by wages; by ease of access to satisfactory transport facilities; and by many other factors which may be of prime importance in the successful operation of particular industries. In other words, the use of electric power and of the internal-combustion engine has increased the potential mobility and the flexibility of industry within the last 20 or 30 years as much as the introduction of steam power increased these same qualities in the industry of 1750.

The cheap distribution of electricity also makes it much easier for even the small plant to avail itself of the best and most up-to-date manufacturing processes and to keep improving its processes without undue cost. One need mention only the improved methods in the heat treatment of steel which have recently made it possible to carry out these processes in comparatively small units in the most economical manner, or the flexibility in machine construction which the individual electric motor renders possible, to make it clear that both the use of labor and the form of factory organization in the small plant can be more readily adapted to economical production than was formerly the case. These and many other changes in which electricity plays the major role tend to make small scattered producing units direct competitors with the larger factory which was built around a central steam plant.

The development of flexible transportation units through the use of the gas engine should not be overlooked when we are considering the possibilities of a redistribution of industry in the present age. It is now possible for factories located in small communities having only a single railway line to avail themselves of the railway facilities in neighboring towns and cities at no greater cost than to the factories in these cities. Ten or twenty miles of driving over paved roads in the country may cost little more than driving as many blocks in the large city with its congestion and consequent delays. Already the truck has largely supplanted the railway for certain kinds of traffic—for example, local freights and the hauling of livestock—and has thus robbed the large city of some of the advantages of superior railway facilities. In the meat-packing industry truck transportation of livestock bids fair to bring about a genuine reorganization, in which smaller centers will take an increasing proportion of the business away from the larger centers. There can scarcely be any doubt that still other kinds of traffic will take to the truck as time goes on. Thus some of the transportation subsidies enjoyed by our larger cities because of our present freight-rate structure will be removed, and the smaller places will be in a position to compete with them more purely on a basis of efficiency than they have been in the past.

In discussing the effects of more flexible transportation upon the redistribution of industry we must also take account of the airplane. There is little doubt that both passenger and freight service by air are going to increase rapidly in the future. The nearness of landing fields to the factory may become a matter of great importance in freight traffic by air, and in this respect the factory in the small city and even in the village will have obvious advantages over the factory in the city, once plane-load lots become common. Whether these advantages will be sufficient to weigh much in the location of new factories or in the establishment of branches cannot now be told. For many types of airplane service the large city will for some time have advantages over smaller communities, just as it has in its railway service.

6. Decentralization of Offices and Improved Communication

The development of electric communication also makes it less and less necessary that the men in charge of large enterprises should have their office staffs immediately under their eyes. This fact apparently has not yet dawned upon the majority of the executives of large enterprises or at least upon the bankers and capitalists who finance and control them. They are still thinking in terms of the letter and the steam engine as a means of communication and are keeping their general type of business organization in practically the same form in which it was developed under the dominance of steam. As a result many millions of people are doomed

to mere *existence* in the congested quarters of our large cities when they might be really *living* in smaller communities (6). That our "captains of industry" and "generals of finance" have so largely overlooked the social and human implications of modern communication and electric power is not difficult to understand. We have long since learned that most of them have little genius for understanding the life of the common man. But it is hard to see how they have failed to grasp a larger measure of the economic significance of electricity and the gas engine.

We have, therefore, in electricity and the gas engine agencies capable of effecting a complete reorganization of our business structure when we come to use them fully; and, of course, if and when this economic reorganization is undertaken, it will mean a redistribution of population and a reconstruction of our whole social order. People go where there are jobs. If, for example, the great life insurance companies of New York were to decide to move three-fourths of their workers out of New York City, as they no doubt could do with profit to all concerned, by reorganizing their business structure and by making full use of electric and airplane communications, there is little doubt that the building of more skyscrapers and subways in New York could be postponed for a few years or perhaps forever. Besides, once it is made clear by actual demonstration that our huddling of enormous numbers of workers in huge offices in great cities is neither good economics nor good social policy, thousands of businesses would seek out locations which would be more advantageous for them, both from the standpoint of getting work done and from the standpoint of the welfare of their workers. After all, there cannot be a permanent divorce between the conditions of life upon which individual efficiency, as well as the efficiency of succeeding generations, depends and the form of economic organization yielding the most satisfactory results.

Finally, although it is not yet possible to say what effects military considerations will have on the size and the structure of our cities, it is reasonably certain that they will be of prime importance in the future, if this war ends with the world divided into armed camps. Just what form of community is least vulnerable to air attack is not yet clear. Until the attacks on Moscow and Leningrad in the fall of 1941 it seemed probable that a highly decentralized industrial structure was likely to suffer least; but at present (spring, 1942) the reports of damage to those cities suggest the possibility that a relatively dense concentration of industry can be protected more adequately and possibly more economically than many small centers. It may very well be that the damage done by airplanes to British cities was largely due to inadequate antiaircraft armament. Certainly it cannot be assumed at this time that military considerations will inevitably force the decentralization of our large cities. They may possibly work in the opposite direction. They may dictate a very great concentration of industry in a few large metropolitan areas which

can be so fully protected from aerial bombardment that little damage can be done to them. But it is useless to speculate further on this point until the evidence is in.

7. The New City

Apart from military considerations, which will almost certainly have less influence here than in Europe, the increasing use of electricity and the internal-combustion engine will work great changes in the structure of the large city of the future. In general these changes will probably be in the direction of decentralization, or living in less congested urban groups. No immediate or even ultimate loss of population is predicted for particular cities, although this may very well happen. It is more probable that in the future cities will plan the development of much larger areas than they now contain and will spread their populations over these areas in such a way that all the people will have space enough in which to live comfortably and decently and yet need not spend any great amount of time in long and tedious trips to and from their work, in the unhealthful conveyances which are now all but universal. I believe that such a decentralization of cities is entirely feasible today. The big city can now decentralize—become polynucleated—with advantage to all who dwell therein. It can spread over a much larger area than it now occupies and yet act effectively as a unit in all those matters which are of common interest to its citizens. It will probably require some new forms of political association to enable such an enlarged and decentralized city to function effectively; but this should not be difficult to effect with our improved means of communication and transportation. Such a reorganization of the city should eliminate most of the disadvantages of the mononucleated big city; it should relieve congestion both on the streets and in housing; it should make possible abundant open spaces for recreation and community activities; it should do away with the necessity for long daily trips to and from work; and as a consequence should encourage more active community life, a closer knit family life, and a more realistic political life.

Already there are many smaller cities growing up within our larger cities. But such growth is generally accidental, not carefully planned, and cannot, therefore, contribute so much to the welfare of the masses as will a decentralization based on sound economics and a good understanding of the social needs of the people. Proof of the growth of these cities within the city is found in the development of retail and amusement centers in outlying districts. It may not be long, therefore, before we shall find portions of the large city which are almost as independent of the downtown city services as are the people who live 50 to 100 miles away. And yet these people in the outlying parts of the city will be able to avail themselves of the specialized services of the downtown area

when they are so disposed. Indeed, they may be more disposed than they are now to support some types of trade and certain kinds of cultural activity downtown if the congestion of this area is so relieved that it does not involve positive hardships to go there.

8. Some Prerequisites of the Reorganization of the City

One of the greatest difficulties in the way of the decentralization of industry and of office work at the present time is to be found in the advantages of large cities from the standpoint of employment. The worker finds it of advantage to live in a location where he can have easy access to a number of offices, industries, and plants, and the employer finds it of advantage to have a large reservoir of workers to draw upon. In varied industries and numerous employers the workman finds some insurance against unemployment and against unfair treatment by a particular employer. In a great body of workers the employer finds both the type of labor that he needs and a certain amount of insurance against strikes and labor troubles in general. But it should be clear that, if plants can be broken up into fairly small units and if offices can be decentralized, there is no longer any reason why the small city, or the various communities which may go to make up the polynucleated urban area, should not offer the employee all the advantages of varied work and different employers which the large mononucleated city now offers him; likewise the employer would be as free in his choice of workmen as he now is. Then, too, assuming that the use of automobiles will grow rather than diminish, the labor market of any given community will less and less be circumscribed by the traction system of the locality.

There are, of course, industries which demand large units of production for efficiency. But even in these industries there is reason to think that many plants have grown in size to the point of diminishing returns and that, though relatively large plants will always be the rule, many smaller branch plants might also be advantageously developed.

What is true of factories is probably even truer of offices. Little study has been given to the economies of large and small offices. The skyscraper has made possible the enlargement of offices almost indefinitely, and little attention has been paid to the efficiency of the workers under different conditions. It is highly probable that many large offices could be broken up into smaller units in exactly the same way as could many large factories. For, even more than large factories, large offices are made up of many duplicating units, the raw materials for whose work come from all parts of the country. Besides, the improvement in communication within the last few years has made possible the assembling of control data from branch offices with a speed undreamed of only a few years ago. As yet the office side of our economic organization has made comparatively little use of these improvements. No doubt there are

many good reasons why this is the case, but the fact remains that a great deal of useless and costly overhead is carried by many businesses because of the reluctance of the "big boss" to make full use of the most efficient means of communication to reorganize the office end of his business.

In our large cities telephone communication has already supplanted personal contact in many, if not in most, business transactions even within the same office. We need only imagine a telephone system in which we can talk to a person 100 miles away as cheaply and with as little delay as we now talk to one within the city, and we shall have almost eliminated the last reason for the existence of the superskyscraper, and with it will go much of the congestion of the modern great city. That such an improvement in telephone service is well within the realm of possibility can scarcely be doubted, and that it will contribute greatly to the opportunities for better living on the part of the masses of the people by making congestion still more uneconomic and unnecessary also seems unquestionable. The large mononucleated city of the present day with its horrible congestion is no longer either an economic or a social necessity

9. Future Growth

It is not possible to foretell the growth of cities as a whole, to say nothing of forecasting the growth of any particular city. The purpose of this section is simply to call attention to the utter impossibility of cities, as a whole, continuing to grow in the future as they have grown in the past. In Chap. XV it was shown that present trends indicate only a small growth in the population of the nation during the next two or three decades, with numbers then becoming stationary for a few years, after which there will be an actual decline.

If these calculations for the United States are even approximate it must be clear that our large cities cannot keep on growing at anything near past rates. There simply will not be enough people to maintain such rates. In previous editions of this work such a statement was in the nature of a prediction, but today with a new census before us we can see that our cities have entered on a new phase of growth. Past estimates for most large cities have greatly overshot the mark. Thus a semiofficial estimate for New York City for 1940 (8,109,000) is over 650,000 above the actual (7,455,000). Los Angeles forecasters expected 2,200,000 in 1940 but only 1,504,000 showed up, and the Chicago district, which was expected to have an increase of about 1,250,000 in the decade, had but 134,000 more in 1940 than in 1930.

The reasons why most of these official or semiofficial estimates of local authorities were so much too high are that: (*a*) they did not make adequate allowance for the fact that the population growth of the nation by excess of births over deaths as well as by immigration was rapidly disappearing, and (*b*) they overlooked the fact that electricity and the

automobile are actually leading people to live outside the cities. The net result is that most of our large cities did not grow so fast as the total population between 1930 and 1940, instead of much faster as had been usual in the past. Thus of the 14 cities which had over 500,000 inhabitants in 1940 only 3 grew as fast as the total population and 1 of these, New York, was just barely above this mark, while 4 lost population. The other 7 grew, but not so fast as the total population. Of the 23 cities having a population of 250,000 to 500,000 in 1940, only 7 grew faster than the total population, 5 actually lost, and the remaining 11 grew at a slower rate than the total population. Clearly the future growth of large cities cannot be foretold very accurately from their own past performance or from the national rate of growth. This judgment is strongly confirmed when the growth of individual cities is studied. There is only a very tenuous relation between their past growth and their growth between 1930 and 1940. The most that can be said is that in the South, where urbanization has been slowest and the birth rate is still relatively high in the rural areas, the growth of large cities is at a more rapid rate than elsewhere, except in southern California. It appears, therefore, that in the future the growth of any city will depend chiefly on the particular conditions existing in it which may attract population. Thus some Florida and southern California cities still attract relatively large numbers, presumably, in part, because of climate. Houston has grown because of its increasing importance as an oil and shipping center and Atlanta as an assembly and distributing center, and so it goes. The time has passed when the sheer momentum of population growth will ensure practically all cities a rapid and continuous growth.

Moreover, the areas around the large cities, although growing more rapidly than the cities in most cases, are, in many instances, not growing fast enough to bring the growth of the entire metropolitan district up to the level of the nation as a whole. The slower and spotted growth of the large cities is by no means to be accounted for by differences in the rates of growth of their suburban areas. In general the same factors that make for the growth of a city make for the growth of the area surrounding it. This does not mean that the loss of population by a city like Cleveland may not be caused by the movement of people to the suburbs, but, when the whole metropolitan district shows a lower rate of growth than the nation, it seems clear that this is not to be explained by a mere shift of population within the district.

Such changes in the growth and structure of cities as have been discussed here cannot take place without affecting our social and economic life in many ways. Only a few of the more important of these probable changes can be suggested here. If cities grow slowly, and particularly if they begin to decline in numbers, their real estate values are almost certain to decline. Downtown real estate values would also be affected by

any change in city structure following upon decentralization. Most city plans will have to be revised as cities cease to grow or as they lose their mononucleated structure. The present pattern of merchandising is also likely to be much changed as the structure of the city changes. Its volume, however, will depend more on the purchasing power of the consumer than upon the number of consumers. One customer spending $2,000 is worth as much to the manufacturer and the merchant as two spending $1,000 each. Any considerable shift in population from the central areas of cities to their peripheries will also affect the need for schools, parks, playgrounds, churches, and so forth, in the various parts of the city. These will, in turn, tend to make necessary an entire reorganization of neighborhood life. Besides, the entire problem of urban transportation will be greatly altered by either the decline in numbers of passengers or a change in the form of the city. This matter needs no elucidation.

10. Conclusion

It may well be, then, that we are nearing the end of an era in the growth of large cities and also in the structural growth of cities calculated to adapt them to efficient functioning in a *steam* age. The city as we know it may pass out of the picture; it may cease to grow in size, and in form it may become an urban area, covering a relatively large territory, with many subcenters. This new city will be so organized that it will retain the advantages of large-scale business but so decentralized that people will not have to endure the inhuman crowding now so characteristic of our larger cities.

That the vast majority of people crowded together in our existing large cities can find much enjoyment in the daily routine of living is unbelievable. The lack of space alone makes life hideous for the majority of them, and the feverishness of their activity in leisure time is the natural consequence of such congested living. People have not and cannot develop the resources for living that are latent in themselves when they are crowded together as they now are in most of our large cities. Of course, once the use of leisure becomes associated with jazz and a generation has grown up which believes that it is enjoying life because it moves fast and far, the mere providing of space for a good home and wholesome recreation will not bring about a good use of leisure; but we probably shall not make a beginning in the tapping of the human resources in our population until we make it possible for people to have a little elbow room and a chance to enjoy some privacy.

For our immediate purpose it is important to ask whether there are any general social and economic tendencies, other than those inherent in the wider use of electricity, the improvement and cheapening of com-

munication, and the increasing use of the gas engine for transportation, which are likely to relieve the congestion of our cities. One would indeed be a hardy optimist who believes that decentralization will proceed rapidly and spontaneously. But there is one factor of considerable importance which is generally lost sight of in discussing this matter. It is the effect of the rapid decline in our rate of population growth upon the structure of our business system.

It seems reasonably certain that with a slowly growing or stationary population there will be increased competition for the consumer's dollar. This more intense competition cannot be met indefinitely by increased sales pressure, more extended time payments, or increasing monopoly, as has been done in the recent past. Before long it must be met in part by real economies in production and distribution, and then we may expect the economic motive to come to the aid of common sense and straight thinking in searching out new types of business organization which will be both efficient and humane.

One need not let his imagination have much rein to see in the small city or the polynucleated large city of the future the nearest approach to the ideal place in which to live and work for those who carry on our manufacturing and commercial activities. In such cities no one need spend more than a few minutes going to and coming from work and yet may have adequate space around his dwelling, be it apartment or detached house, in which his children can play and in which he himself can relax. With the more general use of electricity all cities can be kept fairly clean—free from smoke and dust—and they can also be kept free from many of the devastating noises of our present large cities. When congestion is lessened, real estate values will become more reasonable, and parks and playgrounds for all can be had at a cost which is not prohibitive. Such cities will also offer ample opportunity for the development of the more desirable civic virtues and for the maintenance of a human friendliness that it is impossible to retain when one must force one's way continually among the great crowds of large cities.

The need of the human being for space may have been dwelt on *ad nauseam*. In justification let it be said that most of us do not appreciate what crowding and lack of privacy are doing to the spirit of man. It seems to the writer that they are robbing individuals of many of their finest and most distinctive personal qualities; that it is they rather than monotony of work which tend to make us all of a pattern. Without a chance for privacy, with no time to himself, a man has small opportunity to develop distinctive personal qualities which will make him significantly different from his fellows. A social order which will provide us with space and privacy should be extremely helpful in developing a finer and more fecund civilization.

The reorganization of the big city is absolutely essential if our mechanical civilization is to prove more than a very brief episode in the life of man, because there appears to be no likelihood that man can survive racially any length of time with an increasing portion of his numbers living in the modern large city. With only one-fifth or less of our population on the farm, as may be the case a decade or two hence, the city cannot continue indefinitely to make up its deficit of births by drawing country-bred boys and girls into itself. It is high time, therefore, that we began to canvass the possibilities of making our urban communities so livable that the people residing there will be willing to reproduce. One of the changes essential to this end is to make more space available for living purposes. The failure to reproduce and a declining population do not prove any hereditary decadence in a people, nor do they necessarily presage the downfall of a civilization; but as long as a nation has ample resources, as we have, and as long, therefore, as the failure to reproduce arises as the consequence of personal reactions to the social and economic system rather than from actual physical decadence, we should do well to explore our social system carefully to see whether we cannot so change it as to make reproduction for the masses of the people both easy and natural. The big mononucleated city is doing things to our reproductive life the significance of which we realize only dimly as yet.

References

1. CARPENTER, NILES: "The Sociology of City Life," 502 pp., Longmans, Green and Company, New York, 1932.
2. CHASE, STUART: "The Future of the Great City," *Harper's Mag.*, 160 (1929), 82–90.
3. IHLDER, JOHN: "The City of Tomorrow," *Nation's Business*, 16 (September, 1928), 19–20.
4. KEIR, MALCOLM: "Economic Factors in the Location of Manufacturing Industries," *Ann. Amer. Acad. Polit. Soc. Sci.*, 97 (1921), 83–92.
5. Middle West Utilities Company: "America's New Frontier," 79 pp., Middle West Utilities Company, Chicago, 1929.
6. MUMFORD, LEWIS: "The Intolerable City: Must It Keep on Growing?" *Harper's Mag.*, 152 (1926), 283–293.
7. MUNRO, WILLIAM B.: City, "Encyclopaedia of the Social Sciences" (I, 4), Vol. 3, pp. 474–482.
8. QUEEN, STUART ALFRED, and L. F. THOMAS: "The City; a Study of Urbanism in the United States," 500 pp., McGraw-Hill Book Company, Inc., New York, 1939.
9. THOMPSON, WARREN S.: "On Living in Cities," *Amer. Mercury*, 20 (1930), 192–201.
10. WEBER, ALFRED: "Alfred Weber's Theory of the Location of Industries," English ed., 256 pp., with introduction and notes by Carl Joachim Friedrich, University of Chicago Press, Chicago, 1929.
11. WRIGHT, FRANK LLOYD: "The Disappearing City," 90 pp., William Farquhar Payson, New York, 1932.

Questions

1. Account for the present physical structure of the large city.

2. Contrast the qualities of steam and electricity. Do you believe that we necessarily need to have the same form of urban structure when electricity is used for power and communication as when steam was used directly for these purposes? Justify your answer, and give illustrations from your own experience.

3. How have "size" and "efficiency" come to be so closely associated in our minds? Is there any essential connection between them? Explain.

4. Discuss the possibilities for decentralization of industry by the use of electricity and the gas engine. Give examples of the decentralization of industry that you have seen or heard about. Make them local if possible.

5. Discuss the development of the truck and the airplane as influences favoring decentralization of industry. Is any freight being carried by airplanes in your community? If so, what kinds of goods move this way? What kinds of goods come into your community by truck? Why do these particular goods move by truck rather than rail?

6. What is the outlook for the decentralization of large offices? Give reasons for your answer. Cite cases in which offices are being decentralized, and find out why they are being broken up.

7. How are the methods of distribution of goods being improved? Can you think of other ways in which distribution could be cheapened? Give examples of changes in distribution which you have observed in your own community. Have they had any noticeable effect upon the organization of the community or the distribution of population?

8. What reasons have we to suppose that we shall become increasingly urban?

9. What is meant by a polynucleated city? Have you seen smaller cities growing up within a city? Describe the process in as much detail as possible, and point out the advantages or disadvantages of such a growth.

10. Can you find out from your local electric company what proportion of the electricity used in the community is used for different purposes? If you can, compare communities of different sizes to see what the differences are. Do they seem to indicate anything regarding the possible efficiency of different types of communities?

11. Do you believe that the population in the city should reproduce itself? Why?

12. "The telephone makes big business possible without having big units." Do you believe this? Why?

13. Can you think of other factors which might make it possible to decentralize large plants and offices?

CHAPTER XXI

THE PROBLEM OF QUALITY[1]

The problem of the quality of the population is not a new problem. It has from time to time occupied the thoughts of statesmen and philosophers who were interested in a better society or an ideal state. We are not concerned to recount the theories which have prevailed regarding the quality of the population nor with the practices by which attempts were made to maintain quality in the past. It will suffice to recall that the exposure of infants has at times had a eugenic purpose as well as the intent of restricting population growth. The selection of wives and of concubines has also, at times, been effected with eugenic intent. But by and large man has not been much concerned with the problem of the quality of human stock; the economic and social status of the family has been much nearer his heart. Concern over the eugenic quality of the nation's people has developed slowly as our increasing knowledge of heredity and of the processes of population growth have shown the possibilities of the voluntary control of quality.

It will be recalled that knowledge of heredity and of the processes of evolution grew apace, that as we came to know something of the nature of heredity we were also becoming familiar with such ideas as "struggle for existence," "survival of the fittest," and "natural selection." Then, too, about this time we began to learn a little more about the processes of population growth. Indeed Malthus' exposition of these processes had a great influence on Darwin and Wallace in their efforts to explain the "origin of species" and on their formulation of the doctrine of evolution. But it was not until the latter part of the nineteenth century that the ideas of evolution were applied to the processes of human population growth with much vigor. By this time it was quite generally recognized that heredity was not changed by use and experience, as Darwin had supposed, and that all men were not "created equal" in the sense of having equal natural capacities. It was also becoming known that not all people left the same number of offspring, that is, knowledge of differentials in birth rates was spreading. Thus the basis was laid for an interest in eugenics or in the quality of the population. Obviously, if heredity was for practical purposes unchangeable and if people were reproducing at different rates, it was important to know what kind of people were most successful in reproducing. On this depended the future

[1] General references: 3, 4, 5, 8, 10, 12.

quality of the race. At this stage interest in differential birth rates increased rapidly and a number of people began to collect data on this subject.

Under these circumstances it is not surprising that many people assumed that the greater part of the differences between people in mental development, in social position, in economic status, and even in general attitudes toward life and society were due to hereditary differences, that is, to differences in the traits or characteristics carried in the germ plasm and thus were beyond man's control.

This biological approach to the problems of quality in man led many to believe that the destiny of the individual, whether he would be a rich man or a poor man, a leader or a follower, an aristocrat or a beggar, a banker or a worker, was determined almost entirely by his heredity. Such an extreme position, of course, aroused the antagonism of those who believed that man's destiny lay in his own hands. These "perfectionists" as they were called in Malthus' day, "environmentalists" we would call them, came forth with equally extreme views to the effect that heredity was of little consequence in individual development, that it supplied only a plastic material which environment could mold in any way that might be desired. The extreme environmentalist at times even went so far as to deny that heredity placed any limits whatever on the development of individuals. Thus the battle was joined and the problem of quality in the population took the form of a discussion of the relative importance of heredity and environment in determining this quality.

1. Heredity and Environment (13)

We cannot hope to arrive at any satisfactory understanding of the problem of quality in man without a sound view of the relation of heredity and environment in the formation of the individual's personality. Unfortunately discussions on this matter have generally taken the form of an attempt to answer the question: Is heredity or environment more important in the development of human character? The very form of this question assumes that, as a general thing, one must exercise a more or less exclusive influence on conduct. It is perfectly clear, however, when we come to examine the matter carefully, that heredity and environment are complementary elements in our life. They are simply two aspects of the life of an organism. Both are essential to life and its unfolding, and it is foolish to try to show that, in general, one is more important than the other.

But we must hasten to say that, though both are always at work in an individual and though they are complementary, yet in particular cases it may very well be that one or the other exercises a decisive influence. Thus no one would deny that heredity very narrowly determines the limits within which environment can exercise its influence in the case of

certain types of feeble-mindedness, epilepsy, and insanity. Environment cannot supply traits which one did not inherit; it can only favor or repress the development of such traits as one inherits. Thus there may very well be many people of talent or genius—"mute, inglorious Miltons"—who never manifest their superior qualities because environment gives no opportunity for their development, while many others of only moderate ability attain a considerable degree of eminence because they have had every possible opportunity to develop their capacities. It is a great mistake to suppose that genius "will out" in spite of any and all conditions. Indeed, there are certain types of genius which are probably unusually sensitive to the influence of environment and which without the most favorable surroundings would never be discovered.

Some concrete examples may help us to appreciate how heredity and environment cooperate to produce some of the most significant types of personality. Goethe will certainly be recognized as one of the great men of his time, perhaps of all time. In discussing his own achievements he fully recognized his debt to other people and ages, that is, to his environment, and was not the least loath to acknowledge it. He saw heredity and environment as cooperating forces in his own life, as the following quotation clearly shows:

> I read some pieces of Molière's every year, just as, from time to time, I contemplate the engravings after the great Italian masters. For we little men are not able to retain the greatness of such things within ourselves; we must therefore return to them from time to time, and renew our impressions.
>
> People are always talking about originality; but what do they mean? As soon as we are born, the world begins to work upon us, and this goes on to the end. And, after all, what can we call our own except energy, strength, and will? If I could give an account of all that I owe to great predecessors and contemporaries, there would be but a small balance in my favor (1, p. 154).

In whatever direction one looks one finds this intimate and intricate relation between the hereditary qualities of the individual and the environment in which they develop. One cannot read the life and letters of Charles Darwin, for example, without being very deeply impressed with the fact that the fine hereditary qualities of the man were so dependent upon a favoring environment for their fruition that it would have taken very little to render him scientifically sterile. It is almost impossible to imagine Darwin's earning a living for himself and his family and yet having the energy to produce any scientific work of much significance. Probably the very qualities which made him such a fine observer of nature also rendered him so sensitive to his social surroundings that he could not participate in the affairs of everyday life and yet retain his detached scientific attitude. It not infrequently happened that a trip to London to meet some other scientists, or to read a paper before the Royal Society, left him so wrought up that he could do no work for days or even weeks.

One could readily mention a dozen factors in Darwin's environment which, had they been slightly different, might easily have made all scientific work impossible to him.

This delicate and involved interplay of heredity and environment is always going on. That it is not always so manifest as in the lives of men of genius does not prove that it does not exist, but only that the lives of most of us are not scrutinized so carefully as those of the men who make unusual contributions to human progress. Besides, it is probably true that most of us are less sensitive to what is going on about us than are men of unusual talent, so that we are not so fully aware of the sources from which we derive our ideas, sentiments, habits, and so forth, as they are. There is no doubt a continuous gradation of susceptibility to the influence of environment, from the idiot, who is scarcely as receptive to outside influences as is a dog, to the genius, who has apparently an unlimited capacity to receive and make use of contacts with the life about him which are of significance to him personally. In every case heredity sets the limits within which environment may act; but in no case can the actual realization of hereditary capacity go beyond the opportunity offered it by the surrounding environment. This may seem so obvious that it need not be said; but as a matter of fact there are many people who talk as though either heredity or environment alone were sufficient to account for all that has meaning in the conduct of men. It cannot be emphasized too strongly that the individual as we know him at any moment is the resultant of the hereditary qualities that he possesses as developed by the particular environment in which he has lived.

If we accept this view of the complementary nature of heredity and environment, it is absurd to look upon all social problems as arising from hereditary deficiencies, as many whose primary interests are biological are prone to do, or as being merely the consequence of the inadequate organization of environment, as many environmentalists do. There is not a social problem of any importance in the solving of which headway can be made as long as these particularistic attitudes prevail. Problems of poverty, of crime, and of housing, for example, cannot be understood in their true relations by the person who believes that personal shortcomings are generally the result of inferior heredity any more than by the person who believes that they are always the result of environmental conditions.

Let us consider for a moment the matter of poverty. Many people are inclined to believe that poverty is largely a matter of defective heredity, that it can largely be wiped out if we can rid ourselves of those who have less than the normal power of adjustment to the economic circumstances of life. Now no one who is at all familiar with poverty and with people in poverty would for a moment deny that people with defective heredity are more likely to become poverty-stricken than people with

normal or superior powers of adjustment. To be unable to adjust oneself to the exigencies of the existing economic order naturally results in a low income, which means poverty and all its attendant evils. On the other hand, to argue that being in poverty proves inferior hereditary powers of adjustment, and to ignore other factors in the problem, is extremely naïve.

Quite obviously many social and economic circumstances contribute to the poverty of many people who are recognized as entirely normal in other respects. A prolonged period of depression resulting in unemployment always brings into need many people who are normally self-supporting. Sickness, however caused, is also at the basis of much poverty. Likewise in many industries the wages, which are too low to maintain decent standards of living, lead to much illness and poverty. The intermittent employment so characteristic of the modern industrial age is also a frequent source of poverty. There is, perhaps, less need to call attention to the nonhereditary factors producing poverty today than there has been at any time since the settlement of America began; but unfortunately there are still many who believe that poverty is generally the consequence of individual deficiencies and that, if we could breed a generation without hereditary deficiencies, we would eliminate poverty.

In any particular case we can probably find out whether poverty is primarily due to (*a*) some personal deficiency or (*b*) some social circumstances such as accident, sickness, or unemployment. Probably we can also often determine whether this personal deficiency is hereditary or developmental and because of this understanding can deal with the individual or family more intelligently. We can never hope, however, to reduce poverty to a minimum so long as we try to generalize on its causes and work solely from the hereditary or the environmental angle.

This may seem a considerable digression from the problem of quality in a population. It is not so, however, for we cannot hope to judge of the nature of this problem and of the means of attaining the desired quality if we do not understand the relations of heredity and environment. But the general nature of their relation having been set forth, there is one other point upon which we must insist. It is that we have no way of judging of the hereditary quality of a population as such. We only know the manifestations of heredity in a particular individual in a particular environment. It is pure assumption, therefore, to say that any particular population or group of the population is inferior or superior in quality except as we can measure the reactions of individuals and of groups to exactly similar environments. Since this can never be done for groups with a reasonable degree of certainty, and only approximately for individuals, we must be extremely careful how we make use of the so-called intelligence tests and other devices which are supposed to measure the inherited capacities of people.

As a matter of fact, what we actually measure in tests of this sort is the response of the individual at a given time to a particular set of circumstances, and this response is, of course, conditioned by all his past experience. There is absolutely no way of separating this experience into inherited elements and the training given these inherited elements by environment, except in a very rough fashion. The more closely similar the environments of individuals have been the more the differences in their responses are dependent upon inherited characters; but the idea needs constant reiteration, in view of current practices and doctrines, that no two people, even in what appear to be the same environments, do actually have the same environmental influences exerted upon them; just as, except in the case of identical twins, no two children of the same parents have the same hereditary character. The actual response of any person at any moment is, therefore, such a complex product that it cannot be analyzed into its elements with any exactness. It is an even more subtle compound than the most complex organic compounds with which the chemist has to deal.

We must recognize, then, the fact that we can judge only in a very rough way of the inherited qualities of people from the situations that they occupy at any given time. The frequency with which something good does come out of Nazareth should make us very slow to generalize regarding the inherited quality of people in lowly position. Real ability does appear in the most unpromising places and is often absent from the progeny of men and women of remarkable ability. The fact is that we know almost nothing about the way in which any but a few of the most insignificant of human characteristics are transmitted. Of what significance to civilization are eye color, shape of the head, stature, and the few diseases which are apparently inherited as Mendelian traits? The answer is that they are of very little significance indeed as compared with those qualities which determine developmental capacity and about the manner of whose inheritance we know almost nothing at the present time. We do not know whether any of these qualities which really distinguish man's mental life from that of other animals is a definite trait carried by a particular gene or is a combination of traits carried by many genes. We assume, generally, that the already discovered laws of heredity are applicable to all living beings and to all aspects of inheritance. This is a large assumption, and we must not forget that we are so ignorant of these processes that when we undertake to divide people into sheep and goats from the hereditary standpoint we can do so only in a very rough and tentative fashion, and we certainly cannot do so on the basis of their present economic and social status, their skin color and the slant of their eyes, or the breadth of their noses and the kinkiness of their hair.

Although the writer believes that what has just been said is sound doctrine he would not leave the impression that we can learn nothing

definite about the ways in which heredity and environment contribute to the development of the individual. The psychologists are gradually learning how to separate hereditary and environmental factors and thus to measure the effect of each while the other remains unchanged. It was just because this was not done that much of the early work in mental testing left such wrong impressions regarding the place of heredity in determining the development of the individual and his status in society. It was very widely assumed in these early studies that what was being measured was the native, or hereditary, capacity of the individual. It was quite natural, therefore, when rather wide differences in intelligence quotient were found as between different economic and social groups, to assume that these were the result of hereditary differences between groups; that a man was a common laborer because he had the intelligence appropriate to that job and that the banker also had hereditary qualities which made him a banker rather than a laborer. The fundamental error in this type of thinking is the failure to recognize that the individual is always a joint product of heredity and environment. He is at no time a pure product of his hereditary qualities. He cannot be simply because he must exist in some kind of environment and he is more or less influenced by it from the moment of conception onward. The individual as he is at any given moment is, therefore, a composite product of heredity and experience (environment), and, unless we know the part played by each in his development, we cannot say which is the more important operative factor. In many of the earlier studies of intelligence by tests no effort was made to see that environmental factors were similar before conclusions were drawn regarding the native intelligence of different groups in the population. The author protested against this procedure shortly after the results of the army tests given drafted men in World War I were published, and time has justified that protest (11).

The early studies of particular families which had been a heavy burden to their communities for a long time—the Jukes, the Kallikaks, the Nams, and so forth—all suffered from the same defect. They were frequently assumed to show how defective heredity produced thieves, drunkards, prostitutes, paupers, and ne'er-do-wells of many kinds. There is little doubt that in many of these families there was defective heredity, but the facts gathered made just as good a case for the influence of environment in producing individuals who were a public menace as for heredity. The problem of individual adjustment to life is far more complicated than it appeared to these early workers. Fortunately the study of the relation of heredity and environment is being pursued in a more scientific spirit today, and we are beginning to get results which should prove extremely useful in the formulation of future population policy.

Space will not allow the detailed description of even the more interesting of the recent studies of heredity and environment. But it will

be necessary to indicate briefly what they show. As is generally known today identical twins arise from the splitting of a single fertilized egg (ovum). Thus they have exactly the same hereditary qualities. If, therefore, heredity does play a significant role in the development of the individual it would be expected that, other things equal, identical twins reared together would show appreciably more likeness to one another in qualities which can be measured than fraternal twins of like sex reared together and that identical twins reared apart would show less difference from one another than fraternal twins whether reared together or apart. Actually the results obtained in a very careful study by Newman, Freeman, and Holzinger only partially confirmed these expectations (9). Identical twins were more alike in height, in weight, and in I.Q.'s than fraternal twins of like sex. There was, however, practically no greater likeness between identical twins than between fraternal twins in personality traits, in school achievement, and in arithmetic. Furthermore, it is of interest that fraternal twins differed from one another more than identical twins in height and weight than in Binet I.Q. and more in I.Q. than in achievement.

"In certain instances, namely, arithmetic, nature study, history, and literature, tapping, will-temperament, and neurotic disposition, the correlations of identical twins are but little higher than those of fraternal twins. This seems to indicate that inheritance is a greater factor relatively in producing likeness or difference in some traits than in others" (9, pp. 352–353).

When identical twins who had never been separated were compared with identical twins reared apart these relations were confirmed. But environmental differences did seem to make a significant difference between identical twins in certain characteristics: "In one of the physical traits, weight, and in intelligence and school achievement the differences [that is, the differences between identical twins reared apart as compared with those between identical twins reared together] are significantly greater, demonstrating the effect of environment on these traits. In height, head measures, and the score on the Woodworth-Mathews test, on the other hand, no significantly greater difference is found" (9, p. 356). Again: "When the amount of difference between the separated twins is compared with the estimated amount of difference between their environments, highly significant correlations are found" (9, p. 357).

The study of own and foster children has also provided new information regarding the influence of heredity and environment in individual development (10). In general it appears that foster children show a somewhat stronger resemblance to their true parents in I.Q.'s than to their foster parents and certainly less resemblance to their foster parents than children in a control group show to their own parents. But these differences are not large, and, in the judgment of the writer, the control

of environmental factors in these studies is not so satisfactory as in the twin studies, since it consists largely in rating the biological parents of adopted children by their social or economic status, which leaves a far larger unknown element in environmental conditions than where children are brought up in the same family.

In the writer's judgment these studies, even where they do show a significant association between I.Q.'s and social status of biological parents, do not conclusively prove that this arises from heredity. Furthermore, they cannot be expected to do so until means are devised by which both hereditary and environmental factors can be controlled more accurately than has been done thus far. All one can say at this stage of our knowledge of heredity and environment is that, although there is no doubt that the social and economic status of the individual is frequently determined by his heredity, we have no unmistakable evidence that heredity is a significant determinant of differences between social and economic classes, save in a part of that small percentage of the population which is quite commonly recognized as highly deficient. Nor is there any reason to believe that defective or inferior heredity characterizes any racial or national group as such. The only hereditary differences about which we can be reasonably sure are those between individuals. A person who consistently falls in the lower 5 or 10 per cent in intelligence tests given to people in his own group is quite probably (assuming no accidental cause) of less hereditary capacity in certain respects than one who is consistently in the upper 5 or 10 per cent; but both may be found in the poorest (economically) or the richest class in the community. Differences of a few points (5 to 10) in I.Q.'s between social and economic classes or groups do not seem to the writer to be of decisive significance. They *may* be due to differences in heredity, but they seem to him just as likely to be due to differences in opportunity associated with these differences in social status, especially if the small percentages of clearly defective individuals, who are more frequently to be found in the lower classes, are left out of account.

The upshot of these studies on the influence of heredity and environment on twins and foster children is to show beyond question that heredity does place definite limits to the development of the individual in certain respects but that in many important respects these limits are not narrow, and hence environment can produce significant differences between individuals even when they have identical heredity. Moreover, the more significant the characteristics are from the standpoint of the adjustment of the individual to the community, the broader seems to be the field within which environment can act on the traits provided by heredity. The author believes that the modifiability of those traits which have to do with the determination of I.Q.'s, of school achievement, and of knowledge of arithmetic, nature, history, and literature and with

the development of personality is far more important than the modifiability of one's height or weight or eye color or head form or other purely physical characteristics. What does it matter that we have but little control over the development of physical characters if we can modify within significant limits the development of those characters which determine our social attitudes and relations? The answer to this question seems so obvious to the author that it scarcely needs to be given. If the vast majority of men inherit capacities for social adjustment which can be directed and developed to a significant extent by environmental conditions, then it would seem only the part of common sense to see that these conditions were made favorable to a healthy development before we placed too much emphasis upon the need for policies calculated to affect the hereditary quality of the race.

What has been said above about the relation of heredity and environment does not mean that we should not concern ourselves about the improvement of society by the improvement of human heredity, but it does mean, as will be pointed out later, that we shall probably make far greater progress in improving the quality of our population by providing an environment favorable to the development of the heredity we already have than by concentrating any considerable amount of effort on the improvement of heredity itself. It also means that from the hereditary standpoint it is doubtful whether the differential birth rate is of much significance. In the opinion of the author the differential birth rate is of very great significance but not because it issues in an increase of the hereditarily inferior or superior; it is of significance because it affects the opportunities of the children in different social classes, because it impedes the transmission of the social achievements of the race, and because it modifies the outlook of different classes on the social problems of the community.

But even though the writer does not believe that the chief improvements in human life will come because of a better quality of heredity he does believe that it is important to inquire into what can be done to raise the general level of hereditary capacity in our population and that, where there are some practicable measures which can be taken to this end, they should be used.

2. Feeble-mindedness

The very term feeble-minded implies that the persons in this group do not respond in normal ways to the stimuli of their environment. Since we have come to know something of the nature of heredity and that many of the feeble-minded are hereditarily defective we have come to feel that such people are a menace to the general welfare. Unfortunately even now we do not know how many feeble-minded persons there are in the nation, nor the proportion of them that are so because of defective

heredity. Estimates made by well-informed and unbiased individuals regarding the number of feeble-minded in the population vary by as much as 100 per cent and generally fall between 1 and 2 per cent. A conservative estimate would place the total number at not less than 1,500,000, of whom only about 100,000 are found in institutions (VIII, 10, p. 174). How many of the 1,500,000 just referred to are feeble-minded because of heredity and how many because of accidents of various kinds (environmental), as was said above, is not known. But, assuming that even one-half of the feeble-minded have defective heredity which they will pass on, it is clear that the prevention of their reproduction would be a great gain to society.[1]

In the judgment of the writer the community should take measures to prevent the reproduction of the feeble-minded as fast as we identify them with reasonable certainty. This curb on reproduction should be placed not only on those who are of defective heredity but also on those who are accidentally defective. For even though the latter are not certain to produce defective children they are generally so handicapped both in personal development and in the matter of the opportunities they can offer their children that these children have little chance to develop normally.

There are two great difficulties in the way of preventing the propagation of the feeble-minded at the present time. The first is the lack of adequate facilities for their segregation and the very widespread public opposition to their sterilization, and the second is the lack of valid tests for separating the feeble-minded from the normal. It is quite possible that much of the opposition to sterilization would disappear if we could be more certain of separating the feeble-minded from the normal (2). Progress is being made along this line but we know now that there are no sharp breaks between different grades of capacity. At whatever point in any kind of a scale it was decided to break it and say that those falling below that point were feeble-minded while those above it were normal, there would be a significant proportion of all persons so close to this point that they would have to be considered "borderline" cases and would have to be treated arbitrarily. There is no test now known which will neatly and accurately separate the sheep from the goats. Human capacity is a continuum. What we can hope to do as time passes is to say that certain individuals are incapable of doing certain tasks and that because of this the community has decided that they cannot be allowed to propagate. At present borderline persons are probably far more numerous than definitely feeble-minded persons. We should go slow in the matter of extending the right of segregation and sterilization to

[1] In this connection it should be noted that the lowest types of the feeble-minded are incapable of reproduction so that the harm they do the community is confined to their economic cost, to the strain they put on their relatives, and to the generally demoralizing effects of having subnormal people at large in the community.

borderline cases. Indeed, we are, in practice, so far behind reasonably adequate knowledge of who should be segregated and sterilized that we need to devote more of our energy to equalizing practice with knowledge rather than to trying to extend the right to segregate and sterilize into areas where the knowledge of the ability of the individual to participate in community life becomes hazy. It is especially important just now that we go slow in extending the right of any man, or body of men, to prescribe sterility for additional groups in the population. This power in the hands of people who believe in the superiority of certain classes and races might easily become the means of eliminating those classes of the population who are disliked by the ruling classes. It has taken some centuries for the mass of mankind to gain a modicum of personal rights and privileges and we should be careful how these are abrogated. The common weal and not the advantage of certain classes and groups should be our sole criterion in denying the right of reproduction to any man.

Furthermore, this matter of preventing the reproduction of the feeble-minded is not so urgent as is often assumed. It has already been noted that the lowest grades are incapable of reproduction. The higher grades have children but do not rear them at a rate which need occasion great alarm. Even though their birth rates may be fairly high the death rate of their children is high and they themselves are apt to die at a comparatively early age. This is not given as an argument against preventing the reproduction of the feeble-minded far more than is now being done. It is merely by way of caution against broadening too rapidly the class of persons who are to be denied the right of reproduction. The community has always protected itself against those among its own members who endangered its welfare. What it considers its welfare constantly changes, and there is not the least doubt that we are now moving to protect ourselves against the burden of the feeble-minded, but we should not allow our enthusiasm for the more exact methods of identifying the feeble-minded which are being developed lead us into a too rapid extension of our definition of feeble-mindedness.

3. Mental Disease (7)

The feeble-minded are not the only class of the population which has a harmful effect on its hereditary quality. Many mentally diseased persons are such because of some defect in heredity. They have less than the normal capacity to adjust themselves to the life of the community. It is extremely difficult, in fact impossible, at the present time to say what portion of the population is mentally diseased and of the mentally diseased to say what portion inherits some defect which makes it likely to succumb to mental disorders. One estimate of the extent of mental disease is to the effect that at any given time 1.5 per cent of the adult population is more or less affected by mental ailments while 10 per

cent is affected at some time during life (7). Estimates of the part played by heredity in the onset of mental disease are at present of little value, but there can be little doubt that mental disorders are considerably more common in some families than in others, enough so that even the similarity of environment can be ruled out as the decisive factor within the family.

It would appear that mental disorder is not inherited as a definite trait or group of traits but rather as some general instability of personality which makes one more than ordinarily susceptible to certain types of environmental influence. Whether this susceptibility will actually lead to a definite mental disturbance will depend largely on the type of environmental influences that surround one. If this view is correct then there is nothing hereditarily inevitable in most cases of mental disease. However there can be little doubt that schizophrenia (dementia praecox), which comes on fairly early in life [characterized by (*a*) general apathy and indifference, or (*b*) paranoia, including delusions of grandeur and persecution, or (*c*) a general refusal to cooperate and sometimes by mutism, or (*d*) silliness and bizarre ideas], and manic-depressive psychoses, which come on later in life and are recurrent (characterized by a very unstable emotional life with violent swings from depression to a high state of excitement and rapid action), are both of hereditary origin in many cases, that is, there is an inherited predisposition which is likely to lead to definite mental disturbance in a certain portion of the cases.

From the standpoint of the hereditary quality of the population, however, even the most common types of mental disease are of less significance than might at first be assumed. Schizophrenia as already mentioned comes on early in life (at puberty or soon after), so that its victims have a far lower rate of reproduction than the general population. This is also true of the reproductive rate of manic-depressives, although they probably leave more offspring than schizophrenics. These two types of mental disease account for nearly three-fifths of all hospitalized cases of mental disease in the United States.

No doubt people suffering from the other types of mental disease which come on later in life have higher reproduction rates than the two just discussed, but even these do not in general have high rates. Hence, there is a rather strong current of selection operating to reduce the proportion of the population in which the predisposition to mental disease is hereditary. There is no reason, however, why people suffering from such diseases should not be encouraged to be sterilized and in most cases should not be compelled to be sterilized if they are to be turned back into the general population while still of reproductive age. But in view of what has been said it will be clear that we should not expect a great deal of improvement in the hereditary quality of the population from such measures. It is quite probable, indeed, that the greatest benefit the

community would derive from the prevention of reproduction in definite cases of mental disease would be in the elimination of a certain number of children who would otherwise grow up under the influence of warped personalities and who, if not hereditarily handicapped from the start, would soon be badly handicapped by close contact with their parents.

In all the measures which may be taken to prevent the reproduction of socially burdensome or dangerous groups, we should be careful not to confuse undesirable heredity with differences in opinion and in ways of living. It is so very easy to pass from the belief that a person is wrong in his opinions or judgments of what is worth while in life to the belief that he is hereditarily incapable of getting the right perspective on life that we need to be constantly on guard against going too far in the elimination of people who dissent from our beliefs and opinions. We are witnessing today in the treatment of the conquered peoples by the Germans the definite effort to eliminate those who are "inferior" as well as those who will not "cooperate" in "the new order." Anyone who believes that progress in the development of human personality lies in maintaining a certain measure of individual rights as against the absolute power of the state cannot fail to be greatly disturbed by this throwback to a less personalized type of conduct.

4. Other Types of Defectives

There are still other types of individuals in addition to those already enumerated who by their propagation contribute dangerous or weakening elements to the population. It is not easy to recognize the part played by heredity in many cases, for example, blindness, deafness, mutism, the susceptibility to various diseases such as cancer, tuberculosis, and so forth, but, as fast as it is possible to be certain that heredity is a significant factor in any case, it would be well to encourage the afflicted individuals to be sterilized and where the community suffers serious injury even to enforce sterilization. However, until we have clear evidence on the hereditary nature of the defect, no compulsory action should be taken. This is all the more important because most people with such defects have families of less than average size. Natural selection is actually operating quite effectively to reduce the contribution of most defectives to the next generation, as will be shown more fully in Chap. XXII.

Thus far most that has been said about improving the hereditary quality of the population has been negative, that is, it deals with reducing the amount of hereditary defect in the population. The general conclusion is that in certain respects the community could reasonably expect to benefit by preventing the propagation of those having definite hereditary defects. Moreover, even where defects are not hereditary the quality of the population would be improved if children were not subjected to influences—chiefly family influences, although other conditions

are also significant—which will almost certainly handicap them rather heavily in their development. But it is no longer possible to believe that the differences implied in such contrasts as rich and poor, honesty and dishonesty, farmer and lawyer, laborer and banker, aristocrat and democrat, class and mass, and so forth, are group differences. Hereditary differences are individual differences. Hence, the existence of the differential birth rates discussed in Chap. XI does not mean differential reproduction in hereditary quality with the lower quality reproducing at the higher rate. Thus, while we are now in position to undertake the elimination of the hereditarily defective in a more scientific manner than in the past, we know that we cannot reasonably expect this to yield the large improvements in hereditary quality which many people formerly believed possible.

5. A Eugenic Program for Encouraging the Growth of the Desirable

We have still to consider the positive aspects of the problem of hereditary quality, namely, the encouragement of the more rapid growth of those who would generally be judged to have good heredity. There are three questions to answer if we are to make any headway in understanding this aspect of the problem of quality: (*a*) Who are the fit, or the people of good stock? (*b*) How are matings between the fit to be secured? (*c*) How are the proper number of children to be ensured after the matings of the fit have been consummated? In the following chapter considerable space will be devoted to the analysis of the current notion of what constitutes superior stock, but no attempt will be made to define it exactly. All the author will attempt to do here is to show some of the practical difficulties in the way of securing a more rapid propagation among people whose hereditary fitness no one would seriously question. Every well-defined group or class tends to think of "good stock" in terms of the way certain qualities in other groups and classes affect its own welfare. Hence, there is no reasonable hope of securing more than a most vague measure of agreement among them as to what constitutes good heredity.

But the difficulties of the positive eugenist have only begun when he has defined good stock. Supposing that an agreement is reached as to what constitutes good stock, the next difficulty is to secure matings between people of good stock. There is no sure way of doing this in a democratic country, but there is good reason to hope that a proper and thorough education for parenthood will render many people more unwilling than now to mate with those whose heredity is of doubtful quality. To this end there is need to encourage a legitimate pride in family achievement which is not snobbish. People should be encouraged to consider whether the children issuing from a contemplated mating will be likely to uphold the family traditions. We have had far too little

genuine family sentiment in this country. We have been prone to think that family pride and snobbery were synonymous. Unfortunately this has all too often been the case. But a real pride in the achievement of one's family is altogether consistent with the most humane and democratic sentiments. We may well develop in legitimate family pride a strong eugenic force which will be all to the good. And this family pride need by no means be confined to the small percentage of people who contribute conspicuously to the life of their time. Many humble workers have a right to feel that they are making a very important and necessary contribution to community welfare and to feel proud of their work. There is not the least reason why all these people should not encourage their children to carry on the family tradition of thorough and honest work. Such family pride should contribute materially to the consummation of better matings than are now customary. But of course we must recognize that education for parenthood and family pride, although eugenic forces of no mean strength, will probably be more important in their social than in their biological consequences. They will accomplish more in the better standards of conduct that they set for people to aim at than in the actual improvement of hereditary qualities.

Even supposing that matings between people of good stock are secured in an increasing portion of our population, we still have the problem of whether they will be as fruitful or, preferably, even more fruitful than those less desirable eugenically. There is, of course, no way of telling how fruitful such marriages would be; we may, however, adduce some considerations which have a bearing upon this matter. At present we place heavy personal economic penalties on those people whose preparation for life is long and expensive, if they undertake to rear fair-sized families. Since in this class as a whole inherited property is of little consequence and incomes are both small and uncertain until one is, perhaps, thirty-five years of age, the rearing of a fair-sized family is both arduous and precarious. Furthermore, promotions and raises in pay generally come more slowly to those who have fair-sized families early in life than to those who have small families or, indeed, no families. Such preferential treatment of the bachelor, or the near-childless man, may be justified from the standpoint of the value of these men to the employer as compared with the man rearing a fair-sized family, but it certainly puts a penalty on the rearing of children which few will endure when contraception is easy and "success" gauged by economic standards is a strong social ideal. This is one reason, and a very important one, for great numbers of childless marriages and of one- and two-child families in certain groups of white-collar workers. In the laboring classes somewhat different motives may operate but for many of them the urge to small families is hardly less pressing—the desire to give their children a larger opportunity than they themselves had, the irregular employment,

and the uncertainty of being able to rear a fair-sized family and still lay something by for old age.

One way, then, to encourage greater fertility in matings where the stock is good is to remove some of the penalties for rearing children which our present system places upon those who are most likely to give some weight to eugenic considerations in their mating. There are many ways in which this may be done, as will be brought out in the discussion of national population policies (Chaps. XXV and XXVI). But there is one point not brought out in the policies thus far adopted to which the writer would like to call attention here. In modern industrial society money is the chief measure of the value the community attaches to any and all types of activity. This being the case, the woman who prefers to give the best years of her life to rearing a family finds little or no public reward or recognition of this service in our society because she can earn no money. Society recognizes the economic value of the woman who goes to the factory to knit stockings for children but does not recognize any economic value in her staying at home and darning those stockings nor in doing the much more essential tasks concerned with the care of the physical and mental welfare of children. In fact she is often made to feel that she is a parasite—that in bearing children and taking care of them while they are dependent she is not rendering an essential service but is adding burdens to the family budget. In the opinion of the writer an industrial society paying money rewards for useful work should recognize the service of the mother and pay her for it; there should be a mothers' wage. This is not *buying* children; it is merely providing women with the tangible evidence that the community does value mothers' services as well as the services rendered to industry and commerce by women who work outside the home. The question of whether it is better for the community to ease the cost of rearing children by providing services—health, housing, school, and so forth—or in the form of cash will come up for discussion in the chapters on national population policies.

The removal of the economic penalties of rearing a family should also do much to reconcile the desire for individual development, which is characteristic of many of those having a little more than average ability, with the urge to biological survival. These two elements of our nature can never be wholly reconciled, but much can be done to remove the economic handicaps of fair-sized families from those who would like to rear such families.

The author believes that if the economic handicaps of fair-sized families are largely removed many of the social handicaps will automatically disappear. But much might also be done to encourage families of the proper size (every couple that has children must now have approximately three to keep the population at its present size) by an education

which would make it clear that biological survival as well as personal success is needed to make a well-rounded life. Our whole scheme of education today, particularly our education of women, is most woefully defective in this regard. There appears to be little chance for fair-sized families from good matings, even when the social and economic handicaps have been removed, until we develop some quite different notions than are now current regarding the relations of the individual and the race. Naturally any considerable change along this line will take time. We should not, therefore, anticipate any very rapid progress in increasing the proportion of the next generation that comes from those groups and classes which would generally be admitted to have good heredity. Whether this is considered a dangerous situation calling for urgent action, will, of course, be determined by our judgment as to whether or not the present processes of population growth are dysgenic and, if so, to what extent. The author's view on this matter is set forth in the following chapter.

References

1. ECKERMANN, JOHANN PETER: "Conversations of Goethe with Eckermann and Soret," 583 pp., trans. from the German by John Oxenford, rev. ed., George Bell & Sons, London, 1909. (Bohn's Standard Library.)
2. GOSNEY, EZRA S., and PAUL B. POPENOE: "Sterilization for Human Betterment; a Summary of Results of 6,000 Operations in California, 1909–1929," 202 pp., The Macmillan Company, New York, 1929. (Human Betterment Foundation Publication.)
3. HOGBEN, LANCELOT: "Genetic Principles in Medicine and Social Science," 230 pp., Williams & Norgate, London, 1931.
4. HOLMES, SAMUEL JACKSON: "The Eugenics Predicament," 232 pp., Harcourt, Brace and Company, New York, 1933.
5. ———: "The Trend of the Race; a Study of Present Tendencies in the Biological Development of Civilized Peoples," 396 pp., Harcourt, Brace and Company, New York, 1921.
6. LANDIS, CARNEY, and JAMES D. PAGE: "Magnitude of the Problem of Mental Disease," in *Mental Health*, pub. for Amer. Assoc. Advance. Sci., Science Press, Lancaster, Pa., 1939, pp. 149–155.
7. ———: " Modern Society and Mental Disease," 190 pp., Farrar & Rinehart, Inc., New York, 1938.
8. LANDMAN, J. H.: "Human Sterilization; the History of the Sexual Sterilization Movement," 341 pp., The Macmillan Company, New York, 1932.
9. NEWMAN, HORATIO H., FRANK N. FREEMAN, and KARL J. HOLZINGER: "Twins; a Study of Heredity and Environment," 369 pp., University of Chicago Press, Chicago, 1937.
10. OSBORN, FREDERICK: "Preface to Eugenics," 312 pp., Harper & Brothers, New York, 1940.
11. THOMPSON, WARREN S.: "Eugenics as Viewed by a Sociologist," *Monthly Labour Rev.*, 18 (1924), 11–23.
12. ———: "The Eugenics Bugaboo," *Amer. Mercury*, 19 (1930), 33–37.
13. WOODWORTH, R. S.: "Heredity and Environment; a Critical Survey of Recently Published Material on Twins and Foster Children," 95 pp., Social Science Research Council, New York, 1941.

Questions

1. "All men are created equal." Do you believe this? Give reasons, and show how your answer bears on the problem of eugenics.

2. Discuss the relation of heredity and environment in the formation of individual character. Make your answer concrete by giving illustrations from your own experience. Show how the study of twins and of foster children helps to understand this relation.

3. Write a 1,000-word autobiography in which you try to account for your character by showing the parts that heredity and environment have played in its development.

4. What is the relation of the differential birth rate to the problem of quality? Illustrate.

5. How do mental tests help to define the problem of eugenics? Give definite illustrations from your reading or experience.

6. Discuss the biological aspects of the propagation of the feeble-minded and the insane. How do they compare in importance with social and economic aspects? Give reasons.

7. What part should segregation and sterilization play in a eugenics program? Give your reasons.

8. What three questions must be faced in setting out to encourage growth of the superior stock in a population?

9. Do you believe that "eugenic marriages" should be encouraged? Give reasons.

10. If your answer to 9 is "yes," explain how you think such marriages might be made more fertile than the average.

11. Is there a problem of quality in the population of your own community? If so, describe it in detail, and suggest means of solving it.

12. Do you know of any degenerate family? If so, tell what you can about its history. Is it increasing or decreasing in numbers? How does it affect the life of the community?

CHAPTER XXII

THE PROBLEM OF QUALITY (*Continued*)[1]

There is a very widespread belief among those who have interested themselves in the hereditary quality of the population that *natural* selection worked toward the improvement of this quality while the *artificial* processes of selection in operation today are dysgenic, that is, lead to the more rapid increase of those having defective or inferior heredity. This view assumes that *natural* selection is a process which exists in a state of nature determining the survival of plants, animals, and even of man up to a certain stage of cultural development and that its results are always beneficial, while the processes of selection operating in Western society today are *artificial* and are highly detrimental to human heredity. Just when natural selection was supplanted by artificial selection we are never told. But one may surmise that the general improvement in economic conditions, the development of medical science and practice within the last half century, and the organization of charitable relief on a large scale are the nefarious agents which have gradually nullified the action of natural selection until today artificial selection, that is, selection controlled by man's interference with natural processes, is the chief factor in determining who shall survive.

1. What Is Natural Selection?

The questions that arise in this connection in the mind of one studying the processes of population growth are: (*a*) whether there is any valid ground for calling the processes of selection artificial today as contrasted with natural yesterday; (*b*) whether the processes of selection going on today are any less rigorous than they were yesterday; and (*c*) whether they are less eugenic now than formerly.

The answer to the first question, as to whether there is any real difference in the character of the selective processes called natural and artificial, appears to be "no." There has never been a time in the history of man when his habits, his customs, his institutions, and his social attitudes have not been important factors in determining his survival. He has always to a greater or lesser extent modified (controlled) his environment in the effort to adapt it to his desires, and he has also modified the action of environment on himself by his habits, customs, and institutions. The selective processes in the life of the race have always been artificial,

[1] General references: 1; XXI, 4, 10.

or they are not now artificial. Every process in human selection has always had in it elements contributed by man. In this respect it is no different today from what it has always been. It is no less natural now than it was when our ancestors were forest-dwelling barbarians or than it is today among the Dyaks of Borneo.

The low death rate of today, which seems to be the chief indicator of artificial selection in the minds of many people, is not a whit more artificial than scores of customs among so-called primitive peoples which affect the birth and death rates among them. Just as soon as any habit or custom becomes fixed in the life of a group it is as much a part of the processes of natural selection as any circumstance not directly under man's control. The intense cold of the arctic winters is no more natural, in any significant sense, than the communal customs existing among the Eskimos. Survival is no more dependent on adaptation to the former than to the latter.

Natural selection as ordinarily used in referring to the processes of selection in man is just as applicable to the processes going on today as it was to the processes of a generation, a century, or a millennium ago. There has been, of course, some change in the working of these processes, but they are still as natural as they have ever been. At any given time they may or may not be beneficial from the standpoint of any particular social group. There is not now and there has never been any assurance that the types of men most honored by their fellows will leave the greatest number of survivors. Nature, if one may personalize her, has never been interested in anything but survival. She has never encouraged evolution upward in direction because it was upward but rather has encouraged the propagation of traits which had survival value. To put the matter very bluntly, if imbeciles have traits, for example, a strong sexual urge with reasonably strong parental inclinations, which make for survival, but if on the other hand, geniuses have a strong bent toward self-development and but slight urge to rear children, nature will prefer the imbeciles. She has no respect for human judgments as to what traits are or are not judged socially valuable at any given moment of time; she is interested only in those traits which ensure the survival of the species.

2. Is Rigorousness of Natural Selection Decreasing?

Supposing then that we drop the distinction often made between natural and artificial selection and regard all the processes affecting survival as natural in the circumstances under which they operate. Is there any reason to suppose that these processes are less rigorous today than they were ten centuries ago? In a considerable part of the world they have changed but little in ten centuries so, of course, are of the same kind and intensity as of yore. Therefore, in attempting to answer this question, we need not consider the regions and peoples where there has

been little or no change during the last few centuries. In most of Europe, North America, Australia, South Africa, Japan, parts of South America, and a few other places, great changes in modes of living have taken place recently. The last century and a half has seen momentous changes in the lives of several hundreds of millions of people. Have these changes lessened the rigor of the selective processes to which these people are subject, and have they resulted in the selection of the poorer stock for survival? In other words, have the changed conditions of life following upon industrial development issued in a process of natural selection more favorable to the survival of less desirable human types?

Before we can give a plausible answer to these questions we must be certain that we understand what rigor in natural selection means. Many people seem to think that natural selection is not so rigorous today as formerly, merely because our death rate is only one-third to one-half as great as it was a few decades ago. This one fact seems to them to prove that the rigor of the selective process has been greatly abated of late years. The simple fact is, however, that all people must die, and in the process of evolution it is of little significance whether or not the individual lives to a good old age, provided that his traits are carried on. The rigor of the selective process is to be judged, not by the height of the death rate, which shows only the proportion of the individuals in a population dying in a given period, but by the proportion of the family strains that reproduce and the relative rates of reproduction of these different family stocks.

Judged by this standard, it is probable that selection is more rigorous now in industrialized lands than ever before; that more strains of family stock are now dying out in each generation than in most past ages. It is also likely that many of the family strains in certain groups in the population are becoming a smaller and smaller proportion of the population in each succeeding generation.

Detailed proof of the great rigor of present-day selection cannot be given here. There is no doubt, however, in the mind of anyone familiar with the processes of population growth in our own country and in western Europe that a very considerable part of our population is leaving no offspring, and this proportion appears to be increasing. Furthermore, about half of the women with children (XIII, 24) have only one or two children. Since there can be no reasonable doubt that these small families are more likely to die out than those with three or more children, it seems quite clear the selective processes are extremely rigorous in highly industrialized societies like the United States and the nations of western Europe. We should note, however, that the failure of a rather large proportion of a population to leave any children or only one or two does not necessarily mean the complete extinction of the traits carried by them, for in many cases there will be other members of the same family who are reproducing. Thus the rate of extinction of family traits is by

no means so rapid as the failure of individuals to reproduce might lead us to suppose. The processes of selection are, however, very rigorous today in industrialized communities. It is a mistake to suppose that they are more rigorous in China and India and other backward communities where machine industry has made but little headway.

3. The Eugenic Character of Natural Selection

But, granting that this is the case, it will be said that the processes of selection going on among us are calculated to make the survival of undesirable types easier than among the backward peoples; that formerly the differential death rate removed the ne'er-do-wells, the defectives, the incompetents, the vicious, and the poor at a much more rapid rate than it did the successful, the rich, and the powerful; and that as a result of this process, the race has, in the past, grown more largely from the middle and upper classes, who were of superior stock, than from the lower, who were inferior in ability.

It is by no means certain, however, that the processes of selection in past ages were so simple and so eugenic as this view implies. In the first place, it is rather doubtful whether the upper classes actually have increased any more rapidly than have the lower classes in past ages; and, in the second place, it is rather doubtful whether the upper classes, by which is generally meant the upper social and economic classes, were and are the all-round superior type of human being upon whom the progress of the world depends. With regard to the higher survival rate of the rich and powerful in past times, a few considerations may be set forth which will make this appear less axiomatic than is generally assumed.

One of the chief occupations of the upper classes in most communities in past times has been war. And it should be borne in mind that in many nations this occupation was reserved exclusively for the upper classes. The peasants and laborers were only indirectly involved in it. It is exceedingly questionable whether this fact alone is not sufficient to counteract the greater incidence of nonviolent deaths upon the lower classes, if indeed this incidence was greater. But in addition to the losses from fighting, upper classes always and everywhere have been inclined to debauchery and this shortly results in the dying out of the family. A study of European nobilities shows that in the legitimate line they are not very long-lived. Even in China, where family ties are unusually strong, the powerful and exalted appear to be rather easily corrupted and to die out within a few generations. From these two considerations alone it would appear doubtful whether in the past the race has actually been bred so much more largely from the upper classes as is commonly assumed. But we must also recognize that in times past the quick-acting germ diseases—smallpox, typhus, typhoid, cholera, diphtheria, plague, and so forth—were the causes of a very considerable proportion of all deaths after

infancy was past and that these diseases were but indifferent respecters of social status. They must have made but little distinction between the mighty and the lowly in ages when they were regarded as inevitable visitations of the wrath of God and when sanitation was utterly unknown. Even in the incidence of infant mortality there cannot have been a very great difference between the hut and the castle, for the first principles of infant feeding and care were utterly unknown in both places. Besides, it is likely that upper-class women have always avoided nursing their own children far more than have poor women. It may be that the avoidance of nursing their own children by upper-class women did not increase infant mortality so greatly as might be supposed because of the ease with which wet nurses could be secured; but even so it is probable that the turning of babies over to wet nurses by well-to-do women has resulted in higher infant mortality rates than if they had more generally nursed their own children. Furthermore, it is by no means certain that the improvements in health conditions which are often supposed to have mitigated the force of natural selection on the lower classes have actually been of more benefit to them than to the upper classes. The most recent comprehensive data on occupational mortality known to the writer show that in England and Wales as late as 1931 the death rate of the unskilled workers throughout their working life was often 25 per cent in excess of that of the upper and middle classes but is even greater than that at the ages when reproduction is taking place. Until quite recently the differentials were much greater. It simply is not true that modern sanitation and medicine have made the chances of survival as good for the poor as for the well-to-do. In fact there is some reason to think that modern sanitation and medicine have benefited the well-to-do relatively more than they have the poor (XIV, 7, Part 2, pp. 3–5).

If there is any significant change in the relative survival rates of the upper and lower classes in the past century, it arises not from the relative easing of the death rate on the poor but from the fact that at the moment they are less given to the practice of birth control than the well-to-do. Since practically all students of population growth are disposed to believe that the large differentials in the birth rates which have characterized different economic classes and groups during the last few decades are temporary, it would seem that we need not be greatly worried over the more rapid increase of those in the lower social and economic classes from the standpoint of the hereditary quality of the population, even if they should prove to be of inferior quality, which has not yet been done. As pointed out in Chap. XI, there is already evidence that some of the people in more comfortable circumstances are having slightly larger families than the poor. It is also recognized now that the lowest grades of the feeble-minded have no children and that the mentally diseased have low rates of reproduction. It is by no means certain, therefore, that the

processes of natural selection are even temporarily dysgenic, to say nothing of their remaining so over a period of some generations.

4. Who Are the Superior?

There is a widespread disposition to assume that the very fact of having attained a certain measure of success in the community proves the possession of superior heredity. There is little justification of this view. The attainment of success is proof only of satisfactory individual adaptation to the conditions determining success which happen to prevail in the group at a given time. Social and economic success is not proof of an all-round ability in the person who thus succeeds, nor is it proof of the possession of qualities which will contribute largely to the development of a progressively humane social order. As a matter of fact, many people who attain success, particularly along economic lines, do so because they are thick-skinned and lack the imagination to see the ways in which their success reacts adversely upon the welfare of others and upon the organization of community life. There is nothing inherent in the nature of contemporary social success to ensure that the person who attains it will also possess the finer human qualities which will add to the fullness and richness of our life.

It would not be at all difficult for anyone who knows a number of successful people to pick out several of them who owe their success largely to the qualities which they share in common with the bully, the prize fighter, the ward heeler, and the fox; otherwise how can one possibly explain the callous indifference of many successful men to the living and working conditions of their employees and to the effects of their business practices on the welfare of the nation? There is not time or space to go into the nature of the social processes selecting people for success, but no one can study the people who attain a little more income and prestige than the average without feeling that an appreciable proportion of them have attained their position by the exercise of highly antisocial qualities, by manipulating common human weaknesses for their own enrichment and aggrandizement, by crawling through legal loopholes ferreted out for them by clever lawyers, or because of their lack of insight into how their conduct reacts upon the life of the community. In other words, an appreciable proportion of the successful owe their success to their rather dull moral and social sense, which sees nothing out of the way in exploiting their fellow men as long as they can avoid legal penalties, or to the fact that they have not the capacity to see themselves as others see them. In either case can it be seriously contended that such people are the salt of the earth and that their failure to reproduce is a serious loss to the community? In the opinion of the writer we must conclude that the processes of selection that we now employ in choosing those on whom we bestow social and economic rewards above the average are so ill

adapted to secure the ascendancy of the finer types of intellect and character that we cannot assume that the successful are also the superior, either biologically or in personal development. Even if, as is probably the case generally, the antisocial qualities, which the successful all too frequently manifest, are the product of experience (environment) more than heredity, the chances are that their children will develop many of the same qualities through family contacts. But no matter whence they arise they make life harder and more disagreeable and it is certainly stretching a point to call them superior when success, generally economic success, is the only evidence of superiority.

Finally, we do not know that the rates of growth are the same for all types among the successful. There is some reason to think that those who take their success seriously and who honestly endeavor to give society value received in return for its generous recognition of their ability rear larger families than those who regard the world as their "oyster" and are concerned chiefly with opening it to secure the meat. It is the latter type that we may well spare; there will always be too many of them in the world.

5. Desire to Participate in the Future

But even if we grant, for argument's sake, that the present processes of natural selection, which result in the rapid dying out of a goodly portion of the successful, are dysgenic, there is no reason to suppose that they will remain so for any great length of time. When birth-control knowledge becomes universal, as it probably will be among our children, and when the inhibitions against putting it into practice are largely removed, as they will be among our children also, and when personal ambition as a deterrent of large families is more widely operative, then we may find that the present processes of population growth will be considerably changed. It is not at all inconceivable that, as the size of the family comes more and more under control, the differential birth rate will come to express real differences in outlook upon life. When this comes to pass we may reasonably expect that those people who see some meaning and purpose in life and who wish to contribute their mite to the development of this meaning and purpose will be ready to make considerable personal sacrifice to have children to carry on. A cherished desire to participate in the future through offspring might be regarded as far better proof of desirable hereditary qualities than most of the qualities now making for success. When the population is largely sprung from such people the world should be a better place to live in than at present. Until now, at least in the West, the combative, acquisitive type of individual has played altogether too large a role in the development of our ideals and our forms of social organization.

6. Improvement of Quality through Environmental Change

It has been shown that only a narrowly limited improvement in the hereditary quality of the population can be expected from any selective measures which might be taken at the present time. The acceptance of this conclusion, however, does not mean that we must or should accept the view that very little improvement in the quality of the population as citizens of a democratic society is to be hoped for. If we assume that, apart from the small proportion of the population that has definitely defective heredity, there is a large measure of educability in the remainder, we can readily appreciate the possibilities of improving the quality of most of our people by providing an environment more favorable to their development than they have had in the past. In order to make this point entirely clear it will be necessary to call attention to some of the conditions which now handicap large groups in our population.

7. Economic Handicaps and Their Consequences

At the present time there is not the least doubt that there is a close association between economic status and size of family—the poorer the group the larger the family. A considerable amount of evidence on this point has already been cited in Chapter XI, but it may not be amiss to add more at this point.

Goodrich and associates found that the poorer counties in the United States had much higher ratios of children to women than the richer counties (2). In general those counties which had a plane of living better than the average had too few children to maintain their populations at the present level, while counties which had a plane of living index below the average had a large natural increase even on the Pacific Coast, where all birth rates are low (XI, 21). The largest blocks of counties with low levels of living and high ratios of children are found in the South, and the southern states also have low individual incomes (3).

The point of importance here is that a low plane of living is prima-facie evidence that the children are being reared under conditions which are relatively unfavorable, at least in certain very important respects (VIII, 10, pp. 38–40 and 136–138). It is not merely an accident that most of the southern states have relatively high replacement indexes (Table 62, p. 175), that is, high rates of natural increase and very low per pupil expenditures for education.

On the other hand, most of the states with high per pupil school expenditures have replacement indexes below the maintenance level. If these comparisons could be made for the same states for rural and urban populations separately the contrasts would be still more striking.[1] The

[1] As an indication of the relatively disadvantageous position of the farm population see VIII, 10, pp. 208–210.

people who are least able to provide good schools are the ones who are having the largest families. Can anyone doubt that this condition imposes a severe handicap on the children in these poorer areas?

TABLE 108.—ANNUAL COST OF EDUCATION PER PUPIL IN RELATION TO REPRODUCTION INDEX, SELECTED STATES, 1930

State	Per pupil expenditure[1]	Reproduction index
New York	137.55	0.84
California	133.30	0.80
New Jersey	124.90	0.91
Massachusetts	109.57	0 94
Illinois	102.56	0.89
Ohio	95 69	1.00
Louisiana	48 19	1.24
Kentucky	46.23	1.42
South Carolina	39.98	1.46
Alabama	37.28	1.41
Mississippi	36.13	1.39
Georgia	31.89	1.27

[1] OSBORN, FREDERICK, "Significance of Differential Reproduction for American Educational Policy," *Soc. Forces*, 14 (1935), 28.

Even within a city there are wide differentials in the rate of reproduction in different areas. When these areas are rated economically on the basis of the average rental in the census tracts, a significant correlation is found between rents and ratios of children to women—the lower the rents the higher the ratio of children (XI, 19). Likewise there is a significant correlation between the proportion of the population in the tract engaged in manufacturing and the ratio of children to women—the larger the proportion of workers engaged in manufacturing the higher the ratio of children. There can be no reasonable doubt, then, that the larger part of the children in our cities as well as in the rural areas are growing up in the families which are the hardest pressed to give them reasonably good opportunities.

Another respect in which a large number of our children are handicapped is shown in the division of the family expenditures between different types of goods and services in families of different sizes. In Chicago it was found that the expenditure for food per meal per adult equivalent (4) declined as the size of the family increased, income being held constant. With the proper adjustments for the fact that a child does not need so much food as an adult, the couple with no children paid 22.5 cents per meal per adult equivalent, the couple with one child 18.8 cents, the couple with two children 16.2 cents, and the couple with three or four children 13.8 cents. Thus the couple with three or four children only spent about three-fifths as much for a meal as the couple with no children in

the same income class. There can be little doubt that the children in these larger families did not get adequate nourishment. There simply was not enough money in many families to enable the parents to get what was needed to ensure good health, although these larger families had to spend a larger portion of their budgets for food. The families with three or four children spent 38.6 per cent of their budgets for food, while the childless couple at the same income level spent only 31.1 per cent.

This larger expenditure for food in the larger families left less to be spent for other goods and services. The proportion of the budget going for rent in the three- and four-child families was slightly higher than in the two-child families but somewhat lower than in the no-children families. The three- and four-child families spent no larger a proportion of their income for clothes than other families, hence they must have had poorer clothes; they spent no more on medical care, hence it had to be stretched thinner. Altogether one cannot fail to get the impression that the children in these larger families were handicapped in a variety of ways as compared with those in smaller families by having to live in more straitened circumstances.

8. Other Handicaps

There is no very clear-cut way in which the effects of these economic handicaps on other aspects of life can be demonstrated. It has already been shown, however, that where poverty is general little is spent on education. It has also been shown by inference that nutrition and medical care are less adequate in the larger families. In addition there is evidence that the amount of schooling the individual youth receives is very significantly affected by the social and economic conditions of the family. Bell found that, out of over 13,000 Maryland youths interviewed who were permanently out of school, 39.1 per cent did not go beyond the eighth grade. But this proportion varied greatly in different groups (XVIII, 1). Thus if there was only one child in the family only 22.2 per cent did not go beyond the eighth grade, while if there were four the percentage rose to 35.0, if there were seven it was 52.4, and with nine or more it was 66.1. In this group at least, the children in large families got less schooling than those in small families. But perhaps it is even more significant that only 7.6 per cent of the children of fathers who were classed as professional-technical men stopped school at the eighth grade or earlier, while 66.1 per cent of the children of unskilled workers stopped at this point and 86.3 per cent of the children of farm laborers. On the other hand, 32.8 per cent of the children of professional men finished high school before stopping, while only 10.7 per cent of the children of unskilled workers did so. The children who attended school four years or more beyond high school came even more largely from the professional-technical group, over 21.1 per cent of them going on four years or more,

while less than 0.4 per cent of the children of unskilled laborers had this much schooling.

There is certainly no evidence in the difference between these groups in intelligence-test scores which would lead one to expect such differences between the children of the professional men and unskilled workers in their hereditary capacity to do high-school and college work. The only reasonable conclusion is that such differences in proportions going to high school and college are very closely related to the economic opportunity the family is able to provide.

The significance of all this from the standpoint of the quality of our population is that the status one occupies in the community is quite largely dependent upon the opportunities he has in youth, always excepting, of course, that small group of whose inability to profit by good conditions we can be reasonably sure. If this is the case, then it follows that any considerable improvement in the average quality of our population depends very largely on removing the handicaps to good health, to adequate training, and to generally decent living which depress, both economically and socially, such a large proportion of our people. This does not mean that everyone can, or that all those who can go through college or even high school will, become a professional man, or a tradesman, or even adopt a different occupation, for manifestly the proportion of the population engaged in the several occupations cannot be changed very rapidly. It can change only as the entire economic system develops in new directions and requires new types of workers or changed proportions of workers in the several occupational groups. But the presence of large handicaps does mean that we can never know what the capacities of people really are until we provide much more ample opportunities to the underprivileged groups than those they now have. It also means that the opportunity for generally decent living must be dissociated from higher socioeconomic status as now reckoned. We can no longer justify the wide differences in opportunity for health, for education, to have decent housing, to enjoy recreation, and in the assurance of a steady and adequate income, on the basis of a belief that people are what they are because of basic hereditary differences about which nothing can be done. The real improvement in the quality of our people which will fit us to develop a more humane, a more democratic, civilization must come chiefly by increasing the opportunities of the underprivileged and not by breeding from superior stock.

References

1. DARWIN, LEONARD: "Natural Selection," *Eugenics Rev.*, 18 (1927), 285–293.
2. GOODRICH, CARTER, BUSHROD W. ALLIN, and MARION HAYES: "Migration and Planes of Living, 1920–1934," 111 pp., University of Pennsylvania Press, Philadelphia, 1935.
3. LEVEN, MAURICE, HAROLD G. MOULTON, and CLARK WARBURTON: "America's Capacity to Consume," 272 pp., Brookings Institution, Washington, D.C., 1934.

4. LORIMER, FRANK, and HERBERT ROBACK: "Economics of the Family Relative to Number of Children," *Milbank Memorial Fund, Quart. Bull.*, 18 (1940), 114–136.
5. OSBORN, FREDERICK: "Significance of Differential Reproduction for American Educational Policy," *Soc. Forces*, 14 (1935), 23–32.

Questions

1. What do you understand by "natural selection"? Has this process changed significantly in recent times? Support your answer.

2. Is there a valid distinction between *natural* and *artificial* selection? Explain.

3. "The death rate in China is from two to three times as high as in the United States, therefore, *natural selection* is far more rigorous in China than in the United States." Criticize.

4. "The quality of the population is likely to deteriorate rapidly under the benign influence of modern medicine and charity because they nullify the biological effects of natural selection." Do you believe this? Explain and illustrate.

5. What is meant when people speak of "superior" stock eugenically? Do you know of anyone who would define it differently? If so, how can you justify your definition? How would you like to live in a world made up of the kind of people you have defined as superior? In one in which the superior as defined by your father, for example, dominated?

6. Do you believe that new factors may enter into the selective processes among men when contraceptive practice becomes general? Explain your answer. Do you think these possible changes in selection will be eugenic or dysgenic? Why?

7. "It is essential to distinguish carefully between the hereditary quality of people and their quality as affected by environment." Do you believe this? Give reasons, and illustrate from your own observations.

8. Do you believe that economic conditions can affect the quality of a population? Explain fully, and give concrete examples.

9. How can educational opportunity affect the quality of our people? Give reasons.

CHAPTER XXIII

MIGRATION

A. INTERNATIONAL[1]

The movement of men from place to place has taken on many and diverse aspects at different periods in human history. Early in man's history, when society was organized on a kinship basis, most migration was by clans or other small bodies held together by blood ties. There was little or no independent movement of individuals from place to place or from group to group. It seldom occurred to an individual that he could act on his own initiative to seek new companions or a new place in which to make a living. He was first and foremost a member of a kinship group and he stayed with that group. If the group moved to the seashore at the time the fish were running, he went with it; if it moved to another area when fruit and nuts were ripening, he went there; but it seldom happened that the individual left his group and struck out on his own. Thus most of early man's migration must have been in rather small intimate groups. No doubt there was always an occasional individual who rebelled against this close confinement within the nativity group and tried to live alone or with a few companions as "outlaws," but such individuals probably soon perished, both because they were regarded as enemies of the organized group and because without the communal organization of the group to support them they found making a living extremely difficult and dangerous.

This type of group migration prevailed until a people settled in a definite area and made their living by agriculture. Only when man began to depend upon what he could grow from the soil was there any particular advantage in staying long in one place and in building a more or less permanent abode. Individual and family migration gradually became more important with the establishment of fixed agricultural communities. At the same time the area within which the individual and family could move became larger because there was less need of the protection and support of the kinship group. Thus even though fixed settlement and the development of trade did much to increase the migration of individuals and families, most of the really great migratory movements of man, until quite recently, have been group movements rather than individual or family movements.

In order to make clear what is meant by this statement one may cite the great migrations of peoples associated with the names of Attila,

[1] General references: V, 4; 1, 2, 4, 5, 6, 10.

Genghis Khan, the Tartar movement into European Russia, and even to some extent the movement of the Lombards into northern Italy, and the Norsemen into France and then to England.

Only gradually, then, did man's migratory movements lose their group character and take on the character of individual and family movement in search of more satisfactory living conditions. It is this new type of migration which has chiefly prevailed during the great expansion of Europe which began about three centuries ago. It is this type of migration that we are familiar with in the settlement of the United States. We are so familiar with it that not infrequently we are disposed to assume it is the only type of migration that has ever been of any importance. Actually it is only in recent times and in the settlement of new lands that this relatively free migration of individuals and families has played a significant role in history. Furthermore, as will be noted below, it is quite possible that this type of migration will not play so important a part in the future in bringing about changes in the distribution of peoples over the world as it has in the two or three centuries just past. A new pattern of migration is being fashioned in parts of Europe, particularly by Germany and Russia, which may supersede the relatively free migration of the recent past. Besides, with the settlement of the more sparsely populated regions of the earth, international migration may be largely replaced by a shifting of population within national boundaries. Thus internal migration may become a more important part of all migration than in the past. Not that internal migration has not been important in most countries for a long time, but with the erection of barriers to international migration the shifting of population between areas within a nation will come to be of greater and greater social and economic significance.

1. Motives for Migration

The motives leading to migration have probably varied but little from age to age, the economic motive being the dominant factor at all times. Clans, tribes, nomadic shepherds, and other regularly migratory groups have always moved as seemed best from the standpoint of making a living, although the force exerted by other similar but more powerful groups also in search of a better living has very frequently made necessary the migration of weaker groups. In the period of European expansion the motives for migration have, no doubt, been somewhat more varied, since individual circumstances entered more and more into consideration; but, even so, the desire to better one's position economically—the search for better opportunities—has been the dominant motive among both international migrants and internal migrants. Comparatively few peoples or individuals who are satisfied with their economic position move to new homes.

This is not to deny that a good many individuals move from one place to another for noneconomic causes, but it is to assert that far and away the most important cause of migration is the desire to improve economic status. Other causes of significance are: (*a*) to secure freedom from political oppression, oppression which quite frequently shows itself in the economic disabilities imposed on minority groups; (*b*) the desire for religious freedom, to find a place where one can believe and worship as he sees fit; (*c*) personal maladjustments of many kinds; and (*d*) at certain times and in certain places military and national considerations, which have played an important part in the movement of large bodies of people from place to place.

2. Characteristics of Modern Migration

The migration of great bodies of people as organized groups and in the direct interest of the migrating group, or of the receiving group, did not play an important part in the modern expansion of Europe or in the internal development of Europe until the rise of totalitarian government. Prior to World War I we had become accustomed to think of people moving rather freely from country to country and from place to place within a country in search of more satisfactory living conditions. As was said above, the motivation was largely economic and individual. The individual migrated alone or with friends and family, as seemed best to him and his family. He was not often aided in his decision by any public authority, nor was he, as a rule, assisted financially in making the move, although at times this was done. By and large it was as often the attraction of the new country as the expulsive force of the homeland which exerted the decisive influence. The knowledge of the attractive features of the new land was conveyed chiefly from relative to relative or from friend to friend by word of mouth and by letter, although not infrequently both private organizations and public agencies in the receiving country made definite efforts to acquaint prospective migrants with the advantages open to them.

The natural result of this relatively free play of forces on the individual was that there was a large movement of people from areas of relatively dense population and low economic opportunity to areas of less density and greater opportunity. In international migration, poor peasants and farm workers with little or no land tended to predominate both because they predominated in the European population of their day and because although poor they had the qualities which enabled them to become pioneers in a new land. Since the attractions of the new home were made known chiefly by the letters and personal visits of those who had already ventured forth, international migrants were frequently massed in the new home by place of residence in the old home and different nationalities tended to concentrate in different regions and areas.

But though there were many concentrations of different nationalities in various areas of the receiving countries, there was comparatively little advantage in maintaining Old World culture indefinitely and there was comparatively little effort on the part of the motherland to encourage loyalty to it. Since migrants came as individuals and families and from relatively harsh living conditions they had no heavy obligation to the motherland to live as it wished. Furthermore, to remain isolated from the larger community in which they settled generally entailed definite economic and social disadvantages, which were felt especially by their children, while the lack of pressure, or at most the rather light and intermittent pressure, of the larger group did not drive the newcomers to seek safety and refuge in their own community, as often happened in Europe when two or more nationality groups came into contact. Thus the very nature of modern migration tended to encourage the migrant to adapt himself to the new community, and, if the older migrants failed to do this because of preference for old and accustomed ways of living and of difficulties in acquiring a new language, their children tried all the harder. If they failed, they failed not because they wanted to remain Poles, or Germans, or Swedes, or Englishmen, and so forth, but because they did not know how to make the transition from foreign to native habits. This was almost as true for those who settled in farming communities as for those who settled in cities, although the former had fewer contacts with outside groups and were necessarily somewhat slower in making the transition.

Thus a large part of the international migration of the last two or three centuries, particularly that of Europeans to countries outside of Europe, tended to sever the individual from Old World ties and to a certain extent from community ties and to emphasize the individual aspects of life. Even the increasing ease of transportation did little to maintain the bonds between the migrant and the homeland, except for those who intended to return at some future time and these were generally a small minority. It is not exaggerating to say that never in the history of the world had a great migratory movement carried with it so little of adherence to traditions and customs; never had the individual found so easy a way to break the bonds binding him to family and community as by moving to a new land, leaving behind his past and embarking on a new career. The individual and family character of modern migration is its most distinguishing feature, as it is also the feature most determinative of the migrant's development and of the character of the culture developed in lands where immigrants were many and of varied cultural backgrounds.

3. The Extent of Modern Migratory Movements (14)

Modern migratory movements of the character just described have far surpassed all known movements of this kind in past ages. The

numbers involved are almost incredibly large. Between 1820, when the United States first began to keep accurate records of immigrants, and 1930 about 38,000,000 immigrants entered the country. Of course not all of these remained permanently, but probably not far from 30,000,000 have remained here and have been incorporated into our national life. This is the largest movement of immigrants into any country known to history and, considering the conditions now prevailing in the world, is not likely to be surpassed in the near future.

If we add to the immigrants into the United States the immigrants into the other parts of America, there has been a total immigration of approximately 57,000,000 people into the Western Hemisphere since the beginning of the nineteenth century. The total emigration from Europe since early in the nineteenth century must have been somewhat larger, because of the movement to Australia and South Africa as well as to other parts of the world where European hegemony has been established. But these movements into other parts of the world are small as compared with that into America and have furnished but a small outlet to Europe. It would not be far from the truth, probably, to say that 60,000,000 people have gone out from Europe since the beginning of the nineteenth century and that perhaps two-thirds or three-fourths of these have remained abroad. We are using no mere figure of speech, then, when we speak of the expansion of Europe. There are now probably one-third to one-half as many people of European origin living outside Europe as within it.

During the last three centuries, while Europe was expanding, there have been other migrations also, but they are of lesser importance. There have been movements from China to the Philippines, the Dutch East Indies, the Malay Peninsula, French Indo-China, Thailand, and Manchuria, as well as smaller movements into other areas, for example, into the United States, Peru, and Formosa. The total of these movements from China proper will never be known with any degree of accuracy. In 1922 Ta Chen (2; 3, p. 161) estimated that there were about 8,179,000 Chinese living abroad. This is not a very accurate indication of the total migratory movement of Chinese during recent decades, to say nothing of what has gone on during the last century, but it does indicate that there has been a considerable movement out of China for a long time, as it appears that in recent decades about four-fifths of those who go abroad later return.

The migration from India has also been fairly large. About 2,130,000 (14, Vol. 1, p. 148) Indians lived abroad in 1924. All but about 100,000 of these lived in other parts of the British Empire—chiefly in Ceylon, Malaya, Straits Settlements, South Africa, Fiji, and Mauritius. At present the chief streams of emigrants from India are flowing to near-by plantations in Malaya, the Straits Settlements, and Ceylon. As with

the Chinese there is a large backflow of Indian emigrants, so that when somewhat more than 2,000,000 are found abroad, it means that several times this number have gone out as emigrants within the lifetime of those now living abroad.

The movement of emigrants from Japan is of quite recent date. Until about the last third of the nineteenth century it was a capital offense to leave the country. Once the restrictions were relaxed and the Japanese began to learn of economic opportunities elsewhere, they started to emigrate. The largest streams went to Hawaii and the United States, until they were excluded. As late as 1909 there were nearly twice as many Japanese in this country as in all Asia outside Japan. But now there are several times as many in China, including Manchuria (Manchukuo), as among us. Since 1931 the number has increased rather rapidly. The number of Japanese in the Philippines and the East Indies has also been increasing rapidly of late and they have begun to enter South America. In Brazil alone there are now somewhat more Japanese than in the United States. Even so, however, the Japanese have not yet gone abroad in any considerable numbers, although there can be no doubt that Japan's military expansion, if maintained, will be followed by a large movement of Japanese people into the conquered areas.

When we consider the fact that China, India, Japan, and other parts of Asia and Malaysia probably have four or five times the population that Europe had in 1800, that even with their lower rates of increase their total increase probably far surpasses that of Europe in its heyday of expansion (see Chap. XV), and that the facilities for migration are now far superior to those of that time, it is quite evident that migration from these countries is very small as compared with that which took place from Europe during a large part of the nineteenth century. The fact that no good agricultural area comparable in extent to that opened to Europeans when America, Australia, and South Africa became available remains available to Asiatics for settlement undoubtedly accounts, in part, for the relatively small amount of migration from southern and eastern Asia. It seems highly probable, however, that this situation will be much changed after World War II is over. It is not unlikely that the thinly settled areas in Africa and Malaysia will be settled rather rapidly by Asiatics.

4. Country-to-city Migration

The extent of the country-to-city movement is determined by the relative demand for agricultural and nonagricultural labor and whether it will be inter- or intranational depends upon the particular circumstances of the case. The decision of the ruralite regarding moving to the city is based chiefly upon the economic advantage to be obtained in making

such a change, and this is just as true when the migrant crosses a national boundary as when he moves to a near-by city. There is little reason to hold, as many do, that the city has a subtle attraction for men which has little or nothing to do with economic opportunity. The farmer boy who has to make his own way in life in a settled agricultural community has but little chance to become economically well-to-do. All his life he can count on working hard for a modest income, and in bad times he may consider himself fortunate if he does not get hopelessly in debt. Is it any wonder that, as methods of farming improve and the surplus which a farmer can produce above his needs increases, many of the younger people who see no future on the land should want to go to the cities, where better paying jobs are available and where the prizes awarded the successful are far larger? Nor is it surprising that they often rate their opportunities in the city higher than the facts warrant.

Since the desire to better one's economic position lies at the root of the cityward movement, there is every reason to think that this movement will continue as long as agriculture yields any considerable part of its workers a poorer living than some kind of city work might give them. Why should anyone live in greater poverty than is necessary? Obviously most people will not see any reason for doing so. The ease with which peasants in Europe and the Orient, as well as our own Appalachian mountaineers, are coaxed into cities to join the ranks of wage earners is ample proof that even the most backward of peoples understand the advantages of higher incomes and will readily migrate when it is reasonably certain that by so doing they can better themselves.

In any appraisal of the general nature of modern migration we should, then, bear in mind the enormous country-city movement. It is not only motivated by many of the same factors as is other migration, but it also has many of the same effects upon the attitudes of mind of the migrants, even when it is intranational, and, therefore, raises many of the same problems. Rural-urban migration is a very important part of the whole movement of people from place to place which is so characteristic of modern life. Its amount has never been measured very accurately, but it is not improbable that it is much greater than all international migration. Furthermore, as international migration is more and more hedged about by various types of restrictions, internal rural-urban migration tends to increase.

5. Social and Psychological Effects of Migration

In its simplest terms the migration of a person places him in a situation involving adjustments greater in degree than he is accustomed to and often new in kind. If the environment he has left is quite similar to that which he enters, his adjustments are few and relatively easy, hence he is

not likely to suffer any very serious disintegration of character; nor is he likely to cause much disturbance in the life of the group and the community into which he enters. If, on the other hand, the adjustments are many and difficult, because of wide differences in cultural patterns between migrant and native, it is practically certain that the migrants and their families will show a large measure of instability in conduct, often resulting in considerable lawlessness and crime. The social controls which the native population finds fairly adequate to direct conduct are not effective for migrants accustomed to quite different controls. Furthermore, where the migrant finds adjustment difficult the receiving community finds the assimilation of the migrant just as difficult, and much mutual antagonism arises. It is this conflict of cultural patterns that is of most importance from the social standpoint in considering the consequences of migration, although the economic conflict of migrant and native is also of great importance and will be considered briefly in the following section. The hereditary differences between migrant and native are of minor significance unless the migrants are of a distinctly different race which is easily distinguishable by its physical characteristics.

The nature of the personal and community problems of adjustment faced by migrants can be seen in the analysis of what would be an extreme case. The Polish peasant coming to the Gary steel mills can have no well-established standards to guide him in his conduct toward his fellow workers, his family, the government, the bosses; in his use of leisure; or in any other of a thousand decisions which he must make from day to day. Obviously the traditions of his homeland do not provide him with criteria of conduct for any large portion of his life in Gary; likewise his experience of personal relations in a rural Polish village gives him no clue to the probable conduct of his fellows toward himself in Gary, nor do they show him how he should conduct himself in his vastly more complex relations with them. In addition, if he has his family with him, he finds that he can no longer have any part in the training of his children for their work in life as he did in the Polish village, where they spent a good part of their time in the fields with him, hence that they rapidly lose interest in their home and parents. He cannot guide them because he does not know what is going on in their minds, and the school which claims them for a good part of their waking time only widens the rift between parents and children. Such a man is in a pitiable position, and there is little he can do to help himself economically or in his family relations. His relations with his wife also are greatly disturbed by the new kind of life. They can no longer work together in the field, hence they no longer have a common economic interest—the man's friends may be his work companions while his wife's may be her immediate neighbors. In a hundred ways the traditional family relations are altered with disturbing and sometimes with disintegrating effects.

But sad as is the position of the immigrant and his wife, his children are often worse off. They lack the discipline of a traditional upbringing, and they have no one personally interested in them capable of acting as guide in introducing them to the complexities of a world where status has given place to change—where all is in a state of rapid flux and transition. This is the soil out of which anarchy grows, and it is not in the least surprising that among the children of immigrant parentage many go completely astray. Their home retains many of the features of a peasant home in central or eastern Europe, since the mother knows nothing but Old World traditions and habits, of which the children soon become ashamed. The mother becomes completely bewildered. She can find no sanctions which the children respect, and the father, being away most of the daytime, finds that he cannot exercise much influence even by physical punishment. Indeed physical punishment is quite likely to drive the children away from home altogether at an early age, thus breaking their last ties with home. Then, too, the children are generally urged to go to work as soon as possible. When they have jobs they become independent economically and *one* of the strongest home ties, if not *the* strongest, is broken. Moreover, the difficulties experienced in finding a place in community life by both migrants and their children are fully as great as those of maintaining the home as an important source of training for life. The inevitable consequences of such violent uprooting by migration is a high degree of undisciplined individualism. Unfortunately the rather gloomy picture drawn here is only too often reproduced in actual life.

The undisciplined individualism so frequently produced by the conflict of cultures resulting from migration has had a profound effect upon our country as a whole. Not only has it been settled by immigrants from abroad within a comparatively short period, but its internal development has been accompanied by a very great and rapid movement of natives from East to West, from farm to city, and recently from South to North. The consequence is that a large proportion of all our people have experienced a sufficient amount of change in their modes of living at one time or another for it to have an unsettling effect upon their habits of life, issuing in conduct which is likewise uncertain and unstable. In order to have one's conduct orderly and integrated it must be based on a mental development which is orderly and forms a coherent and consistent whole. Migration, particularly where the changes in conditions of life are great, makes such an orderly mental development very difficult and at times renders it wholly impossible. Hence we have a very great number of people whose conduct is a series of actions expressing momentary or short-lived attitudes rather than a well-ordered and integrated mental development. Their lives are very truly lived without law, that is, without the guidance of settled habits and attitudes of mind. Their

personalities are disorganized because they lack the unifying beliefs which very naturally grow up in men when they live under more settled conditions and tradition has a chance to do its work.

6. Migration and the Growth of Population

About 60 years ago General Walker set forth the theory that immigration into a country did not constitute a net addition to its population but rather was a substitution of the immigrant and his children for the children of people already there (7; 9, pp. 100–102; 11; 12; 13). He pointed out that the birth rate was apparently declining most rapidly in those parts of our country where immigrants were most numerous and held that there was a causal connection between these two conditions. He believed that the unwillingness of the natives to have their children compete with foreigners was the reason for this decline. If this was the case, then allowing immigrants to enter at will merely meant that we were condemning a like number of children of native parents to remain unborn. Since there has always been more or less feeling against the newer immigrants, this view was very naturally seized upon by those opposed to immigration as a very effective weapon in their campaign to reduce immigration. We are concerned here only with the truth involved in General Walker's position.

It is quite impossible, of course, to prove the truth of such a proposition. It is true that native birth rates, if we use ratios of children to women as indicative of these rates in the days before birth registration became adequate, have long been lower in the northeastern states, where immigrants were most numerous, than in most other parts of the country. It is also true that when the rough, heavy labor in construction work and factories passed into the hands of the immigrants, many natives did not want their children to enter these tasks. But it does not follow that immigration is the sole factor, or even the chief one, in producing a lower birth rate among the natives. In the discussion of the decline of the birth rate it has been maintained that urbanization and industrialization are the factors most uniformly associated with a decline in the birth rate and in the rate of natural increase. If this position is correct, then the question to which we are really interested in finding an answer is whether immigration has had any effect upon the rate of our industrialization and urbanization. But it must not be forgotten that this is quite a different question from the one as to whether the direct competition of immigrants and natives causes the latter to reduce their birth rates.

Even the question of the effect of immigrants upon industrialization and urbanization cannot be answered definitively, but it is not unlikely that the presence of large numbers of poorly paid immigrants did somewhat hasten this movement. Even while there was still a frontier and while many immigrants were still going directly to the land, our eastern

cities were retaining large numbers of them and employing them in construction work and in factories. The fact that the cities had this abundant supply of cheap labor probably hastened our industrial development by making investment in industry and trade more profitable than it would have been if only higher priced native labor had been available. But it should be remembered that the immigrants would not have come if they had not been reasonably sure they could find jobs. So that at the same time that the presence of the immigrants was favorable to a rapid expansion of industry the forward movement of industry undoubtedly called for more labor than could have been supplied at that time from native sources; hence the causal relation of industrialization and immigration cannot be stated with any great degree of accuracy. But it is quite probable that in an indirect way the coming of our immigrants has had some influence in hastening the decline of our native birth rate through increasing the urge of the natives to get into better paid white-collar jobs, while the immigrants took over the worst paid jobs and became "forgotten men."

Thus it is quite possible that immigrants and their children did not constitute a net gain in numbers over what we would have had if the process of industrialization had been slower. But it cannot be proved that we should have had just as many people in this country today as we now have if there had been no immigration since the adoption of the Constitution. We were certain to develop cities and the industry of cities, in this country, and the birth rate was bound to fall as has happened; so that it is quite erroneous to attribute all or even the greater part of this decline in native birth rates to the immigrants.

It is the author's judgment that, although the influx of great numbers of immigrants may have hastened the decline of the native birth rate, it has also added materially to our growth, that our population is larger now than it would have been had there been no immigration since 1800. There is, as was said above, no way to prove such a belief (VIII, 9, pp. 304–311).

The effects of emigration upon population growth in the homeland have also attracted much attention and have formed the basis for much heated discussion as to whether the country of emigration gained any relief from population pressure by sending out emigrants. The argument of those who hold that emigration does not really relieve population pressure is based on the undoubted fact that, in the past, certain countries have had a rate of increase which does not seem to be much affected by the variations in the outflow of emigrants. The situation in Italy has frequently been cited in this connection. In the following table the average annual rate of increase in Italy since 1862 and the average annual number of permanent emigrants from Italy are given, so far as these data are available.

TABLE 109.—AVERAGE ANNUAL NUMBER OF PERMANENT EMIGRANTS FROM ITALY AND AVERAGE ANNUAL RATES OF INCREASE, 1862 TO 1932[1]

Year	Average annual number of permanent emigrants	Average annual rate of increase per 1,000 inhabitants
1931–1934	26,041[2]	8.5
1926–1930	79,897[2]	8.6[3]
1921–1925	159,983[2]	
1911–1920	210,000–220,000[4]	4.6[3]
1901–1910	270,000–280,000[4]	6.5
1882–1900	123,000–125,000	7.4
1872–1881	33,000– 35,000[4,5]	6.2
1862–1872	15,000– 20,000[4]	7.1

[1] 14, Vol. 1; Italy, Instituto centrale de statistica, "Statistica delle migrazione da e per l'estero anni 1926 e 1927," Failli, Rome, 1933, Ser. 2, Vol. 1; ———: "Annuario statistico italiano," 1935, Instituto poligrafico dello stato, Rome, 1935, p. 42.

[2] The data for 1921 to 1925, 1926 to 1930, and 1931 to 1934 are not strictly comparable with those for the preceding years because they are for net emigration only.

[3] The average for the decades 1921 to 1931 and 1911 to 1921.

[4] Partly estimated.

[5] Eight years.

TABLE 110.—AVERAGE ANNUAL NET IMMIGRATION AND AVERAGE ANNUAL RATES OF INCREASE, GERMANY, 1861 TO 1933[1]

Year	Average annual net immigration	Average annual rate of increase per 1,000
1933[2]	− 29,300	5.6
1925[2]	22,800	5.5
1910	− 32,000	14.0
1905	10,500	15.2
1900	18,800	15.6
1895	− 89,800	11.6
1890	− 65,800	11.0
1885	−196,000	7.2
1880	− 76,200	11.8
1875	− 79,900	10.2
1871	−103,700	7.7

[1] Germany, Statistisches Reichsamt, "Statistisches Jahrbuch für das deutsche Reich," 1931 and 1934, Reimar Hobbing, Berlin, 1931, 1934, p. 6; Germany, Kaiserlichen Statistischen Umt, "Statistisches Handbuch für das deutsche Reich," Carl Heymanns Verlag, Berlin, 1907, Vol. 1, pp. 6–7; Germany, Statistisches Reichsamt, "Statistik des deutschen Reichs," Verlag für Sozialpolitik, Wirtschaft und Statistik, G.M.B.H., Berlin, Band 451, Heft 1, 1935.

[2] Without Saar Territory.

These data, though not showing the number of permanent emigrants as accurately as could be desired, do show that emigration had no very marked effect on the rate of population increase in Italy until the decade of World War I. Thus the highest annual rate of increase recorded is

for the period 1882 to 1900, and this was also a period when permanent emigration was increasing very rapidly. It averaged at least three times as much during this period as in the preceding decade, and at the same time the rate of increase was approximately 20 per cent greater. On the other hand, there was an appreciable decline in rate of increase in the following decade while the amount of emigration more than doubled. This suggests that a large emigration, as in the first decade of this century, may have had some influence in slowing up the rate of population increase. The decade 1910 to 1920 cannot be considered in this connection because there were too many disturbing factors present. Since 1920, however, and particularly since 1924, the number of emigrants leaving Italy has fallen rapidly and the increase of population has become greater. Thus the slackening of the flow of emigrants seems to have resulted, temporarily at least, in an increase in population growth—temporarily, because the birth rate declined from 29.2 in 1921 to 23.8 in 1932 (XIII, 22, Vol. 9, No. 36 [May, 1940], p. 401) and to 23.5 in 1939 (8, p. 37). Thus the number of births was 77,931 fewer in 1939 than in 1921.[1] The data for Germany (Table 110) show even more than those for Italy that in periods of large emigration—1861 to 1871 and 1880 to 1885—the rate of population increase was lower than in periods of smaller emigration or of net immigration—1871 to 1880 and 1895 to 1905.

Although it seems to the writer that the relation between the rates of population growth and net emigration or immigration for Italy and Germany do give some reason to think that emigration has been helpful in relieving population pressure, or, at least, in preventing it from increasing at a faster pace, it must be recognized that the data given are far from conclusive. One cannot be certain that the number of emigrants was the only, or even an important, factor affecting population growth in a given period. The effects of emigration are so closely bound up with other social and economic conditions affecting population growth that they probably can never be isolated with any assurance. Thus we should need to know whether increasing industrialization and trade were making it possible for a nation to support a larger population at a higher level of living; whether the efficiency of agriculture was increasing; what progress the public health movement was making; whether the natural resources and capital formation were such as to ensure a long and steady industrial development; whether the agricultural area could be extended, and how much and how easily; whether technical skill and managerial ability were available in such quantities that resources could be efficiently used; whether the knowledge of birth control was available to the people generally, and how rapidly it was spreading; and a number of additional facts indicating the probable effects of the social and economic conditions

[1] Figures for 1921 are for the old territory; other figures are for the new.

which may be assumed to affect birth and death rates and hence to determine the rate of increase.

If one were to attempt to summarize the effects of emigration on population growth one might express it as follows. If there is a high birth rate and a high death rate in a country and a considerable pressure of population upon the means of livelihood, then emigration probably does not appreciably lessen the rate of population increase unless emigration is at a *very high* rate. This has, perhaps, occasionally happened in certain parts of Europe during the nineteenth century. But emigration not infrequently does serve to relieve the pressure in certain localties and families and thus reduces their local death rates. But this in turn probably leads to a somewhat more rapid rate of natural increase in these areas, so that the growth of population in the country as a whole is not greatly affected, unless, as said above, the amount of emigration is very large. It is quite probable, then, that, as a rule, countries of emigration have not derived much relief from this outward movement.

It now appears probable, however, that conception control is so commonly known and practiced in most of the countries of western Europe that their growth of population may be rather nicely adjusted to the economic conditions by controlled variations in the birth rate with little or no assistance from the death rate. Under such conditions it would seem quite reasonable to suppose that any considerable emigration might result in a net loss in numbers and in this way would furnish relief of a very substantial sort. The best example of a country where emigration would seem likely to furnish such relief is Great Britain, where there has been a large amount of unemployment most of the time since World War I. At the same time the birth rate has fallen rapidly. If immediately following the economic depression there had been a large and steady emigration as well as this decline in the birth rate, a consummation which is altogether possible under the conditions now prevailing, there can be no reasonable doubt that the economic situation of those remaining in Great Britain would have been improved and the country's burden of unemployment would have been lessened. As a larger and larger part of the people come to know about and to practice contraception, emigration should afford relief to overcrowded lands, provided, of course, that there are lands to which surplus numbers can go and provided further that the movement can be organized on a fairly large scale.

As regards the colonizing of new lands by peoples of more advanced culture, there can surely be no doubt in anyone's mind that their total numbers are increased by such emigration. By very definition a more advanced culture, as compared with a primitive one, means, for one thing, a culture in which the productiveness of human labor is greater. No one supposes, for example, that the population of the United States, Canada, Australia, and most of the countries of South America is not

much greater now than it would have been had the European never entered these lands. So that, whatever may be the numerical effect of immigration after a country is fairly well settled by people of the same general cultural level as the immigrants, the net effect of European colonization has certainly been to increase very greatly the number of Europeans in the world and probably the total number of people in the world. Besides, there can be little doubt that most immigrants in the last two or three hundred years who have settled in new lands have left more descendants than they would have left if they had remained at home. On the whole, the surroundings of these immigrants have been favorable to a high birth rate and a moderately low death rate, resulting naturally in a very rapid rate of growth, so that we find periods in the life of these European settlements when they have more than doubled their numbers in a generation.

7. Are Emigration and Immigration Desirable?

In addition to the social and demographic aspects of migration and their effects on the countries of origin and destination, there are some rather obvious economic effects of international migration which may be mentioned here, since they probably have had a more decisive bearing on the control of such movements than the social and demographic factors.

a/ From the economic standpoint there can be little doubt that, in the long run, the emigrant is better off as an immigrant than as a native in the homeland. As was said, he ordinarily starts out to improve his economic condition, and he succeeds in doing so in the great majority of cases even though he may remain poor according to the standards of his adopted land. From the standpoint of personality development the balance in favor of the immigrant is less certain. There are no doubt a great many immigrants who feel that they have cast off the shackles of tradition and that they have been released into a larger and more benign world. These experience an enlargement of spirit which they could never have had at home, and this growth of the spirit can be considered among the finest fruits of the emancipation arising from migration. They are entries on the credit side of our immigration ledger. Unfortunately there is a debit side which is represented by the broken-spirited and those whose lives have become anarchical as this term has been defined above. It is quite impossible to strike a balance in this account. The elements in the case are too imponderable. But the fact is that the consequences of migration to the personality development of the immigrant are so frequently obscured by the economic advantages which are direct and obvious that the immigrant's own judgment is of little value in deciding whether he is spiritually richer for migration. Even his conduct in the matter of inducing his friends to come is conclusive

only on the economic side, for the dollars-and-cents argument is no doubt the most generally plausible one and the one which is most frequently decisive. The writer thinks there can be little doubt that from the economic standpoint the individual usually benefits from migration and that this is and will remain the overwhelmingly predominant motive inducing men to leave their homes and search out new habitations.

b. From the standpoint of the sending country it is difficult to say whether emigration is of economic benefit or not. It is argued both ways and with considerable plausibility. In the first place we must remember that a fairly large proportion of emigrants consists of young adults who have been raised to maturity at the cost of the emigrating country. Their labor power and their purchasing ability are lost when they migrate. This is obvious and needs no more than statement to be generally accepted. To offset the economic harm suffered by the migration of vigorous young adults we should notice that, if emigration does reduce population growth, it removes some of the danger of unemployment, or of underemployment, and strengthens rather than weakens the economic life of the country, for it increases the average productiveness of workers left behind. But as we have seen it is by no means sure that any such effect will ensue.

As regards ability, emigrants are probably a little above the average of the groups from which they go, in energy, in intelligence, and in adaptability. Their going may be a drain on the home community, which will weaken it in the course of time. Too much emphasis should not be placed on this point, however, since economic motives are generally predominant and the selective effects both of economic factors and of personal factors are by no means simple and direct.

There is still one other aspect of emigration which the government of the country of origin has at times considered its most important aspect, namely, the political and military aspect. Emigration has frequently been forbidden by countries wanting to keep all their men of military age. In recent years the Soviet Union, Italy, and Germany have made emigration practically impossible except for certain small groups. When military and nationalistic considerations outweigh all others emigration is regarded as a national calamity.

c. The converse of practically all these advantages and disadvantages of emigration to the homeland applies to the land of immigration. It gets ablebodied adult workers whose rearing has cost it nothing; it may, but seldom does, select to get a better immigrant than the average of the class from which he comes; it gets more potential soldiers than it would otherwise have; it may get skilled workers in lines of industry where it has few of these; and it may not improve its industrial processes so rapidly as it otherwise would because of the abundance of cheap labor, although this certainly has not been true to any great extent of industry

in the United States. But it must pay a price for these things, and one part of this price is a large amount of spiritual anarchy, as we have already said. It may also pay a price in low standards of living and low wages in large segments of the population, with a resulting distribution of wealth which is anomalous, to say the least (in 1928 there were 24 men in the United States with taxable incomes in excess of $5,000,000 each, their total *incomes* being somewhat in excess of $240,000,000).

A country of immigration also has a problem that is very difficult and perplexing in creating an organic unity of the numerous elements which compose it. Whether or not in the long run it profits from these diverse elements is a matter of much dispute. There are vigorous advocates of the view that diversity of population is essential to the development of a rich and diversified civilization; but there are also just as vigorous advocates of the view that only a highly homogeneous group can be expected to produce a civilization of a high order. There does not appear to be any very satisfactory evidence for either view; but one is probably safe in saying that the highest achievements in decent and humane living cannot be expected from a people living in such a state of constant flux as we live in today. A fine type of human development necessarily presupposes an integration of personality and an assurance regarding human and aesthetic values which cannot be developed by a people living on the run. Insofar as immigration contributes to the hectic life that we live today, it undoubtedly makes the achievement of many of the higher human values more difficult.

8. Race Contacts

Thus far no mention has been made of the effects of international migration on race contacts. That different races would be brought into contact by migration was inevitable and that visible differences in race would intensify the conflicts arising from cultural differences was also to be expected. That race problems have been multiplied and intensified by the migration of Europeans to other parts of the world needs no proving. It is so obvious that he who runs may see. There is much reason to suppose that these race conflicts will become even more bitter in the future. Although this does not mean that any general uprising of the colored races against the white race is imminent, it is folly to ignore the fact that the expansion of Europe has created many and difficult race conflicts and that the economic exploitation which has accompanied this racial expansion has embittered and is embittering these racial contacts. Race conflict is to a large extent the heritage of migration and must be charged to the debit account in attempting to assess the benefits derived from migration. No attempt will be made here to discuss race contacts, not because they are not worthy of much attention,

but rather because of the incompetence of the author and because of the limitations of space.

9. The Future of International Migration

As has been intimated at several points in the preceding discussion, the relatively free movement of individuals from country to country appears to have come to an end. Ever since the end of World War I there has been a growing tendency to control international migration. This was manifested first in restrictions placed on numbers, and sometimes on sources, by receiving nations and also by the new limitations on the rights of immigrants in their adopted country. Our own quota laws, which first came into effect in 1922, both limited the numbers and allocated these to different countries in accordance with the proportion of our population already composed of the different national stocks. In most European countries restrictions of the rights of immigrants were also increased or existing restrictions, such as limitation of sojourn without naturalization, were enforced more rigidly, while even in South America more control over immigration, both as to numbers and as to country of origin, gradually came into effect.

Even before the receiving countries became more strict in the regulation of immigration, Russia had practically forbidden it and there has been only the merest trickle of people out of Russia since the establishment of the Bolshevik regime. Totalitarian Italy also soon decided that it was harmful to have a large outflow of young adults and had practically stopped emigration several years before the onset of the depression in 1929.

What international migration had not been stopped before the depression was soon stopped after unemployment began to pile up in the receiving countries. With the access to power of the Nazis in Germany, emigration was permitted only to those small groups which the Nazis were anxious to get rid of, chiefly the Jews, but owing to inability to secure funds not many of them were able to leave.

It is hazardous to predict what future international migration will be, but some signs are beginning to appear which may indicate the future pattern. In the first place it seems likely that all countries are going to exercise rigid control over immigration in the interests of their native population. This control will include both the regulation of numbers and the selection of the kind of people to be admitted. Cultural and racial likeness will probably be the chief criteria determining who will be admitted, if it is decided to admit any. In totalitarian lands, where the individual possesses no rights which the government is bound to respect, migration of what have heretofore been considered national groups will probably follow the pattern now being developed by Germany and Italy. People now living in areas which the Nazi leaders consider essential to

the establishment of a large solid mass of Germans in central Europe are being evacuated wholesale and are being replaced by Germans from Germanic islands scattered throughout central Europe. This process is now under way in Poland. It is also beginning in Alsace-Lorraine and there is every reason to believe that a victorious Germany will clear out the Czechs, the Slovaks, great masses of Ukrainians, and other non-German-speaking peoples who now live in this coveted area. In the place of the people removed from these areas, German-speaking people will be moved in from areas where they constitute minority groups (islands) within a larger non-German population. Already large numbers of German-speaking people from the Baltic states are being settled in what was the western part of Poland, the Germans from the Italian Tyrol are also being brought into the new Germany and there are reports to the effect that German-speaking people from Yugoslavia and Rumania are being moved toward the German center.

Italy is following in the footsteps of Germany. It is hastening the evacuation of the Germans south of the Brenner Pass and filling their places with Italians; it has sent and is sending considerable numbers of Italians to Albania; and after the conquest of Ethiopia it drove out many Ethiopians from regions considered suitable for Italian colonization and began to settle its own nationals there.

Thus a pattern of future international migration begins to take shape, a pattern which will probably continue in its present direction in the event of a Nazi victory. The countries not directly under Nazi domination will take such measures as they can to defend their interests, but where not strong enough to enforce their decisions will bow to the demands of the Nazis. In the Far East, if Japan is dominant, large numbers of Japanese will be colonized in the East Indies and possibly in parts of central and southern China and in Indo-China, but not to any great extent in Manchukuo and Siberia. The chances are that there will not be the same large-scale forced removals of other peoples in the Far East that the Nazis are contemplating in Europe because there is still much thinly settled territory in this region. But such removals will be resorted to when of advantage to Japan.

In the case of United Nations' victory there is nothing on which to base a judgment of probable international migration. It would appear that no country, left to itself, will now accept many immigrants. Up to the present the statesmen of the United Nations have not expressed themselves on the matter of regrouping minorities in Europe, but it is unlikely that compulsory migration will be so great under the control of the United Nations as it will be under Nazi control. In the Far East it is possible that the desire of the United Nations to hold Japan in check together with the pressure of their obligations to China and India would lead them to encourage people from these countries to migrate into

Malaysia on a large scale. But, of course, the whole question of the settlement of Chinese and Indians in Malaysia and possibly in parts of Africa may pass out of the control of the United Nations even with victory.

In the past most of the attention given to matters of migration in this country has been confined to international migration. This is not surprising in view of the huge size of this movement and its importance. In the future, however important immigration may be, students of society are going to devote more and more attention to matters of internal migration. This will be discussed briefly in the following chapter.

References

1. BRUNNER, EDMUND DES.: "Immigrant Farmers and Their Children," 277 pp., Doubleday, Doran & Company, Inc., Garden City, N. Y., 1929.
2. CAMPBELL, PERSIA CRAWFORD: "Chinese Coolie Emigration to the Countries within the British Empire," 240 pp., P. S. King & Son, Ltd., London, 1923.
3. CHEN, TA: "Chinese Migrations, with Special Reference to Labor Conditions," 237 pp., Government Printing Office, Washington, D.C., 1923. (U. S. Dept. Labor, Bureau Labor Statistics, *Bull.* 340, Miscellaneous Ser.)
4. DAVIE, MAURICE R.: "World Immigration," 588 pp., The Macmillan Company, New York, 1936.
5. FAIRCHILD, HENRY PRATT: "Immigration; a World Movement and Its American Significance," rev. ed., 520 pp., The Macmillan Company, New York, 1930.
6. ———: "The Melting-pot Mistake," 266 pp., Little, Brown & Company, Boston, 1926.
7. GILLETTE, G. M.: "Immigration and the Increase of Population in the United States," *Soc. Forces*, 5 (1926), 37–51.
8. League of Nations: "Statistical Year-book of the League of Nations," 1939–1940, Geneva, 1940.
9. National Bureau of Economic Research: "International Migrations," ed. by Walter F. Willcox, 2 vols., National Bureau of Economic Research, New York, 1929–1931.
10. ROSSITER, WILLIAM S.: "Increase of Population in the United States 1910–1920; a Study of Changes in the Population of Divisions, States, Counties and Urban and Rural Areas, and in Sex, Color, and Nativity, at the Fourteenth Census," 255 pp., Government Printing Office, Washington, D.C., 1922 (U. S. Bur. Census, *Census Mon.* 1.)
11. TAFT, DONALD R.: "Human Migration," 590 pp., The Ronald Press Company, New York, 1936.
12. WALKER, FRANCIS A.: "Discussions in Economics and Statistics," 2 vols., Henry Holt & Company, New York, 1899.
13. ———: "Restriction of Immigration," *Atlantic Monthly*, 77 (1896), 822–829.
14. ———: "Immigration and Degradation," *Forum*, 11 (1891), 634–644.

Questions

1. Discuss the factors influencing the migrations of peoples. Give concrete examples of factors at work in the case of people whom you know.

2. Describe the characteristics of modern migrations. How do they differ from earlier migrations?

3. Discuss the extent of modern migratory movements.

4. What are the economic causes of migration? Give illustrations from your reading of modern history and from your personal acquaintance with people who have migrated.

5. How is World War II affecting migration now? How is it likely to affect future migration: (*a*) in event of a United Nations victory? (*b*) in event of an Axis victory?

6. What are the chief social and psychological effects of migration? Give examples from your personal knowledge. Can you explain the reasons for the psychological effects that you have observed?

7. What relation does migration have to our "changing morality"? Make your answer specific and definite by drawing upon your own experience.

8. What has been the effect of immigration upon the population growth of the United States? Discuss General Walker's theory and justify your agreement or disagreement with it.

9. Does emigration relieve population pressure? Explain the conditions under which your answer is valid.

10. Why was the rate of population growth so much more rapid in the early days of settlement in the United States than it has been since the middle of the nineteenth century?

11. Discuss briefly the benefits of migration to the individual and the sending and receiving countries. What is your attitude toward the present restrictive policy of the United States? Give your reasons, and analyze them so that you are certain that they are the real reasons and not merely an effort to justify preexisting prejudices.

12. Why is the question of race contacts growing more insistent? Can you illustrate from your personal knowledge or experience?

CHAPTER XXIV

MIGRATION (*Continued*)

B. INTERNAL[1]

The causes of internal migration—people moving within national boundaries—are not essentially different from those of international migration, but it is probable that noneconomic motives play a somewhat less significant role. This would be expected since there is commonly less difference between the several regions within a nation than between nations in religious tolerance, in political rights, and in social status while differences in economic status and opportunity within a nation may be just as great and probably are better known than those between nations. During the productive years of life most people who make significant moves within a country do so in order to secure a better living. They move toward better economic opportunity. Among older people who are retired this motive naturally exercises less influence than among younger people but even with them the cost of living is an important factor in deciding where to go.

The volume of internal migration has never been recorded with any degree of accuracy in most countries. Sweden is apparently the only country in which a fairly careful account has been kept of the movement of people from community to community during recent decades. The Swedish data will be discussed in Section 4. But as interest in the subject has grown, an increasing number of studies have been made of the amount and the direction of internal movements and of the personal characteristics of the migrants.

1. The Source of Internal Migrants

It has been known in a general way that all during the period of modern industrial development the prevailing movement has been from agriculture to nonagricultural industries—from farm and agricultural village to industrial village or town and city. This was the natural result of a series of agricultural revolutions closely associated with, and no less fundamental than, the series of industrial revolutions of the last two centuries.

In addition to the general change in our economy calling for more nonagricultural workers, the agricultural population has for some decades had a higher birth rate than the urban population and, since it has always had a lower death rate, it is the usual thing for it to have a higher rate of

[1] General references: 1; XXII, 2; 7; 9; 11; 14; 15; 16.

increase. This has meant that the agricultural population has always had a surplus population that could not be employed to advantage in agriculture except at times when new lands were being settled rapidly or agriculture was being intensified. A considerable proportion of this surplus has always gone to the cities (ever since there were towns and cities) because cities have never, save for a short time after the adoption of modern sanitation, been able to keep alive enough of their children to maintain their own numbers, to say nothing of providing for growth. The second source of internal migrants has been the movement from town to town, from city to city, and from city or town to country which has grown to large proportions with the improvement of communication and transportation in the modern world and the increasing opportunity of the worker to seek a job at a distance in a rapidly changing economic world.

2. The Direction of Internal Migration in the United States

In the United States the *westward* movement of young people leaving the East to take possession of new lands in the West was long the dominant movement, or at least we have generally believed that this was the case. Such vast internal movements of people between rural areas in search of new homes were, of course, peculiar to new countries which had great unsettled areas. They could only take place in the Americas, Australia, and certain other areas where the native populations were small and ill prepared to resist the encroachments of the Europeans in search of homes. But even in lands like China and India, where urban population has always been relatively small and where there has been little change in its proportion for centuries, there has always been a considerable amount of internal migration and its direction has in general been from the agricultural community (usually a small village) to the market town and to the city. But the volume of this country-to-city shift of population must everywhere have remained small in relation to the total population until quite recent times.

How the search for new homes in the West plus the rapid development of industry affected the distribution of population in the United States may be illustrated by the growth of population in the East North Central States. In 1790 there was no enumeration of population in the territory now comprising these states. In 1800 there were only 51,000 people enumerated in this area. The following table shows what the population of this region would have been if it had grown solely by natural increase from 1800 to 1900 but at the almost incredibly rapid rate of 100 per cent each 20 years, and what the population actually was. In 1820 the actual population was almost eight times as great as it would have been by natural increase and until the period 1860 to 1880 the actual population considerably more than doubled each 20 years. This same rapid growth of the frontier states, in which internal migration played a very important

part, was characteristic of many western states until after 1910. It is true, of course, that a large number of the migrants into our "newer" states came not from other states (internal migrants) but from abroad. But even so it was not unusual as late as 1900 to find western states in which half or more of the native whites had been born in other states, chiefly those lying to the east of them. Since this westward movement of population is largely past and since we know but little about the migration between urban communities, our attention will be directed chiefly to the movement of people from agricultural to nonagricultural communities. This movement of population between agricultural and nonagricultural areas is not new (4). In 1790, 94.9 per cent of our people lived on farms or in villages having fewer than 2,500 inhabitants. Since then this proportion has declined steadily, until in 1940 only 43.5 per cent of our people live outside towns of 2,500 or more.

TABLE 111.—ESTIMATED AND ACTUAL POPULATION BY 20-YEAR PERIODS, EAST NORTH CENTRAL STATES, 1800 TO 1900

Year	Estimated population[1]	Actual population
1800	51,000 (actual)	51,000
1820	100,000	793,000
1840	200,000	2,925,000
1860	400,000	6,927,000
1880	800,000	11,207,000
1900	1,600,000	15,986,000

[1] Assuming a natural increase of 100 per cent each 20 years and no migration.

We can never know just what part internal migration has played in building up our urban population, but the following table is suggestive. At every census period since 1790, except between 1810 and 1820, our urban population has grown much faster than our rural population. Until about 1840, with the above exception, the urban rate of growth was about twice the rural rate; from 1840 to 1880 it was from nearly two to four times as great; and since 1880 it has been from three to nine times as great until the period 1930 to 1940, during which there was comparatively little difference. Since 1920 it has been possible to divide the rural population into the farm and nonfarm, and this shows that the farm population declined about 1,200,000 between 1920 and 1930, to 24.6 per cent of the total population, and remained practically stationary between 1930 and 1940. Hence, of course, it declined proportionally, to 22.9 per cent of the total.

This rapid relative growth of the urban and rural-nonfarm populations is all the more significant as indicating a large farm-to-city movement in view of the fact that, except for foreign immigrants in the cities, the rate of natural increase has always been much higher in rural areas than in

urban areas. Therefore, if it had not been for migration from rural areas to the cities the rural population would consistently have grown at a higher rate than the urban.

TABLE 112.—RURAL AND URBAN POPULATION OF THE UNITED STATES, 1790 TO 1940[1]

Census year	Total	Urban	Rural	Per cent of increase		
				Total	Urban	Rural
1940	131,669,275	74,423,702	57,245,573	7.2	7.9	6.4
1930	122,775,046	68,954,823	53,820,223	16.1	27.3	4.4
1920	105,710,620	54,157,973	51,552,647	14.9	29.0	3.2
1910	91,972,266	41,998,932	49,973,334	21.0	39.3	9.0
1900	75,994,575	30,159,921	45,834,654	20.7	36.4	12.2
1890	62,947,714	22,106,265	40,841,449	25.5	56.5	13.4
1880	50,155,783	14,129,735	36,026,048	30.1	42.7	25.7
1870	38,558,371	9,902,361	28,656,010	22 6	59.3	13.6
1860	31,443,321	6,216,518	25,226,803	35.6	75.4	28.4
1850	23,191,876	3,543,716	19,648,160	35.9	92.1	29.1
1840	17,069,453	1,845,055	15,224,398	32.7	63.7	29.7
1830	12,866,020	1,127,247	11,738,773	33.5	62.6	31.2
1820	9,638,453	693,255	8,945,198	33.1	31.9	33.2
1810	7,239,881	525,459	6,714,422	36.4	63.0	34.7
1800	5,308,483	322,371	4,986,112	35.1	59.9	33.8
1790	3,929,214	201,655	3,727,559			

[1] Urban population in the United States from the First Census (1790) to the Fifteenth Census (1930), released by the Bureau of the Census, Oct. 31, 1939. 1940 figures from U. S. Bureau of the Census special release.

The relatively greater rate of growth of the urban population since about 1880 is undoubtedly associated with the rapid cessation, after about 1885, of the movement of a large number of foreign-born immigrants to the land. As the better land was settled, agriculture ceased to attract the foreign born; it also ceased to attract the native and he, too, turned to the city in increasing numbers. After about 1890 even the westward movement became increasingly a part of the farm-to-city movement.

Internal migration in the United States has, then, been made up chiefly of two great movements: (*a*) from the more settled regions of the East to the new regions of the West, which was in part a farm-to-city migration although primarily a land-settlement movement; and (*b*) from the rural areas to the towns and cities because of the increasing importance of nonagricultural industries. The former of these movements is now chiefly of historical interest. The latter type of migration, however, is still with us and is a matter of current concern. There is, finally, a third type of internal migration which has no doubt always been large but of which we have heretofore taken little account, namely,

the movement of urban, or at least of nonagricultural workers, from urban community to urban community, or from urban community to rural community and back again. This type of movement will undoubtedly become more important in the future.

The slight interest taken in migratory movements within the country is shown by the fact that we know very little about internal migrants and their movements; our chief source of information in the past has been the state of birth and state of residence data gathered by the census since 1850. However, in studying the growth of a particular urban group, or even the urban population as a whole, we cannot say what proportion of the people in it were born in that particular city or in any other city, or what part moved there from other towns and cities or from rural areas, nor do we know anything about the length of time the internal migrants have lived there or about the demographic composition of these migrants. We are only now beginning to get some data which will throw light on the amount and the composition of internal migratory movements of various types.

The 1940 census collected information regarding the place of residence on Apr. 1, 1935, as well as at the time of the census (Apr. 1, 1940). When this is tabulated it will give a considerable body of information regarding net internal movement between different regions and types of communities during this five-year period, since tabulation plans call for the division of the country into a large number of areas (about 300) classified by type. Furthermore, this movement from place to place can be tabulated to show in considerable detail the characteristics—age, color, sex, marital condition, occupation, education, economic status, and so forth—of people who moved. Just how much of this information will be tabulated is not yet known, but certainly we shall get a far better picture of the amount and the direction of internal migration than we have had hitherto and we shall know more about what kind of people migrate.

3. The Selective Influence of Migration (5; 6; 12; 18)

There has long been considerable discussion regarding the kind of selection, if any, that takes place when people move from one type of community to another of different type. Students have been especially concerned to find out whether the rural community and the small town lost their best, their poorest, or their average citizen to the city. When rural-urban migration first attracted attention there was a marked tendency to assume as a matter of course that the brighter and more energetic boys and girls were leaving the farms and villages and going to the city. It seemed quite logical to believe that it took more than an average amount of energy and initiative to sever one's home ties and move into the unknown.

Later, as the problems arising from foreign immigration to the cities multiplied and became baffling, there was a rather violent reaction from this belief in the all-round superiority of the migrant and there was much talk that they were the "scum" of the population, the "dregs of humanity," and so forth. This point of view was also adopted as regards internal migrants by some writers, although it was never applied to them in the extreme form in which it was applied to foreign-born immigrants. More recently there is an increasing disposition to believe that internal migrants are a pretty good sample of the people in the communities from which they come. They may have a little bit better education than the average, and they may be a little more daring than the stay-at-homes, and they may be a little more adaptable in some respects than the people they leave behind, but there is no convincing evidence that they are, on the whole, either inferior or superior to the people among whom they have been reared. If there are differences between migrants and stay-at-homes they are not adequately defined by the terms *superior* and *inferior;* they consist rather in qualities which assign unequal values to different types of environment, in qualities which can only be called inferior or superior in that they enable individuals to adjust themselves more or less readily to a particular type of environment. At the present stage, in any event, we know altogether too little about the selective influence of migration to make any broad general statements regarding the relative quality of migrants and stay-at-homes.

4. Some Data on Country-to-city Migration

The U. S. Department of Agriculture has long been interested in the movement to and from farms and has gathered some data which are useful and interesting even though they are not so accurate as could be desired. These data show that in the decade 1920 to 1929 the net movement from farm to nonfarm areas was in excess of 6,000,000. The total movement to and from farms was more than five times as great—in excess of 32,500,000. This does not mean that over 32,500,000 different individuals participated in this rural-urban movement, but it does mean that in all probability from one-fifth to one-sixth of the total 1920 population of the nation (18,000,000 to 20,000,000) took part in this vast migration. In the following decade, 1930 to 1939, the net movement from farms was only about one-third as large—about 2,180,000—but the gross movement to and from farms was over 23,400,000. Thus instead of only about five moves being made for each person lost to the farms there were about ten.

These data confirm what had been generally believed by those familiar with farm-to-city movements, namely, that, of the total number of people migrating within any given period, only a small proportion of them

remained long in the place to which they first migrated. Internal migrants are highly mobile. They move frequently from place to place, as might be expected considering the ease of movement and the temporary character of many types of jobs, but even so, most people studying this problem have been surprised at the small net gains and losses of most communities in proportion to the number of in- and out-migrants.

TABLE 113.—MOVEMENT TO AND FROM FARMS, 1920 TO 1939[1]

Year	Persons arriving at farms from cities, towns, and villages	Persons leaving farms for cities, towns, and villages	Net movement from	
			Cities, towns, and villages to farms	Farms to cities, towns, and villages
1939	805,000	1,063,000	.....	258,000
1938	823,000	1,025,000	.....	202,000
1937	872,000	1,160,000	.....	288,000
1936	719,000	1,166,000	.....	447,000
1935	825,000	1,211,000	.....	386,000
1934	700,000	1,051,000	.....	351,000
1933	944,000	1,225,000	.....	281,000
1932	1,777,000	1,511,000	266,000	.....
1931	1,546,000	1,566,000	.....	20,000
1930	1,611,000	1,823,000	.....	212,000
1930–1939	10,622,000	12,801,000	266,000	2,445,000
1929	1,604,000	2,081,000	.....	477,000
1928	1,698,000	2,120,000	.....	422,000
1927	1,705,000	2,162,000	.....	457,000
1926	1,427,000	2,334,000	.....	907,000
1925	1,336,000	2,038,000	.....	702,000
1924	1,581,000	2,068,000	.....	487,000
1923	1,355,000	2,162,000	.....	807,000
1922	1,115,000	2,252,000	.....	1,137,000
1921	759,000	1,323,000	.....	564,000
1920	560,000	896,000	.....	336,000
1920–1929	13,140,000	19,436,000	.....	6,296,000

[1] U. S. Department of Agriculture, Bureau of Agricultural Economics, Farm Population Estimates, Jan. 1, 1940. Released July, 1940.

This point has been brought out very clearly by Dr. Thomas in her studies of Swedish migration (VIII, 6, pp. 299–303). No matter what type of community is considered—agricultural, industrial, or these two types mixed—the *net* outflow or intake is only a small proportion of the *gross* outflow or intake. Thus in the year 1895 the out-migration from agricultural communities amounted to 56.8 persons per 1,000 of their average population, but their net loss was only 10.3 per 1,000. In 1933 the net outflow (8.0 per 1,000) was a still smaller proportion of the total out-movement (63.7 per 1,000). In rural industrial communities

which had a net inflow, an even smaller proportion of the total in-migrants remained—in 1895 only 6.8 per 1,000 out of an in-migration of 62.4 per 1,000 and in 1933 only 1.1 per 1,000 out of 59.1 per 1,000. In large industrial towns, where there was always a net inflow, this was also a very small proportion of the total in-migration even in periods of rapid growth. Thus in 1895 the net inflow was 30.8 per 1,000 of their population while the gross inflow was 118.0 per 1,000. Only about one out of four was net gain. By 1933 this had fallen to 9.1 net out of 93.5 gross—one in ten.

Gross internal migration in Sweden is greatest in proportion to net effect on numbers in the smaller industrial or semi-industrial communities. Such places probably draw large numbers of people from surrounding agricultural areas for seasonal work, who return to their home communities when work slackens. In general one gets the impression that in- and out-migration is easier in the small communities than in the larger places. One can but wonder whether these smaller industrial communities are not increasingly becoming the areas where seasonal and unusual manufacturing demands are met simply because they are able to get extra workers quickly and for a short time from surrounding agricultural areas.

In Germany much the same general pattern of internal migration was found by Dr. Heberle (13). The net out-migrants from rural areas constituted only a small proportion of all out-migrants from these areas, and the net in-migrants were but a small proportion of all in-migrants in the urban areas gaining from internal migration. Furthermore, as in Sweden, it appears that the *net* out- or in-migration is becoming a smaller part of the *gross* out- and in-movements—in other words, the population appears to be getting more mobile. This would seem to be a natural consequence of the increasing efficiency of communication and transportation and of the increasing unevenness of industrial operation.

Swedish data also throw some light on the extent of the movement of people between different types of communities (10). They show that: (*a*) a smaller proportion of rural-born than of town-born find their way to Stockholm (4.37 and 5.90 per cent, respectively); (*b*) a slightly smaller proportion of rural-born are found in towns (18.19 per cent) than of town-born in rural communities (19.82 per cent); (*c*) a smaller proportion of rural-born (49.75 per cent) than of town-born (61.5 per cent) are found in the community in which they were born, and, hence, that (*d*) more rural-born (32.06 per cent) than town-born (18.93 per cent) move to similar types of communities. There are two points of special interest here: (*b*) that a larger proportion of town-born people were living in rural communities than of rural-born who were living in towns; and (*d*) that a smaller proportion of town-born people moved to other towns than of rural-born people to other rural communities. The explanation of this second point is probably to be found in the fact that when industry

and commerce are expanding people born in towns do not need to go elsewhere to find jobs, while when agriculture is expanding the new lands lie outside the existing agricultural communities and hence necessitate moving.

Miss Moore's data also show that a larger proportion of town-born people than of rural-born people who move to Stockholm, 57.91 and 21.84, respectively, move there directly from community of birth, while conversely a larger proportion of rural-born people than town-born people, 78.16 and 42.09 per cent, respectively, make intermediate moves between community of birth and Stockholm. People born in small industrial and mixed agricultural-industrial communities occupy an intermediate position in these respects. It cannot be told whether internal migration in the United States between different types of communities would show the same pattern, although some people have long believed that many rural-born migrants to cities did not make this transition in a single move.

Unfortunately we have no studies of internal migration for the United States so typical as those for Sweden and Germany referred to above, but it is rather probable that the general trends are much the same here as in those countries. It may well be, however, that the widespread use of the private automobile for daily transportation to and from work over fairly long distances will result in fewer short moves from one community to another for nonagricultural workers in this country than in Europe. It is not at all uncommon for men to drive from distances of 20 to 30 miles each day to their work. Since the area within which they can work and still live in the same community is expanding rapidly it may affect the amount of migration over short distances. However, there is as yet no evidence showing how widespread this condition is, nor whether it is materially affecting the volume of local migration.

5. Factors Affecting Out-migration

If the volume of migration and its direction are largely determined by the economic differentials between communities, as has been contended here, and if in consequence people generally move from areas of low earning power to areas of higher earning power, it should be possible to predict with fair accuracy the general direction of net internal migration in the United States in the near future. This assumes, of course, that unusual conditions like those governing defense migration are absent. Areas of low earning power are such for four chief reasons: (*a*) they have relatively poor natural resources—poor land, small mineral deposits, an unfavorable climate, and so forth; (*b*) they have so many people that the resources per capita may be small even though in amount per land unit they are quite high, in other words, there are too many people and they have too high a birth rate; (*c*) the community may lack the organization and the capital to make good use of its resources; (*d*) the changes in economic

processes may be so rapid that what was only an adequate population under former conditions has become an excessive population under new conditions, for example, the very rapid mechanization of cotton farming in the Mississippi Delta and westward is having disastrous effects on the agricultural population in all the cotton states, but especially in the Southeast, the old cotton area.

It should be observed that these conditions making for low earning power seldom come singly. As a rule, most or all are found in the same locality, each, in fact, being causally related to all the others. The point of importance here is that such areas are almost certain to be areas of *net* out-migration when the nation is so organized that the people living in them can learn of more promising conditions elsewhere and are not legally prevented from moving about freely. Even at the depth of the depression there was only one year when the net migration was toward poor rural communities (see Table 113) and the total was barely over 250,000. There were, however, several years when the net loss to rural communities was quite low.

Bearing in mind the conditions likely to induce out-migration there is little difficulty in picking the chief areas from which a large part of our net internal migrants are likely to come: (*a*) the hilly and mountainous areas of the southern Appalachians, of central Kentucky and Tennessee, and of the Ozarks, where the birth rate is high, the land poor, and industrial development lacking; (*b*) the cutover areas of the northern Great Lakes and of the South, where formerly lumbering furnished a livelihood to a considerable population; (*c*) the cotton South, especially the Old South, which can no longer compete with the Delta and the new cotton country in Texas, where the mechanization of agriculture is proceeding rapidly. In both of these areas a considerable part of the workers in agriculture are no longer needed and as yet there is no indication that local industrialization will keep pace with the layoffs in agriculture; (*d*) the western wheat lands (dust bowl), where drought and the mechanization of agriculture have already combined to oust a considerable number of farmers and where mechanization is not yet complete; (*e*) the corn belt, where mechanization is also proceeding at a rapid pace and seems likely to continue to do so for some time to come; and, finally, (*f*) those areas in which there is a more or less sudden change in industrial employment due to the exhaustion of natural resources (coal or copper mines, and so forth) or to the discovery of new resources elsewhere which are cheaper to exploit, or where temporary conditions have made it expedient to assemble a population which cannot be supported there under normal conditions (defense industry). These latter areas generally are not large but the problem they face is often an emergency problem and they have little time in which, and often few resources with which, to make an adjustment.

In the future, therefore, we may look for a considerable part of our net internal migration, the part which will exercise an effect on the distribution of population, to come from the areas just described. But we should not overlook the fact that a large proportion of all migrants will continue to pass from city to city, from farm to farm, and from village to village and between different combinations of these areas and leave no net residue in any of them. What the net movement in any of these directions will be will depend upon the nature and strength of the expulsive and attractive forces prevailing at the time. Farmers left the "dust bowl" in great numbers for two or three years because drought drove them away, but the mechanization of wheat farming, a somewhat less spectacular factor, was added to the expulsive force of drought and will keep them away. They went west partly, no doubt, because of our national tradition that opportunity lies to the west, but also because they were told that jobs could be found there or that farm land was still available in that region. This will account for the fact that in about two years and nine months over 250,000 people (2) who were dependent upon their work for a living went into California by auto.

But though the areas of greatest probable out-migration can be predicted in a general way, it is impossible to foretell the future contributions of each area, as this depends upon many factors which are quite beyond our power to foresee. Another drought in the dust bowl might drive out a high proportion of the farmers still living there; a rapidly lessened demand for cotton might place special compulsion on the Negro population of the cotton belt; while a few prosperous years in the corn belt might enable farmers to mechanize at a faster rate and thus spare more young people to the city, while army demands might have the same effect. All such contingencies are possible, but who can say which is the most probable?

It is even more impossible to say where migrants are likely to go. Will new industries (for example, plastics) seek new locations? Will new pipe lines carry crude oil to be refined on the eastern seaboard or gasoline which has been refined in the Southwest? Will the expansion of existing industries take place at present locations or in new locations? Will the increasing use of electric power tend to break large manufacturing units into smaller ones? Will the automobile affect the distribution of industry and commerce in different ways in different parts of the country? Will cheap and satisfactory telephonic communication help to break up huge factories into smaller units? There is no answer to these and a hundred other questions which should be answered if we are to predict the amount and the destination of migration with even a moderate degree of accuracy. The most probable guess would be that past trends will continue, that any significant variation from the present pattern will proceed slowly. But for any given locality even this is a most hazardous guess. Only

national planning on a large scale would supply the answer to where our migrants are likely to go.

6. Who Are Our Migrants?

We have long known some of the characteristics of internal migrants in a general way, but we have comparatively little of the detailed information about them which would be useful in planning mutually satisfactory adjustments between migrant and community. We have known for a long time that in the westward movement of population males predominated rather heavily. Thus in the north central part of the country, which was being rapidly settled in 1820, there were 111.4 males for each 100 females. In the settlement of the Far West the preponderance of males was very great in the early days—278.9 males per 100 females in 1850—and it remained quite high until after 1920—113.0 males to 100 females (VIII, 9, p. 183). In recent decades, however, the sex composition of internal migrants has been changing, and, as shown in Table 114, the number of females leaving rural areas between 1920 and 1930 was almost 600,000 greater than the number of males. Females constituted 55 per cent of the net rural out-migrants during this period.

Table 114.—Net Gain or Loss[1] through Migration to the Rural Population[2] by Age, Residence, Color, and Sex, United States, 1920 and 1930[3]

Age	Total rural	Rural-farm	Rural-nonfarm	White	Colored	Male	Female
Total	−5,734,200	−6,084,600	+350,400	−5,099,900	−634,300	−2,574,100	−3,160,100
Under 5	− 413,100	− 356,500	− 56,600	− 494,600	+ 81,500	− 154,900	− 258,200
5–9	− 709,500	− 624,000	− 85,500	− 639,500	− 70,000	− 289,700	− 419,800
10–14	−1,385,700	−1,449,900	+ 64,200	−1,210,400	−175,300	− 673,500	− 712,200
15–19	−1,158,000	−1,341,100	+183,100	− 989,400	−168,600	− 593,000	− 565,000
20–24	− 658,800	− 715,400	+ 56,600	− 496,500	−162,300	− 318,600	− 340,200
25–29	− 151,700	− 238,000	+ 86,300	− 156,200	+ 4,500	− 43,400	− 108,300
30–34	− 104,100	− 132,000	+ 27,900	− 138,400	+ 34,300	− 11,600	− 92,500
35–39	− 282,400	− 216,400	− 66,000	− 268,900	− 13,500	− 117,100	− 165,300
40–44	− 21,100	− 60,500	+ 39,400	+ 24,900	− 46,000	+ 61,400	− 82,500
45–49	− 312,600	− 267,100	− 45,500	− 241,100	− 71,500	− 167,100	− 145,500
50–54	− 176,700	− 192,900	+ 16,200	− 151,600	− 25,100	− 89,700	− 87,000
55–59	− 56,700	− 126,000	+ 69,300	− 61,300	+ 4,600	− 17,200	− 39,500
60–64	− 101,100	− 148,700	+ 47,600	− 81,400	− 19,700	− 47,900	− 53,200
65–69	− 70,300	− 102,200	+ 31,900	− 57,700	− 12,600	− 36,200	− 34,100
70–74	− 44,900	− 53,300	+ 8,400	− 43,200	− 1,700	− 27,000	− 17,900
75+	− 87,500	− 60,600	− 26,900	− 94,600	+ 7,100	− 48,600	− 38,900

[1] Minus (−) indicates a loss.

[2] Includes only persons living in 1920.

[3] Lively, C. E., and Conrad Taeuber, "Rural Migration in the United States," Works Progress Administration, Government Printing Office, Washington, 1939, p. 15. For method of computation see Appendix B.

It has also been known that young adults predominated in most migrant groups. In the very nature of the case, young people constitute

a large portion of those who need to look for a new place in which to live and make a home, when population is increasing fast. As an example of the age of migrants, one may cite the age group fifteen to twenty-four in 1920 in the West (Mountain and Pacific states). This group numbered 1,427,000. In 1930 these people would, of course, be twenty-five to thirty-four years of age and a considerable number of them would have died. But the twenty-five to thirty-four age group in this region actually numbered 1,898,000. Clearly there was a migration of more than 500,000 persons of these ages into the West during this decade. In the older age groups the increase in numbers from migration was much smaller. The movement of young adults away from rural areas has also produced marked differences in age make-up between the farm population and the city population. Thus in 1930 the persons aged twenty to forty-four constituted but 31.0 per cent of the total rural-farm population while they were 45.2 per cent of the total population in cities of over 500,000.

We have never known much about the occupational composition of internal migrants, but it has generally been believed that unskilled and semi-skilled workers predominated because farm and village boys have little opportunity to learn skilled trades and to acquire clerical and professional training and because the unskilled are more frequently forced to migrate in order to find jobs. In an Ohio county very few of the husbands of south-born urban women (migrants) had white-collar jobs, and these few were chiefly clerical workers. Furthermore, only a little over one-fourth of such men held skilled jobs. The remainder were chiefly unskilled and semiskilled workers. Of the husbands of north-born urban women, on the other hand, over one-third were in white-collar jobs, predominantly professional and proprietors, over one-third were skilled laborers, and only about one-fourth were unskilled and semi-skilled laborers. Even these figures somewhat understate the differences in occupational status of north-born and south-born men in this county because about one-fifth of the south-born urban women had married north-born men while only a little over one-eighth of the north-born urban women had married south-born men (XI, 16).

Webb found almost two-thirds of the unattached male migrants in his study gave their usual occupation as semiskilled (23.2 per cent), unskilled (31.2 per cent), or domestic and allied service (10.6 per cent). Only 17.5 per cent were skilled while only 6.2 per cent were salespersons and canvassers, and so forth, and 4.9 per cent were clerical. The employable heads of migrant families showed a somewhat different occupational distribution, almost one-fourth giving their usual occupations in each of the four classes, white-collar, skilled, semiskilled, and unskilled, as compared with 42, 13, 15, and 30 per cent, respectively, in these same classes in the 1930 general population of gainful workers aged sixteen to

sixty-four (17). In any event, comparatively few migrants are found in the white-collar class, while they are overrepresented in the unskilled and semiskilled classes. It may be said, therefore, that on the whole, migrants do not have as adequate an occupational preparation as the general employed population.

In the United States the migrant groups about whose frequency and distance of movement we know most are those in rural areas. Lively and Taeuber report that, of the male heads of families in selected areas studied during 1935 to 1936, 68.8 per cent had resided in the same place for at least seven years; an additional 11.4 per cent had lived elsewhere in the same county; 5.8 per cent in adjoining counties only, in addition to current place of residence; 3.9 per cent in other counties in the same state; 3.0 per cent in adjoining states; 1.4 per cent in other states; and 5.7 per cent elsewhere, including foreign born and families established since 1928. This would seem to indicate a rather low rate of mobility for this group during this period (8, p. 103). As might be expected the rate of mobility declined as the age of the head of the family increased. Only 60.7 per cent of the heads of families under thirty-five had lived in the same county for these seven years, while 93.9 per cent of those over sixty-five had done so. Of the male heads of families who moved into these areas during the survey, one-third were under thirty-five, and almost another third were thirty-five to forty-four, indicating a rather small movement after forty-five years of age (8, p. 104).

About half of the children (49.6 per cent) of the open-country families in this same group who had left home at least seven years before the survey were still living in the same county and 35.5 per cent in the open country. When these children had moved as far as the adjoining county, almost as many were found living in the city as in the open country, 5.1 and 5.9 per cent, respectively, while only a little over half as many (3.4 per cent) went to villages. As the distance of migration increased the proportion living in cities increased, until over four times as many living in other states were living in cities as in the open country, 6.7 and 1.5 per cent, respectively. As would be expected, more recent migrants (within the seven years preceding the survey) have not wandered so far, but when the distance from the parental home increases, they show the same pattern of distribution between open country and city as the earlier migrants. This study also showed that different occupational groups have different rates of mobility. Of the nonfarm families (5,738), the professional group had the highest rate, just over one-half moving within the seven-year period; while the lowest rate was for proprietors, managers, and officials (25.5 per cent). There was not a great deal of difference between the other groups, although clerical workers (34.5 per cent) were somewhat less mobile than unskilled laborers (37.1 per cent). As would be expected, this group was considerably more mobile than

farm families as a whole. Farm owners and managers are a highly stable group, only 13.3 per cent moving during the period under question. However, tenants and farm laborers are the most mobile of all groups, the percentages moving being 42.0 and 43.9, respectively. Farm laborers also show a tendency to make longer moves than most other classes.

It will not be feasible to continue to catalogue the composition of small migrant groups.

7. Problems of Personal Adjustment (3)

Enough has been said about the composition and mobility of certain groups of rural-urban migrants to suggest the nature of the problems of adjustment they have to meet. Basically these problems are not different from those of any other migrants. They consist in the adjustment of the mental attitudes of the migrants to those of the new communities to which they move. But these facts show something of the probable difficulties encountered by different groups. Thus one can be reasonably certain that the open-country youth who stays in the open country in the same or adjoining county, or even in the same state and perhaps even if he goes to a neighboring state where a similar type of agriculture is carried on, does not encounter any very difficult problem of adjustment. Nor is his problem of adjustment serious if he, or more often she, goes to a neighboring village. In the study just referred to, 8,052 children, sixteen years of age and older, had left open-country homes before 1929; of these 44.5 per cent went to the open country within the same state, with only 3.0 per cent going farther than adjoining counties; another 16.2 per cent lived in villages in the same state, with only 2.8 living farther away than in adjoining counties. On the face of these figures it would appear probable that about 60 per cent of these migrating youth found the adjustment involved in their migration so simple and natural as to be almost unaware of it. Another 9 per cent lived in the open country and villages in other states, and only about 28 per cent lived in cities. Since a good many in this last group had had a considerable preparation for city life through education and through occupational experience, it is quite probable that only a minority of this 28 per cent found the adjustment necessitated by migration to be of any particular difficulty.

On the other hand many internal migrants, perhaps a majority of them, do not find adjustment so simple and easy as it seems probable it is for the majority of farm youths from such a community as described above. A brief statement of some of the new conditions confronting young people from the Kentucky hills when they move to an industrial community only a few miles away may help to show some of the more difficult problems of adjustment encountered by internal migrants. In general a boy from the Kentucky hills has made his living by a desultory sort of mountain agriculture, supplemented by a certain amount of

hunting and fishing. He has always lived at some distance from his neighbors, so that his sanitary habits made little difference to anyone but himself. He will find it difficult to understand the sanitary regulations of the city and he may make their enforcement almost impossible. Regular hours of work, observance of safety regulations, and the strict discipline essential to working in gangs for a common end, all demand the formation of new habits in connection with earning a living. At the same time, living in a relatively densely settled community demands a different conception of personal obligations to neighbors and family and a general cooperative attitude toward established authority and toward employer and fellow workers, which lie quite outside his customary conception of his obligations to others. It is little wonder that such migrants often fail to make satisfactory adjustments to these new conditions, that there is much demoralization among them, and that they present many serious problems to the local authorities in the city. Indeed in this case the problems of adjustment are probably almost, if not altogether, as perplexing as those of the European peasant moving to an American city. The Kentucky migrant has the advantage of the peasant in speaking English but he has the disadvantage of less group discipline and of a very deep-seated individualistic outlook on life which makes it very hard for him to fit into the highly organized life of the modern urban community.

As I see it, the problems of personal adjustment of the internal migrant to his new home lie all the way between the extremes I have tried to picture, between those of the farm boy moving to a farm not far from home, to those of the Kentucky boy leaving the hills to become an industrial laborer. They are to be measured by the cultural differences between the migrant and the group into which he moves. On the whole, these differences are probably less in the case of internal migrants than in the case of foreign-born migrants, but this is not always the case.

I would not maintain, however, that cultural differences are the only factor in the personal adjustments of internal migrants to their new homes. There can be no reasonable doubt that at times these problems of personal adjustment are so intimately bound up with the volume of migration and the economic conditions that it is impossible to tell which is the more significant. The very rapid building up of some of our defense industries provides striking examples of the effects of a great influx of migrants into a community not equipped to provide for their physical needs and not organized to absorb them into its daily life. But even so, the problems arising from too great a volume of migration are largely problems arising from the clash of cultures in the broader sense. Where migrants fit into the pattern of life of the natives and where they supply services needed and wanted by the community, they are seldom considered outsiders for any great length of time, nor do they remain hostile to the customary community controls in their new homes.

If the problems of personal adjustment arise primarily from cultural differences, then a considerable proportion of all internal migration can be said to involve so little adjustment that it loses interest for the social scientist. The farmer moving from farm to farm within the community or to near-by communities, the family moving from one part of the city to another, or even from city to city, with no appreciable change in economic status, the movement of professional men and executives from place to place commonly associated with advancement in their work, these and many other types of movement involve very little in the way of significant adjustments. On the part of the migrant there is no violent uprooting of people from old habits, no period of personal disorganization while groping for new connections in the community; and on the part of the community there is no holding at arms length of the newcomer, no assumption that the community must use force to impose minimum standards of safety and health. Such migration, while large in volume, does not require much attention from the community because the migrant is able without outside aid to make the few and relatively small adjustments needed, and, unless the economic situation should be such as to make all outsiders suspect, his presence will scarcely be noticed. On the other hand considerable differences in general manner of life will create cleavages between the migrant and the native, the migrant and the community, which are very difficult to close and if there is also competition for jobs, with the migrant accepting lower wages, the difficulties are much intensified.

There are many other aspects of internal migration, for example, Negro migration (IX, 2), the Okies, the hobo, and so forth, which cannot be discussed here. These are all of interest but I believe that they do not present essentially different problems from those outlined above. Since I believe, however, that internal migration almost to the exclusion of foreign immigration is going to be the means by which we will effect a redistribution of our population in the future, I think that it will behoove us to direct much more attention to this movement of population than we have in the past.

References

1. ANDERSON, NELS: "Men on the Move," 357 pp., University of Chicago Press, Chicago, 1940.
2. California State Chamber of Commerce: "Migrants, a National Problem—and Its Impact on California," 51 pp., May, 1940.
3. DUNCAN, OTIS DURANT: "The Theory and Consequences of Mobility of Farm Population," 22 pp., Agricultural Experiment Station, Stillwater, Okla., May, 1940. (*Exp. Sta. Circ.* 88.)
4. GALPIN, C. J., and T. B. MANNY: "Interstate Migrations among the Native White as Indicated by Differences between State of Birth and State of Residence," 105 pp., U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, D.C., 1934.

5. GEE, WILSON, and J. J. CORSON, 3D: "Rural Depopulation in Certain Tidewater and Piedmont Areas of Virginia," 104 pp., Institute for Research in Social Sciences, *Mon.* 3, University of Virginia, Charlottesville, Va., 1929.
6. GIST, NOEL P., C. T. PIHLBLAD, and CECIL L. GREGORY: "Selective Aspects of Rural Migrations," *Rural Soc.*, 6 (1941), 3–15.
7. JEROME, HARRY: "Migration and Business Cycles," 256 pp., National Bureau of Economic Research, New York, 1926.
8. LIVELY, C. E., and CONRAD TAEUBER: "Rural Migration in the United States," 192 pp., Government Printing Office, Washington, D.C., 1939.
9. LORIMER, FRANK, ELLEN WINSTON, and LOUISE K. KISER: "Foundations of American Population Policy," 178 pp., Harper & Brothers, New York, 1940.
10. MOORE, JANE: "Cityward Migration," 140 pp., University of Chicago Press, Chicago, 1938.
11. SMITH, T. LYNN: "The Sociology of Rural Life," 595 pp., Harper & Brothers, New York, 1940.
12. SOROKIN, PITIRIM, and CARLE C. ZIMMERMAN: "Principles of Rural-urban Sociology," 652 pp., Henry Holt and Company, Inc., New York, 1929.
13. THOMAS, DOROTHY SWAINE: "Research Memorandum on Migration Differentials," 423 pp., Social Science Research Council, New York, 1938.
14. THOMPSON, WARREN S.: "Research Memorandum on Internal Migration in the Depression," Social Science Research Council, New York, 1937, *Bull.* 30.
15. U.S. Seventy-sixth Congress, 3d session: "Hearings before the Select Committee to Investigate the Interstate Migration of Destitute Citizens, House of Representatives," Government Printing Office, Washington, D.C., 1941.
16. VREELAND, FRANCIS M., and EDWARD J. FITZGERALD: "Farm-city Migration and Industry's Labor Reserve," 67 pp., National Research Project, Work Projects Administration, 1939.
17. WEBB, JOHN N., and MALCOLM BROWN: "Migrant Families," 192 pp., Government Printing Office, Washington, D.C., 1938. (*Research Mon.* XVIII.)
18. ZIMMERMAN, C. C., and J. J. CORSON, 3D: "The Migrations to Towns and Cities, Number 6," *Soc. Forces*, 8 (1930), 402–408.

Questions

1. "It is important to distinguish carefully between *gross* and *net* internal migration." Is this true? Why?

2. What is the source of most of our *net* internal migration? Why this source rather than some other?

3. Describe the chief movements of internal migration in the United States up to the present time. Are they likely to be different in the future? Explain.

4. Has internal migration affected the quality of population in different parts of the nation? If so, in what ways?

5. What are the demographic characteristics of the people who move about within the nation? What economic effects, if any, would you expect from the migration of such people? Have you observed such effects? If so, describe.

6. Why do people move from place to place within a country? Try to answer this with concrete examples, citing the cases of actual migrants.

7. Bearing in mind your answer to 6, from what regions of the United States would you expect the major portion of our migrants to come?

8. Are the problems of personal adjustment of internal migrants essentially different from those of foreign-born immigrants? Explain your answer. If you have had opportunity to observe migrants making this adjustment, describe what you have seen.

9. Are all types of internal migration equally significant? Justify your answer.

CHAPTER XXV

NATIONAL POPULATION POLICIES[1]

As already shown (Chap. XVI), the differential growth of national populations is a factor of great importance in determining the relations between them. The balance of power between nations and groups of nations tends to shift as changes in the relative sizes of their populations take place, particularly if these changes in size are accompanied by increasing industrialization, although this is by no means the only or even the chief factor in many of the shifts in political importance among nations. In part as a consequence of the relative changes in population and in part as the result of a growing realization that there is a close relation between numbers and national welfare in many other respects also, there has been an increasing tendency in recent years, especially since about 1930, for nations to undertake the control of population growth in the interest of national welfare. This has led to the adoption of more or less definite national population policies by a number of countries. The chief of these will be described briefly.

1. France

There has long been much concern among French students and statesmen over the slow rate of population growth in France in the face of a much more rapid growth of population in Germany and latterly in Italy (X, 6). This concern quite naturally led to the formation of a number of voluntary committees and organizations which undertook, first, to acquaint the French people with the facts regarding their population growth as compared with that of other countries and thus to make them feel the great importance to the nation of raising the birth rate, and, secondly, to secure the adoption of definite measures which it was believed would prevent the decline of the French people and possibly even bring about an increase.

The numerous measures which constitute what may now properly be called the French population policy have come into being largely in response to economic needs arising in particular situations and not as a policy definitely planned to increase population or even to prevent its decline in the near future. It will be quite impossible to go into any detail regarding the manifold measures taken from time to time which

[1] In this discussion the author is heavily indebted to Glass (I, 5), particularly for the latest developments in France, Belgium, and Italy.

may have had an effect on the growth of the French population, but a few of the more important may be enumerated and the chief—family allowances—will be described a little more fully.

Nearly all the countries in the West have long had laws punishing induced abortion. These laws, at the outset, were passed more as an expression of the moral sense of the community than as measures intended to encourage population growth. In recent decades, however, and especially in France, the moral urge for strict enforcement of these anti-abortion measures has been less potent than the desire of certain important groups that the community should avail itself of the increase in births which might be expected to follow on the curtailment of abortion. This seemed a quite reasonable hope because the best estimates placed the number of illegal abortions in France at 500,000 to 800,000 per year (I, 5, pp. 163–164). It does not appear, however, that attempts at stopping abortion have been sufficiently determined to be successful and as a consequence this measure has failed as a means of increasing the birth rate. That the effective prevention of abortion might have had a significant effect on the birth rate in France seems highly probable from what has happened in Germany since 1933. There abortion is being severely punished, and it appears that a significant part of the increase in births in recent years can fairly be attributed to this action (see Chap. XXVI, Section 1).

In France there has also been a strong drive, reinforced with legal sanctions, against the manufacture and sale of contraceptive devices. This, too, seems to have failed to yield any increase in the birth rate. Why this drive has produced no noticeable result is not known. It may be that like the movement to curtail abortions it has not been carried out with determination, or it may be that other means of contraception have been resorted to. In any event these measures taken to make the voluntary control of births more difficult have failed to yield any appreciable results in France.

The birth rate in France (Chap. X) has continued to decline slowly but almost steadily since the brief rise following almost immediately on the close of World War I.

The positive measures looking to the increase of the birth rate in France are many and varied. Income and property taxes have been graduated in such a way that the family with several children pays appreciably less on a given income, or on a given amount of property, than one without children and to make up for these remissions special taxes are levied on the unmarried and childless; inheritance taxes are also reduced as the number of children inheriting property increases; birth premiums have been established—that is, definite sums paid to the mother at the birth of a child—graduated so as to encourage families of several children; health centers for mothers and children reduce the

cost of confinement and care of children; children from large families are granted stipends to assist in their education; frequently the working mother is paid her wages for several weeks before and after the birth of a child and is also aided to provide suitable food for it in case she cannot nurse it; there are also provisions to make it easier for families with several children to get more adequate housing than they could otherwise secure; and large families have long been granted reduced fares on the railroads of the country.

This list by no means exhausts the minor aids given to encourage more births prior to 1938, but all these together are generally regarded as merely incidental to family allowances, which have gradually become the core of French population policy (1).

It is of interest that family allowances, which have become the chief reliance for stimulating the birth rate in France, were originally put into operation voluntarily by employers in different industries and regions largely as means of assisting employees having families of different sizes to meet the rising cost of living. The underlying motive was to see that the workman did not suffer too great a deterioration of his level of living because of the number of children he had. Clearly any voluntary scheme for aiding families with children entered into by employers, or groups of employers, whereby they imposed taxes on themselves for this purpose might easily lead to discrimination by employers not in the scheme against married workers and especially against those with children, since by such discrimination they would have an advantage in labor costs over employers paying family allowances. It was necessary, therefore, to prevent this by the legal establishment of funds to which all the employers in an industry or a region contributed in proportion to the number of employees and not in proportion to number of married employees. With this governmental encouragement but no direct public aid the system of family allowances grew slowly but steadily until World War I. During the war and immediately following it many new categories of workers were brought into the family-allowance system but it remained largely a voluntary system for several years.

Almost from its inception but especially following the War the motive for family allowances was undergoing an important change; from being primarily a means of meeting the rising cost of living without raising the basic wage it became an instrument of population policy. The propaganda of the societies interested in raising the birth rate was having its effect and the belief was growing that the way to secure larger families was to do away with the economic penalties involved in rearing families. Today family allowances are thought of chiefly as a means of encouraging a higher birth rate, the original purpose being largely forgotten. Although this is the case, it should be noted that the family allowances granted in France up to the outbreak of the present war never covered

more than a small portion of the cost of rearing a child, even in the large families where the grants were largest. However, as the use of family allowances to encourage larger families became more generally accepted, these allowances were gradually increased and in addition many of the family-allowance funds also provided birth premiums—a fixed sum at the birth of a child—health centers, and other services calculated to make it easier for parents to rear several children.

The voluntary system of family allowances in France, although undergoing many changes both by private initiative and public regulation, was not greatly modified in the direction of public assistance to these allowances until the decrees of 1938 and 1939, which completely revised and greatly extended the coverage of the existing family code (I, 5, pp. 212–217). Although these acts did not have time to come fully into operation before the war broke out, it will be of interest to note some of the new measures added at this time. The chief of these were (*a*) to bring *all* occupied persons under the family-allowance provisions (previously many classes of occupied persons, chiefly independent workers, had been excluded); (*b*) to introduce a state subsidy for family allowances which made greatly increased allowances possible and which amounted to the virtual absorption by the state of the voluntary organizations which had hitherto performed this function; (*c*) to watch the use of family allocations to ensure that they were spent for the children; and (*d*) to grant loans to young couples who lived and worked in the country, whether on farms or as artisans, to enable them to stock a farm or set up a household. These loans were to be reduced somewhat at the birth of each child and the balance was to be canceled at the birth of the fifth child.

In other respects these new acts did little but strengthen and introduce order into the many and diverse types of family aid which had grown up over the course of time. Under these acts, for the first time, the nation undertook to contribute to the family a substantial proportion of the cost of rearing children. Heretofore, as was said above, family allowances had been so small that they met only a small portion of this cost. All that can be said of the effects of French population policies as a whole up to 1939 is that there is no convincing evidence that they have had any effect on the birth rate. It is true that some of the propaganda societies are certain that the granting of even the small allowances customary before 1939 had a stimulating effect on the birth rate, but to the outside observer the data presented are not convincing. There has been an almost steady, though slow, decline in the French birth rate since 1920 and although it is possible to claim that the decline would have been greater had it not been for family allowances no one can be certain that this would have been the case. If family allowances will raise the birth rate, as most French students seem to think, it has also

become clear that these allowances must be much larger than they have been in the past and must be much more firmly established as a matter of national policy. Whether the more determined measures of the new family code will stimulate the birth rate, if and when, put into effect, cannot be told, but there is some reason to think that they may, for they have many points in common with German measures, which seem to have had some influence on the German birth rate since 1933, although here, too, as will be seen, one must largely reserve judgment until more facts are available.

It may be well to call attention to one important difference between the family-allowance system which has developed in France and the Swedish system discussed below. In France the family allowance is paid in cash and the use to be made of it is left largely in the hands of the parents, although there is to be a certain amount of public (governmental) supervision to ensure that the allowance is spent for the children. The Swedish measures provide for a larger measure of the assistance to be granted in the form of public services to children and in the housing of the family with children. This provision of services is by no means lacking in the French system and it would be easy to exaggerate the differences between it and the Swedish system in this respect, but there can be no doubt that the former does provide more cash to be paid directly to the parents. This is a point made much of by Swedish students, as we shall see.

2. Belgium

Little need be said about the population policies of Belgium. In general the development there has been quite similar to that in France up to the acts of 1938 and 1939. From time to time many minor aids were granted to the larger families, with family allowances gradually becoming the most important feature in a population policy. However, Belgium never adopted any definite national population policy such as France undertook to put into operation in the acts of 1938 and 1939. In Belgium as in France the policies of aid to larger families and the measures against birth control do not appear to have had any appreciable effect on the birth rate. This continued to fall rather steadily and by 1939 was well below the level needed to maintain the population at its existing numbers.

3. Italy

Italy had not long passed under Fascist control before the government began to shape a definite population policy. This did not at once spring full-blown from Fascist doctrines as was later the case in Germany. By 1927, however, Italy was restricting emigration and Mussolini had

begun to talk about the need for a larger population if Italy was to take her rightful place in the world (see Chap. XVI). He was also speaking of the falling birth rate as a sign of the decadence of a people and indicating his belief that increased political power must rest on a large and growing population: "With a falling population one does not create an empire but becomes a colony."

Following the discouragement and restriction of emigration, the Italian government made it easy for emigrants to return home from abroad by reducing return fares from all parts of the world. An attempt was also made to tie the wanderers to the mother country more closely by claiming them as citizens, no matter where they might be living, and by keeping officially in touch with them while abroad. Reclamation of swamps and other waste lands was undertaken on a larger scale under the Fascist government in order to provide land for Italy's rapidly increasing population. In addition there was also a definite effort to prevent the movement of people from the rural areas to cities, since the birth rate was higher in the rural areas. A definite propaganda was also organized to enhance the feeling of pride in Italian citizenship and to stimulate the desire to participate in the building of a new and greater Italy—an Italian Empire. But most of these measures were mere preliminaries to the real population policy which was expected to bring about a higher birth rate.

The first measures intended to raise the birth rate or at least to prevent its further decline were negative, that is, they were concerned with making the usual contraceptive practices more difficult and with providing more severe penalties for abortion. It is not known how well these laws were enforced but certainly these repressive measures did not prevent the continued decline of the birth rate. In 1921 to 1925, during the early years of the Fascist regime, the crude birth rate was 29.7 and in 1938 it had fallen to 23.6, having risen a little in 1937 and 1938 over the low of 22.4 in 1936. The net rate of reproduction had fallen about one-fourth during this period.

But these negative measures did not long stand alone. As early as the end of 1926 a bachelor tax was imposed and the proceeds used to further maternal and child welfare. Although the bachelor tax was increased a number of times in the following years, it did not seem to have much effect in stimulating marriage. The encouragement of marriage by the bachelor tax was soon followed by direct aid to large families in the form of lighter taxes, but, since these exemptions at first applied only to families with seven or more dependent children, they were of little practical significance. Of more importance were the maternity aids of various kinds—medical care, confinement grants, payment for time lost from work, and family allowances. By 1929 Italy had also begun to assist poor families with many children by

giving them preference in allotting housing accommodations in the new apartments being built by the government.

However, the effects of all these measures were insufficient to prevent a continuous decline in the birth rate, as has already been shown. Hence in 1936 and 1937 more definite efforts to increase the rate of population growth were put into effect. Family allowances, which heretofore had been small in amount and granted to a relatively small part of the population, were increased significantly in amount and their coverage greatly extended until practically all who worked for any employer were eligible, provided they had dependent children and incomes below a certain level.

In 1937 the marriage loan as an encouragement to marriage and the rearing of children became a much more important feature of Italian population policy. The general plan adopted at this time followed rather closely that of Germany, the chief features being a loan (under certain restrictions) to enable the young couple to set up housekeeping and the remission of a fraction of this loan upon the birth of each child, the entire debt to be canceled upon the birth of the fourth child. Birth premiums were also granted, that is, a fixed amount at the birth of each child, the amount increasing with the number of the children in the family.

Employment preferences for married men and for those with large families were extended in many lines of work; marriage holidays with pay were allowed in most occupations; women were granted relatively long leaves of absence from work with compensation at the time of confinement; and in many other ways efforts were made to lessen the economic burdens of those who had several children and to remove the economic and social advantages of remaining single and childless.

It is impossible to evaluate the efficacy of these various measures, either severally or collectively, in raising, or preventing the more rapid decline of, the birth rate in Italy. The real determined effort at the stimulation of the birth rate may be said to date from 1937 and has not been in effect long enough to show definite results. It is of interest that there was a large increase in marriages in 1937, the year of the introduction of a more liberal system of marriage loans; but there had also been an appreciable increase in 1936 over 1935. It seems probable, therefore, that the increase in marriages in these years was more the consequence of the postponement of marriages during the Abyssinian War than of the marriage-loan system. This view is made to appear even more probable by the fact that the number of marriages declined in 1938 until it was but little above that of 1936 (XIII, 5, Vol. 12, No. 2, 1939).

This increase in marriages in 1936 and 1937 will in turn probably account in large measure for the slight increase in the birth rate from 22.4 in 1936 to 23.6 in 1938 (XIII, 5, Vol. 12, No. 2, 1939), for in the first

half of 1939 the birth rate declined again almost to the level of 1937 (XIII, 5, Vol. 12, No. 8, 1939). It is not certain, therefore, that the efforts of Fascist Italy have yet been successful in arresting the decline of the birth rate, to say nothing of raising it. It should be noted that a slight increase in the crude birth rate brought about by an increase in the number and proportion of first births following an increase in marriages, as was the case in Italy in the last two or three years, does not necessarily mean any increase in fertility. It may and not improbably does represent only a different distribution of marriages by years and of births by age of mother. It is possible, of course, that the birth rate would have declined even more had Italy taken no measures to encourage births; but this can never be known.

It may be said, therefore, that if one were to judge the effectiveness of the population policies of France, Belgium, and Italy by the way they have affected the birth rates of these countries up to 1939—the latest normal year—the verdict must be that they have been ineffective insofar as they were intended to raise it or even to prevent its decline. The fact is that net reproduction rates have continued to decline in all these countries with such minor exceptions that only the most convinced believer in the efficacy of the measures taken would have the hardihood to assert that they had been effective.

4. Sweden (3)

In Sweden the decline of the birth rate during the first third of the century carried the rate of reproduction even below that of France. By 1933 Sweden's birth rate was so low that it was only adequate to replace about 70 per cent of the existing population. This is about the same level that prevailed in Germany in 1932. It is not surprising that under these conditions there was considerable interest in population questions in Sweden when once this fact became known.

Although it was without doubt chiefly the fear arising from the danger of speedy population decline that aroused the interest in population questions in Sweden so effectively and so quickly, yet it is clear from the measures taken that the people who were most active in securing consideration of population questions were also concerned fully as much with matters of social reform as with forestalling the decline in numbers. Indeed up to the present the measures taken to promote population growth seem to the writer far better calculated to bring about an amelioration of the lot of the poorer one-third or one-half of the population than to effect any increase in the birth rate. Nevertheless these measures constitute a population policy and it will be of interest to enumerate the chief features of the program being undertaken.

The basic economic assumption on which Swedish population policy rests is that the size of the family has a marked influence on the family's

level of living at any given income. The author has spoken of this as an assumption, but it not only is fully in accord with common-sense observation but also rests on a study of family budgets. Indeed the relation of the size of the family to its level of living was gone into very carefully by the Population Commission established to make a report on the whole population problem in Sweden, and it was proved beyond question that at any given income level the presence of children did lower the family's level of living—the larger the family the lower the level of living. With this fact established, the various recommendations of the Commission were made with a view to rendering the children in a family as small an economic burden as possible.

In addition to this basic economic assumption, the Commission posited three other principles on which any population policy undertaken by a democratic country should be based.

a. Individual liberty and public interest must be reconciled. Voluntary parenthood should be ensured for all families by making birth-control information universally available. Only children who are welcomed by their parents should be desired by the nation. But the resources of the community should be utilised to remodel social conditions so that more children can be welcomed.

b. Harmony should be established between the qualitative and quantitative goals of population policy. The quantitative goal of a population constant in the long run should be pursued only by measures that simultaneously improve the health and welfare of children and thus enhance the quality of the next generation. Such considerations necessitate as a general rule the repudiation of cash premiums for parents in favour of goods and services in kind furnished directly to children; this principle, however, is subject to some modifications, as will be explained later. In cases of conflict between quantitative and qualitative effects the latter should be given priority. Quantity should never be bought by sacrificing quality, but quality and welfare of children might have to be attained at the expense of numerical results.

c. Educational influences and economic reforms should be co-ordinated. A more positive attitude towards family values and a greater capacity for handling family relationships must be achieved through educational propaganda, utilising both the public school system and voluntary adult education. On the other hand, social reforms must be effected involving a redistribution of income in favour of families with children. Propaganda without the support of economic reform would be futile and socially wrong if directed to the masses. And economic reform would not be politically feasible in a democracy without some change of values and attitudes through education, since citizens without children constitute a strong majority in the electorate, and the fate of the whole economic programme depends on the votes of those who have personally nothing to gain by it (3, pp. 735–736).

It will be seen from these principles that the Swedish program is not so much aimed at securing an immediate increase in the birth rate as at improving the living conditions of the present children, although it is

also hoped that certain of the measures taken will, in the course of time, result in larger families. It is significant that the Swedish plan is often called a "program for family security."

The reasons for this strong reform element are clearly given in the statement of principles quoted above. In a democracy any increase in the birth rate must come from the voluntary action of the people, and this can only be secured by so changing the social and economic conditions that a very considerable proportion of married couples will want larger families.

The chief measures recommended by the Population Commission to achieve greater family security and thus to raise the birth rate may be classed under the following five heads.

a. Education for Family Life.—Nothing of much importance has yet been done by the schools in this field but it is proposed to introduce such education into them and to include in it instruction in sex hygiene and contraception. Women's organizations in particular are in favor of such a move and Mrs. Myrdal believes they will be successful in seeing that it is carried out. It is also planned to provide adequate means for personal consultation by both men and women on family problems and on health problems including sexual hygiene, most of this to be provided in connection with the regular health services supported by the community.

b. Reform of the Laws.—(i) Forbidding the manufacture and sale of contraceptive devices, (ii) punishing abortion, and (iii) regulating the sterilization of the hereditarily defective. The manufacture and sale of contraceptives was legalized but under careful regulation; abortion was also legalized but under such conditions that it would improve the physical and hereditary health of the population and would not be used as a means of control of the size of the family. This it was believed could better be done by preventive means. Nor was abortion to be sanctioned in the case of the unmarried mother. The disgrace attached to this could only be wiped out by a change in the attitudes of the community which might be wrought by proper education. Nothing has yet been done regarding further eugenic sterilization.

c. Equalization of Income.—It will be recalled that the basic economic assumption of Swedish population policy is that the economic status of the family declines as the number of children increases. It follows from this that, if parents restrict their families because of this lowering of their level of living, there must be a considerable equalization of the income available to families of different sizes after the necessities of the children are provided for, in order to overcome the economic handicaps of fair-sized (three, four, and five children) families. In general, the Swedish plan lays great emphasis on providing direct services to child health, education, housing, and so forth, rather than paying family

allowances in cash to the parents, as in France. In addition to the services provided directly to children the tax system is to be revised to encourage larger families by higher exemptions as the number of children increases and to extend the age at which exemption ceases as the children spend a longer period in school. A housing program is to be inaugurated by which families with children will get more adequate living space than they have been able to afford hitherto. This is to be done by subsidizing housing for the larger families. As yet almost nothing has been accomplished in this field. All these measures taken together involve a considerable redistribution of the national income, but they fall far short of meeting the cost of rearing children, hence they do not wipe out the differential levels of living involved in rearing families of different sizes.

d. Maternity Expenses.—The intention here is to relieve the family to a large extent of the special costs involved in pregnancy and birth and to ensure the proper care of mother and child at that time. It was hoped that this would reduce abortion for economic motives and would encourage additional births where their cost was an important item in the family budget. The aid given here in addition to services provided by the community includes a special grant in cash for the child's clothes and other incidentals connected with birth and also provides for maternity assistance in cash sufficient to care for the child for the first year. These measures represent a long step in the direction of the assumption of the cost of bearing children by the community.

e. Care of Orphaned Children.—Under this heading the chief measures provide for pensions for orphaned children and the guarantee by the state of alimony to divorced mothers. Assistance to children in families already on poor relief has been proposed but has not yet been sanctioned.

These measures, while recognizing the right of the couple to decide upon the size of their family, also take account of the fact that in the modern world the presence of children and particularly of three or more children generally does place certain handicaps on both parents and children which are being found increasingly burdensome and which people will not endure. As a consequence the leaders of the Swedish people have come to believe that the state must bear an increasing share of the economic burden involved in the care of children if their population is not to decline so greatly in numbers in the near future that its position as a national group, or even as a cultural group, will be placed in jeopardy. The nation seems to have accepted this view with very considerable reservations to judge from the nature of the measures described above. As a matter of fact the Swedish population policy is more of a blueprint for a policy than an actual policy. The measures thus far adopted embody the hope that when the entire program of social and economic reform is effected it will result in a higher birth rate. It is certainly

stretching the facts to assume that any very vigorous effort has yet been made to relieve the family of any appreciable part of the cost of children. Furthermore, the Swedish plan does not make serious attempt to substitute considerations of national welfare for considerations of individual welfare in the motives determining family size, as has been done in Germany.[1]

Mrs. Myrdal frequently mentions the need of changing social values and conditions so that people will want more children, but it seems to the writer that the Swedish scheme does not really come to grips with this problem. It displays a rather naïve faith in the willingness of the average citizen to rear more children once the problem is put before him in its national aspects; and it does this in spite of adopting only a few weak economic measures, although strongly insisting upon the necessity of equalizing the economic burden of children if larger families are to be raised. It is the writer's opinion that until the economic provisions of the program are put fully into effect it will have little effect on the birth rate. Furthermore, insofar as these economic provisions are not accompanied by sound and efficient propaganda calculated to change social values, they are more likely to result merely in a better level of family living than in any increase in the size of families.

It should be noted, however, that the Swedish policy in assuming that all the measures taken must be in accord with the democratic attitudes and institutions of the country accepts certain handicaps both in propaganda and in program which are not present in an authoritarian state. This is no doubt one of the very important reasons why so few of the economic measures needed to effectuate the policy have been set up and is probably also an important reason for furnishing such a large part of the economic assistance in the form of direct services to children rather than in cash payments to parents. On this point the writer is not convinced that the payment in kind in Sweden will turn out to be a much larger proportion of all economic aid to the family than it would be in France under the 1939 code. Certain services, education, health, housing, and even providing a part of the food, are better carried out by some central authority and are largely planned this way in the population policies of all countries in which such policies have been adopted. On the other hand, certain other needs of children and of the family, as a result of the presence of children, are better provided for by giving the parents the cash to get the goods, for example, clothing, special expenses incurred by the mother during pregnancy and the infancy of

[1] This does not mean that the author believes the considerations of national welfare being preached in Germany are good. He is simply trying to make the fact clear that in Germany such considerations constitute a far more important factor in population policies than in Sweden and in most other countries. Their effectiveness in Germany will be discussed in the second section following.

the child, and the keeping of the family together by a widow or divorced woman. Thus to the writer the really important feature in Sweden's program is not that it contemplates larger payments in kind than certain other programs but that it does fall within the framework of a democratic society, while it is doubtful whether the population policies of some of the other countries, Germany in particular, would do so. Whether Sweden's population program will work remains to be seen.

5. Soviet Population Policies

Not a great deal need be or can be said on Soviet population policies. Until about 1932 or 1933 the government of the Soviet Union did not manifest any particular interest in population growth. The birth rate in nearly all parts of the Union and in nearly all classes was high, and all that was needed to ensure a rapid increase in population if this were desired was to lower the death rate, which was also high. At this time it is doubtful whether the government had much interest in the demographic consequences of the measures being taken to improve the health of the people. Humanitarian interests seem to have prevailed over demographic and national interests in the spread of health work until about 1934, although the government was by no means unaware that the improvement of health, largely through better sanitation, would have a stimulating effect on population growth. This early period of relative indifference to population growth was undoubtedly prolonged by the continued discovery of large mineral resources within the Union and by the improvement of agricultural techniques which made better yields possible. The Soviet Union at least need not fear that population would outrun available resources for a relatively long time. During this period the government also practically abolished the laws prohibiting abortion and made contraceptive devices more generally available. Reproduction was to be left wholly in the hands of the individual—that is, as regards population growth a policy of *laissez faire* prevailed.

There is reason to believe that the legalizing of abortion led to some abuse and that the health of many women in the larger cities was injured by the frequent abortions undergone. Abortion in fact was used by many women as a means of birth control. This led to the abolition of abortion at will but did not prohibit its legal performance for health reasons. It is doubtful whether this tightening up of the conditions under which legal abortion could be performed should be classed as a measure of population policy. It seems rather to have been motivated by a genuine desire to improve the health of the population generally.

So far as the writer can find out there has not yet been any restriction placed on the sale of contraceptive devices. They were still on sale in the drugstores as late as 1937. It should be noted, however, that since all industry is state-owned the mere administrative decision not to manu-

facture contraceptive devices and not to import them would make it practically impossible to secure them. About 1934 the Soviet Union began to introduce measures affecting the care of mothers and children which might be interpreted as the beginning of a policy to encourage larger families. They were claimed by the government, however, to be measures to improve the health and welfare of the people, and the writer is inclined to believe that this was the real motive since the government had little reason to be concerned over the birth rate. It had declined somewhat in the cities but was still high in the Union as a whole, and the continued reduction of infant and child mortality was a much more certain way to ensure a substantial natural increase than any plan to stimulate the birth rate would have been.

The nature of the measures themselves also indicates that the health motive was very strong, even if it was not the sole motive. Provision was made for better medical care of mothers and children, for releasing the mother from work for a considerable period both before and after the birth of a child, and for the economic security of the mother and child not only for the first few months of the child's life but until it was of working age. It is true that certain premiums or bonuses were to be paid to mothers with large numbers of dependent children, but these did not start until the family was so large (seven) that few women would benefit from them.

There is not much doubt that after the Nazis came into power in Germany and began to talk about taking large slices of Soviet territory and increasing their population to 250,000,000 the Soviet authorities became interested in keeping their population ahead of that of Germany, but, since it was quite obvious that the rate of natural increase could best be kept up or even increased by a general improvement of health, it was quite natural that attention was concentrated on this aspect of the population problem rather than on definite measures calculated to raise the birth rate, which was the purpose of the countries of western Europe which had embarked on population policies. What little is known of population growth in the Soviet Union indicates that it has grown rapidly in spite of civil war and famine and purges. In 1926 the population was approximately 147,000,000, while in 1939 it was about 170,000,000—an increase of 23,000,000 or an average of a little less than 2,000,000 a year. An effective health program would undoubtedly maintain this rapid population increase in the Soviet Union for some time to come if it were not for the war.

References

1. THEODORE, M.: "Le Noveau Code de la famille," *La Femme et l'enfant*, Paris, 1937.
2. MYRDAL, ALVA: "Nation and Family; The Swedish Experiment in Democratic Family and Population Policy," 441 pp., Harper & Brothers, New York, 1941.

3. ———: "A Programme for Family Security in Sweden," *Inter. Labour Rev.*, 39 (1939), 723–763.

Questions

1. Why have so many countries become interested in population policies rather recently? Do you think these reasons justify the interest shown?

2. Can you pick out any central idea running through all these policies? What conditions have given this idea more significance now than it was entitled to a generation ago?

3. Describe briefly the population policy of France, of Italy, and tell how they differ from one another. In your judgment which would be more likely to accomplish its purpose? Give your reasons.

4. How does the population policy being inaugurated in Sweden differ from that of France? from that of Italy? If you had to choose between the French and the Swedish policy which would you prefer? Why?

5. Do you think that the Soviet Union and Great Britain should have essentially the same kind of population policy? Why? Your reasons should be based on all your study of population problems up to this point.

CHAPTER XXVI

NATIONAL POPULATION POLICIES (*Continued*)

The discussion of German population policies has been reserved to the last because they are the most thoroughgoing of all such policies and hence, in the author's opinion, have more to teach us about the ways in which population growth can be stimulated than those of any other country.

1. German Policies

German policies grew out of the need not only to raise the birth rate to ensure reproduction but also out of the belief that national welfare demanded a large increase in the number of Germans in the world. This in turn grew out of the belief in the inherent superiority of the German people, a view the Nazis are fostering with every means at their disposal. This belief in the inherent superiority of the German people is not of recent origin. It is not a new product of the Nazi party ideology! It takes its rise—ah, the irony of fate—from the anthropological writings of Count Gobineau—a Frenchman—who was writing during the third quarter of the nineteenth century (3). Briefly, Gobineau attributed all cultural achievements to the racial characteristics of people and held that the blond, long-headed (dolichocephalic) people of northern and western Europe were the only people who possessed the inborn characteristics which could possibly lead to the great achievements of Europeans in recent times. These northern Europeans were, then, a select people on whom depended the future progress of the race, culturally and biologically.

This doctrine of the inherent superiority of the so-called Teutonic race was eagerly picked up by a number of writers, particularly in Germany, where it came in time to be applied to the German people as a national group rather than to the northern Europeans as a whole. However, the man who, even more than Count Gobineau, popularized the belief in the superiority of the Teutonic peoples defined them in the following words: "Under this designation (Teutonic) I embrace the various portions of the one great North European race, whether 'Teutonic' in the narrower Tacitean meaning of the word, or Celts or genuine Slavs" (1, p. lxvii). Certainly Chamberlain never thought of the German nationals or German-speaking peoples as the only peoples

belonging to this superior race, as do the Nazis. With them it has become the basic doctrine on which their population policies rest.

It is easy to see how the acceptance of the dogma of the inherent superiority of the German people (using this term now in the narrow sense in which the Nazis are using it) leads to many other beliefs and practices associated with present-day German population policy. For one thing, if the Germans are superior and are responsible for all the good features of modern civilization, then in their own opinion no other people can rightfully claim any share in the planning and development of future civilization. The French, the Slavs, the Italians, the Jews, and all other groups which cannot be called German in the narrow sense are only fit to serve these naturally superior Germans—these other peoples are only fit to be hewers of wood and drawers of water in the eyes of the Nazis.

In the second place anyone who opposes the Nazis, now believed by themselves to be *the* Germans, has no rights of any kind, not even the right to live—witness the treatment of the Jews, the Poles, and more recently, the nationalist groups in the Balkans, and the Russians.

Obviously this belief in German racial superiority has manifold ramifications which are not directly concerned with population policy, but it seemed necessary to point out this intimate relation between the belief in inherent racial superiority and population policy in order to understand how fundamental population policy is in the whole Nazi program. If the belief that the Germans are superior is once accepted it follows that every German is under a heavy personal obligation to help not only to maintain the German population but also to share in providing a large increase in numbers which will, in turn, enable the Germans to control an ever larger part of the world. It is an easy step from believing yourself superior (racially) to the belief that you owe nothing to an inferior people. They are only so much impedimenta to be used to the advantage of their masters. They have no right even to live if they interfere with the growth and development of the master race. This belief in their own superiority and in their rights as a master race may be called the major premise in all Nazi reasoning. There are many minor premises, only a few of which can be discussed here.

One of the more important of the minor premises is that the peasant-owner raises a larger family than any other large class. It follows, therefore, that measures should be taken to assure a large peasant-owner group in the German population. Around this belief in the close relationship of national welfare to blood (stock) and land (Blut und Boden) a whole philosophy of social organization has been built.

The attempts to develop a strong peasant class owning its land and contributing a large increase to the German population of the future cannot be described in detail. It will have to suffice to say that this

general policy of encouraging a strong body of peasant-owners has been going on for some decades in Germany but that the Nazis have tied it in more closely with a definite population policy than had been done under either the Weimar government or the preceding monarchy.

Before summarizing present German population policies it should also be made clear that the concern of many German leaders over the future of the German people is by no means a new growth coinciding with the coming of the Nazis into power. Ever since the beginning of the century the German birth rate has been declining, but the decline only became precipitous with World War I and the disturbances following it. By 1932 the birth rate was only sufficient to replace about 70 per cent of the existing population. It is little wonder then that any government, believing in the superiority of the Germans over other peoples and in the destiny of Germany to rule Europe and perhaps the world, should make the increase of population one of its cardinal policies.

The general background for a population policy had been carefully prepared by the Nazis before their advent to power. Scarcely had they secured the important positions in the government when they began to put into effect definite measures calculated to increase the birth rate.

On June 28, 1933, Dr. Frick, the Minister of Interior in the new Nazi government, delivered an address in which he stated the basic beliefs of the Nazis on race and on the role of the peasant-proprietor in the maintenance of Germany's population. He also indicated the direction in which the government would move in order to encourage a strong German population, strong both in numbers and in quality. The qualitative aspects of this program can be stated very briefly. They rest on two general propositions: (*a*) The cost of care (segregation) of those who because of defective heredity were likely to beget defective offspring is a heavy burden on the national income and should be reduced as rapidly as possible by the sterilization of the unfit. This was the justification of an extensive program of sterilization undertaken almost at once and, so far as the writer can find out, continued up to the present time. (*b*) The mixture of any non-German blood with German blood lowered the quality of the German people and should, therefore, be forbidden. This was aimed especially at the prevention of "Aryan"-Jewish marriages. Such marriages were, therefore, forbidden and the participants in them were to be severely punished. It also followed that German-Polish and German-Czech marriages were a pollution of the pure German blood stream and should be outlawed.

It was recognized, however, that such negative measures were of little practical significance as compared with the raising of the birth rate among the bulk of Germany's Aryan population. Hence, most of the Nazi program calculated to control population growth has consisted of measures intended to encourage a higher birth rate.

The first positive measures looked to the prevention of abortion and the encouragement of marriage. It was generally believed that abortion had come to be a very widespread means of birth control in Germany. Some estimates were made which indicated that as many as 600,000 or 800,000 abortions might be taking place each year while the total number of births in 1932 did not quite reach 1,000,000. The laws prescribing penalties for abortion were not much altered by the Nazis but their enforcement was made more rigorous and the number is supposed to have been greatly reduced even before the end of 1933. So great was this reduction that some observers believed that a considerable part of the increase in the birth rate in Germany in 1933 and 1934 and even some of that in later years was due to the decline in abortions (5). Indeed if abortions did amount to 600,000 to 800,000 annually, only about one-third of these would have had to be prevented in order to account for the entire increase in birth rate between 1933 and 1934. Clearly the campaign to prevent abortions cannot be ruled out as a factor in the increase in the German birth rate following 1933.

A second measure calculated to raise the birth rate was the establishment of marriage loans to encourage young people to marry. The importance of such a measure will be seen if it is recalled that at the time the Nazis came into power, Germany, like most of the rest of the Western world, had been in the throes of a severe depression for several years. The marriage rate had declined from 9.2 per 1,000 of the population in 1928 to 7.9 per 1,000 in 1932, and the birth rate (14.7 in 1933) had fallen below any level previously known except for a short time during World War I.

The chief means employed to encourage marriages was to loan young couples the purchasing power with which to set up housekeeping. Loans up to 1,000 marks were made available to politically right-minded German couples of *Aryan* descent, of sound heredity, and where the bride had been employed at least six months (later nine months) during the two preceding years. The bride also had to agree to give up her work at time of marriage if not before and not to seek employment again unless the husband's income was unusually low and in any event until the marriage loan had been repaid. But after 1937, as labor became scarce, the prohibition of outside employment for women was relaxed.

These loans were to be paid back without interest in small (1 per cent) monthly payments beginning in the quarter (year) following its granting. However, one-fourth of the face of the loan was to be canceled upon the birth of each child and further payments were to be postponed for one year after the birth of each child (2, Vol. 15, No. 6, pp. 230–231). An example of repayment may be quoted:[1]

[1] From "Ehestandsdarlehen," Imperial Ministry of Finance, Berlin, 57 (1935).

Aug. 15, 1933, marriage loan	1000 RM
Paid, October, 1933, to June, 1934 (inclusive)	90 RM
July 1, 1934, first child born	250 RM
Remainder after birth of first child	660 RM
No payment due until June, 1935, one year after birth of first child.	
Paid for ten months, July, 1935, to April, 1936	100 RM
April 20, 1936, birth of second child	250 RM
Remainder after birth of second child	310 RM
No payment due May, 1936, to April, 1937.	
Paid for two months, May and June, 1937	20 RM
June 27, 1937, birth of third child	250 RM
Remainder after birth of third child	40 RM

This system of marriage loans would appear to have had some effect in stimulating marriage, since the number of marriages increased from 516,793 in 1932 to 638,573 in 1933, to 740,165 in 1934, falling to 609,770 in 1936 and rising again to 644,363 in 1938 (XIV, 6; 2, 1939, No. 7). In the very nature of the case it is impossible to say what would have been the number of marriages if there had been no system of marriage loans. The number of couples marrying who took advantage of the marriage loan was 141,559 in 1933 (August to December), or 22.2 per cent of all those marrying in that year and almost half of those marrying during that portion of 1933 during which marriage loans were available. In 1934 the number of marriage loans was 224,619, amounting to 30.3 per cent of all couples marrying; in 1936 the number was 171,460 and in 1939 it was 270,919 (2, 1940, Nos. 5 and 6). Since the period of recovery from the depression coincided with the institution of the system of marriage loans it is impossible to say how much of the increase in marriages since that time was effected by the loans and how much by the general improvement in economic conditions.

It is of interest that the marriage loan is not paid to the couple in cash but in coupons which are good only for the purchase of household equipment. Furthermore, these coupons are only to be used in certain stores, presumably those operated by "politically right-minded Aryan" persons. It seems clear from the conditions surrounding the granting and the use of the marriage loan that it was instituted not merely as a measure to increase marriages and thus affect the birth rate, but also as a measure to help in economic recovery (stopping the employment of married women and subsidizing the purchase of household equipment) and to strengthen the hold of the party on an important part of the young marriageable persons in Germany.

If, as said above, it is impossible to evaluate the effect of the marriage-loan system on the marriage rate it is still more difficult to tell what effects it may have had on the birth rate. Up to the last quarter (beginning October) of 1940, 1,574,178 marriage loans had been granted and

cancellations of one-fourth of these loans had been made on account of 1,560,035 live-born children (2, 1940, 24). Thus the repayment of the loan by children amounted to slightly less than an average of one child per couple. About one-sixth of the couples securing loans had not yet been married a year, but even so it would not appear that marriage loans had been any great success in getting these people to have births in rapid succession. When the calculation is made on the basis of the number of years married per birth, one is forced to the same conclusion, since there was but one live birth to each 3.5 years of married life. Certainly this is not a high rate of reproduction. Unfortunately it cannot be compared with the birth performance of a like number of couples in similar social and economic circumstances, except for the receipt of marriage loans.

In addition to the measures thus far described there is a second group of measures providing for various forms of material assistance to families with children, particularly to families with four or more children. They operate on the assumption that parents find children an increasing economic burden which they are unwilling to assume, particularly in urban communities, and that, if population is not to decline, to say nothing of continuing to increase, the state must assist the parents of the larger families in providing decent and healthful living conditions for their children and in giving them the education and training essential for adjustment to the modern world.

The material assistance granted to parents may conveniently be divided into two classes: (*a*) that given but once as a sort of premium or bonus for the birth and care of a particular child for a stated period, or at a given time because of the presence of a given number of children; (*b*) continuing assistance, that is, regular benefits, in money, in kind, or in service, for the purpose of rendering the care and education of children less burdensome to the parents.

The child bonus or premium takes many forms in Germany. For the family already large (four or over) at the time this part of the Nazi population policy was inaugurated (1935), a grant of 100 RM for each child under sixteen could be secured, the maximum grant not to exceed 1,000 RM. The usual restrictions as to race, heredity, goods to be purchased, and so forth, applied here, as in the case of the marriage loan. This grant, up to 400 RM, could, however, be used for the purchase of a "small settlement" if the family saw fit. This was intended to encourage people to own small rural or semirural properties in the belief that these owners would have larger families than those who lived in more crowded urban quarters (see Chap. XI).

In this connection attention may be called to the grants made to enable peasants to own and stock small farms and to their exemption from inheritance taxes, also to the household grants given almost peri-

odically to agricultural laborers. The first of these policies has been in operation since the close of World War I and was a part of the general reform movement under the Republic, but has been used to encourage large peasant families since the Nazis came into power. However, there has been no appreciable increase in the establishment of peasants on small holdings since 1933. The household grants to agricultural workers probably do less to encourage large families than to prevent the removal of such workers from the land, but, as already noted, merely to live in agricultural communities means that the family will be larger than in the city.

In the class of single payments for children must also be placed the various measures providing better and practically free medical attendance for the mother during pregnancy and at time of confinement, increased exemptions from inheritance tax as size of family increases, and birth bonuses or payments of the special expenses incident to the birth of a child.

In the class of continuing assistance to families with children fall all those measures which add to the spendable income of the family as the number of the children increases. Thus the allotment of a certain amount per month per child, increasing as the number of children increases (beginning with three), adds directly to the income available for the care of the family. The graduation of income taxes according to the number and the dependency of children, even to twenty-five years of age where professional education demands long preparation, also belongs in the category of continuing assistance, as does the graduated exemption of property from taxation as the number of children increases. These various measures are far more thoroughgoing in Germany than elsewhere, so that the differential burden of care for children due to having different-sized families is being assumed more largely by the community in Germany than in any other country. Not all these aids to families with children come directly from the state. Some come from semivoluntary sources such as professional, industrial, and trade organizations; others come from municipalities; and still others come from industry through preferential employment and wage rates for fathers of large families.

Altogether Nazi Germany has put into effect assistance to families of three or more on an unprecedented scale; perhaps no larger a scale than contemplated in the more recent schemes of Italy and Sweden or even in that promulgated in France on the eve of the war, but Germany actually put a large part of her scheme into effect in 1933 and 1934, although it has steadily been extended since that time. We are very much interested, therefore, in what has happened to the birth rate in Germany since the Nazis came into power.

As already noted, the number of marriages has increased greatly and although the effect of marriage loans on number of marriages may easily be exaggerated yet there is little doubt that these loans have made marriage possible for many couples which could not otherwise have set up a household. On the other hand, it has been shown that even the couples receiving marriage loans and married more than one year have spent about three and one-half years in wedlock for each child on account of which they have claimed a remission of one-fourth of the loan.

The Nazi demographers, however, claim that the sum total of the measures adopted to increase fertility have been highly successful. The following table shows how they arrive at this conclusion.

TABLE 115.—CALCULATED EFFECT OF GERMAN POPULATION POLICIES ON THE NUMBER OF BIRTHS AND ON FERTILITY

Year	Total number of legitimate births	Basic number of births[1]	Increase in births		
			Total	Due to additional marriages	Due to increased fertility
(1)	(2)	(3)	(4)	(5)	(6)
1933	892,800	873,800	19,000	19,000	.....
1934	1,125,500	867,900	257,600	74,700	182,900
1935	1,195,300	862,400	332,900	120,500	212,400
1936	1,210,000	857,700	352,300	127,700	224,600
1937	1,207,500	855,300	352,200	131,300	220,900
1938	1,277,200	849,900	427,300	142,400	284,900

[1] This assumes that the number of marriages in each year would be the same as in 1932 and the fertility rate would remain at the low point of 1933 (2, 1939, No. 7, p. 285).

This table shows an increase in births in 1938 of over 50 per cent above the number that would have occurred under the conditions on which the figures in column 3 were calculated, namely, that the number of marriages in 1932 remain fixed in succeeding years and that the fertility rates of 1933 were also fixed. This increase in births is then attributed to the two changes (*a*) additional marriages and (*b*) increased fertility in the ratio of about one to two. It is further implied, in the assumptions, that both of these are due to the positive population policies and/or the propaganda of the Nazis for larger families. On the same basis it could be shown that the United States and England, where no population measures have been taken, have also had a substantial increase in number of births in the last six or seven years, although not so much as in Germany. The measures taken to encourage births in Germany have apparently been rather effective but, in the writer's opinion, not so effective as the above table seems to indicate. The

recovery from the depression must be given some—perhaps most—of the credit for the increase in both marriages and births during the last several years.[1] But even when this is granted it still remains uncertain how much of the credit for the remainder should go to the different measures. As mentioned above, the increasingly severe punishment of abortion, if it is as effective a deterrent as is claimed by the Nazis, would be sufficient to account for the entire increase in fertility. Then, too, one can scarcely doubt that easing the economic burden of parents has had some effect in encouraging larger families.

Finally, I would not give the impression that I attach no significance to the Nazi claim that the psychical factor is of great, if not of prime, importance. Such a statement probably exaggerates the importance of the "climate of opinion" thus far created in favor of larger families, but I can see no reason why community attitudes favorable to fair-sized families should not exercise an influence in this direction. We very commonly accept the view that small families are in part the consequence of the approved community pattern of family, and I can see no reason why, if the approved community pattern were to become one of four or five children, it should not exercise much influence in determining the size of family in a considerable portion of the population.

My personal belief is that when due allowance is made for the effect of the recovery from the depression upon the marriage and birth rates, for the suppression of a considerable amount of abortion, and finally for the material assistance given to parents, there still remains a not inconsiderable residue of the increase in German births which may properly be attributed, as the Nazis claim, to the more hopeful outlook on life generated by their rise to power. I see no reason to doubt that a revival of the will to live and work such as the Nazis have brought about would also have an effect on the will to reproduce. I think it highly probable that they overestimate the importance of this revival of spirit in the rise of the birth rate but I also think that we may very easily underestimate this factor in our hatred of other features of their philosophy of life. The fact remains that the German population, which in 1933 had a replacement index of 70, had one of almost 100 by 1939. Thus what is in my opinion the first serious effort by any people to raise its birth rate from the point where race suicide was imminent to a survival level has *apparently* been successful. I say *apparently* because this whole experiment has operated for only a few years and, since it may very well break down completely because of the war, we may never be able to find out just what has happened. But it appears that it would behoove us to study carefully the measures adopted in Germany with a view to finding out what we can about the effects of the different measures used. It is

[1] KIRK DUDLEY, "The Relation of Employment Levels to Births in Germany," *Milbank Memorial Fund, Quart. Bull.*, 20 (1942), 126–138.

possible that we, too, may become interested in the control of population growth at some future time. If so we cannot know too much about the experience of other countries in such matters. To ignore the experience of Germany just because we do not like the general philosophy of life under which her population policy was developed and the authoritarian methods used in carrying it out would be folly.

2. Japanese Policies

In January, 1941, the Japanese Planning Board announced the adoption of a population policy which it was expected would give Japan proper a population of 100,000,000 in 1960 (4). (There were slightly over 73,000,000 in 1940.) In the announcement of this policy four objectives were listed: "First, to maintain a perpetual increase; second, to outrival other nations in the rate of increase and quality; third, to supply the military and industrial man power required by the State; fourth, to distribute the population properly to maintain Japan's leadership in Asia."

The means proposed to achieve this rapid and "perpetual" growth are "a lowering of the marriage age by three years so men will marry no later than the age of twenty-five and women at twenty-one, restriction of female employment in factories, loans to newly married couples, and reduction of taxes for large families."

The immediate occasion for the adoption of these measures is the decline of the birth rate from 36 in 1920 to 27 in 1938.

Later information indicates that the Japanese scheme follows the German very closely but that it has not yet been put into effect. But certainly no totalitarian state can long refrain from attempting to control population growth. The rigid control of individual conduct which is inherent in the totalitarian state cannot stop at the threshold of the home.

Of the population policies described above the one which most nearly meets with the author's approval is the Swedish. In basic assumptions it is directly opposed to the Nazi policies: (*a*) there is no assumption of racial superiority; (*b*) it assumes that the citizenry is capable of determining what is good for men and of carrying out policies to achieve this good; (*c*) it holds to the right of the individual to live his own life and reproduce as he chooses, albeit he must so live that he will not interfere with the equal rights of other people. A population policy based on such beliefs is truly democratic but, since the measures taken appear to the author to be only halfhearted, he is very doubtful whether they will prove effective. We should be careful, however, not to identify halfhearted measures with democratic measures and thoroughgoing measures with authoritarian control. Certainly a real alleviation of the economic pressure arising from the presence of several children is of itself neither democratic nor authoritarian; what makes it either is the manner in

which such a measure is decided upon and enforced. When a democratic people is threatened it can adopt and enforce thoroughgoing measures as well as an authoritarian government. In the matter of population policy, if it once becomes clear that survival depends upon the adoption of measures which will really help those who rear children to live as well as those who do not, it is not improbable that democratic countries will adopt such measures.

All this is of interest to us since the United States has also come to the point in population growth where there are no longer enough children to maintain our present numbers. It may not be long before we, too, shall be compelled to choose between a declining population and the adoption of policies which will raise our birth rate. When this time comes we shall need all the information we can secure about the effectiveness of the various measures adopted by other countries in their efforts to stimulate the birth rate.

3. Some Reflections on a Population Policy for the United States

a. Quantitative.—The general situation as regards our population growth, the quality of our people, and their distribution in different types of communities has been set forth above. These data are essential to the formulation of any rational population policy but they do not in themselves indicate what this policy should be. They merely show us what the conditions are today; they neither show positively how these conditions can be changed if that be desirable, nor do they provide the aims, the ideals, the philosophy of life, which must determine the shape of national population policy. Thus the study of our population shows us that there is a differential birth rate in the United States which up to the present has resulted in the poorer, the less educated people increasing at a much faster rate than those in more comfortable circumstances and better educated; but there is nothing in such information to tell us whether this situation is harmful or advantageous to the nation. The judgment of the social effects of such processes as have been described is a value judgment, an ethical judgment, if you please, which arises out of our general philosophy of life and is not an inescapable conclusion from the facts of our population growth. So it is also with the rural-urban differentials in birth rate. We will pass judgment on the desirability or harm of such a differential depending on whether we think it a good thing to maintain a stationary, or perhaps an increasing population, or whether we would like to see population decline; and this judgment, in turn, will depend on what aim or goal we are thinking of for the nation, our values of national life.

The facts of population growth and distribution are then only the raw materials out of which a policy structure might be built. The ideas which will determine what kind of a policy will be built are to be found

in the social philosophy—the value judgments—of a people; whether or not they are conscious of having a philosophy of life, makes no difference. *Laissez faire* is as much a philosophy of life as are the Nazi doctrines that only the militarily strong are fit to survive, that only the Aryan German is fit to rule himself or others, that only the nation has any right to prescribe the conduct of citizens, the nation in this case being identical with the government.

In attempting to outline a population policy for the United States there are no such simple values to aim at as the Nazis had. The Nazis could say definitely that their aim was a body of 250,000,000 Germans in the center of Europe by the end of the twentieth century and could take measures which they believed were sufficient to this end. They did not have to convince the mass of the people that this was a desirable goal, nor that the measures taken to achieve it were good. Their only concern need be with the effectiveness of their measures. Their ideals, their philosophy of life, determined their population policy and the measures they took to give it effect. The writer is inclined to believe that at best the Nazi population policies will fall far short of achieving what was expected of them largely because the Nazis did not understand the motives determining the size of family. But, given their outlook on life, it was easy to define the goal at which they were aiming.

In the United States and all other democratic countries, on the other hand, it is not possible to set forth a single important tenet of a philosophy of life with such definiteness that it will form a sure basis for value judgments on which a population policy can be constructed. This statement may be questioned in the light of the Swedish policy, which is said to aim at the maintenance of the present population, the general improvement of the health of the people, and the better preparation of the less fortunate of its citizens to participate in the social, political, and economic life of the nation. However, one cannot study the few measures taken thus far to effectuate this policy without feeling that actually the fear of population decline has been exploited as a means of obtaining a certain amount of desirable social reform rather than as the basis of a policy really expected to control population growth. Hence, such a scheme does not really attack the problems of the control of population growth, of quality, and of distribution at all, or at most, very feebly. Much as the social reforms undertaken are needed it is by no means clear that they are calculated to effect the avowed aims of the population policy adopted. Up to the present the improvement of living conditions among the less fortunate part of the population has invariably resulted in the decline of their birth rate. The few exceptions to this rule thus far found are of no significance in their effect on population growth, however important they may be as straws in the wind indicating future trends.

In the United States any outline of population policy must in the writer's opinion, rest on a number of definite assumptions of value, no one of which will be generally accepted. In the statement that follows, therefore, it should be understood that the assumptions made and all judgments of value (ethical) represent the author's views and are not given as a logical deduction from the facts presented in this book. Value judgments necessarily rest on the interpretation of facts (or beliefs) and can never be "scientific" in the sense that they are an inescapable logical conclusion from the facts.

The first assumption the writer will make here is that it is desirable to maintain our population at the present level, or rather, in view of the fact that we shall have but a small increase during the next two or three decades, that it is desirable to maintain our population at about the level it will reach in 1960. I make this assumption, in part, because I believe we need have no fear that we cannot provide a good level of living, better than in the past, for our population in 1960, and in part, because I believe that it is morally desirable for people to devote enough of their energies to children to ensure reproduction (a judgment of the moral value of reproduction). Here then is a definite aim—the maintenance of our population at the level it seems likely to attain in 1960. There will be many who will not agree that this should be an aim. Some will believe that we should have a smaller population, while others will believe that we should have a large and steady increase for a long time to come, and still others will deny the moral value of participation in the biological maintenance of the nation or stock as compared with what they can contribute to community life in other respects or as opposed to what they believe are their personal rights of enjoyment and individual development. However, what I have to say about means to control growth will be based on the assumption that it is desirable to maintain a population of about 150,000,000 to 160,000,000 in the United States.

A second assumption I shall make is that it is desirable that practically all healthy persons participate as uniformly as possible in the rearing of the next generation, that it is not good for one-fourth or more of the people to have no direct interest in social institutions as they affect a growing generation. I cannot stop to give the reasons for this assumption further than to say that in my opinion to have no direct personal interest in the future of children all too frequently results in the acceptance of a set of institutional and personal values which are antagonistic to biological survival and, hence, in my judgment inconsistent with the steady development of a more humane organization of society. How, then, are population numbers to be maintained when the birth rate has already fallen below this level and seems quite certain to fall still further? The laissez-faire policy of individual choice of size of family is failing

under present conditions to ensure survival in the nation. This leads to a third assumption, namely, that we should not substitute any kind of direct governmental compulsion, even if it were possible, for individual choice of size of family. This means, therefore, that we must convince ourselves that maintenance of our numbers is a desirable goal and make whatever personal adjustments may be needed to do our part in the attainment of this goal.

As to the specific measures which might lead to the achievement of the goal set forth above I shall mention only a few of those I believe of greatest importance. In the first place there is a very widespread belief that the cost of rearing children is one of the chief deterrents to larger families, particularly in urban communities. There cannot be the least doubt that for the great majority of people the level of living is affected adversely by each additional child because they have small and limited incomes. One of the means being very commonly used to remove this economic obstacle to larger families is family allowances or wages given by the community with a view to equalizing the living conditions between families of different sizes but with approximately equal incomes. The author knows of no proof that such allowances have been effective but is inclined to think that this is because they have never been large enough to remove any considerable part of the cost of additional children from the regular family income. Even the German scheme, though it has done more than any of the others to correct the economic disabilities of families with several children, has only partially removed this handicap. Other means being used are the provision of free medical services, aid to the children of larger families in getting an education, increased tax exemptions for children, and so forth. I can see no reason why all these measures should not be helpful in reducing living differentials arising from differences in family size, but I am very doubtful that they will ever do much to increase the birth rate to maintenance level if the general sentiment in the community is not such as to encourage people to rear families of moderate size. (It now takes about 2.4 children to every married woman to maintain the population and about 2.9 to every married woman having children.) As long as there is any considerable body of sentiment in the community which values more highly the achievements and the enjoyments that can be had from a given amount of income when not spent on children than when spent on children, there will be a large number of people who will remain childless or have only one or two children. In my judgment definite social approval of fair-sized families must be coupled with economic aids before we can hope for a sufficient increase in the birth rate to ensure national survival. This is the reason why I was unwilling to deny that the "new spirit" which the Nazis claim to have created in Germany might be a factor of considerable importance in the rise of its birth rate. If people believe

that children are among the major values in life, no matter why they hold this belief, it is quite likely that they will have fair-sized families even in the face of considerable economic handicaps. But I think that it is also highly desirable to remove a large measure of the economic handicaps which now burden those who do rear such families.

A mere enumeration of the chief measures which are being used or which might be used to encourage families of three or four children, or larger where the parents desired, may be of sufficient interest to warrant the space it occupies.

1. Family allowance, or family wage, or mother's wage, in some form, finds its way into most of the schemes. It is a recognition by the community that the efforts of the parents in the care of a family are as worthy of economic recognition as those for which they are now paid. Fundamentally the need for income in addition to regular wages, salary, and so forth, arises from the fact that in an industrial civilization, as contrasted with an agricultural one, the family as a whole has comparatively little economic function and hence children do become an increasing economic burden which the individual is unwilling to assume.

2. A second important economic measure, but one which also has a bearing on health and quality, is the provision by the community of free or cheap medical and hospital care for the family. Such care in more or less complete form is included in all schemes known to the writer and is, of course, being developed in many countries without reference to a general population policy.

3. The special expenses connected with pregnancy and birth constitute a third type of economic assistance frequently given the family. In this may also be included the actual pay given the mother working away from home for the time before and after birth for which she is given leave. The need for this would, of course, be eliminated if there was a mother's wage system which made it possible for the mother to remain in the home practically all the time during the years she was bearing children and until they were old enough for school.

4. A fourth measure, and one given prominence in the Swedish plan, is the provision of good housing at low cost to families with children. This avoids the necessity of larger families economizing on housing at the risk of their health and also does away with the moral hazards of slum life for the poor.

5. All the measures now classed under the head of "social security" give greater assurance that the parents will be able to care for their children while they are young and themselves when they grow old; hence, they belong in this general category of economic measures calculated to have an influence on the birth rate. The Swedish plan also provides for a state guarantee of alimony to the mother in case of divorce

and for special aids to the surviving parent in case of death of either mother or father.

It should be made clear that all these economic measures rest on the general assumption that it is chiefly the economic burden of children which deters parents from rearing larger families. While it is my personal opinion that this is an important element in the situation I am not convinced that it is the chief factor. The evidence we have does not seem to me conclusive. I am of the opinion that we have not yet adequately investigated the "climate of opinion," the "social atmosphere," the "mental attitudes" of people as they affect the willingness to rear children. I am not at all sure that any or all of the economic measures enumerated will be successful in getting people to rear families of three or four children until we also find some way to convince ourselves that biological survival is a primary consideration. Until the social "atmosphere" is such as to encourage biological survival I am inclined to believe that all other reforms are of secondary importance. I have no scheme to propose by which this change in social values may be accomplished, but this I do know, that up to the present all economic and social reform have acted to depress the birth rate. I believe that the important reason this is so is that, like all the rest of our social and economic order, these measures have treated the individual as the element with which to work while the family as a biological unit has received little attention; its importance in the whole scheme of the community's life has been overlooked in our anxiety to assure the individual large opportunities for personal development. We have failed to see that there might be a basic antagonism between the desire of the individual to live his own life in his own way and the need of the community to survive biologically if it were to ensure itself opportunity to develop into a social environment adequate to give the largest feasible opportunity for personal development. In other words, one is driven to wonder whether the individual, without a large measure of direction by the community, which alone can profit fully by the accumulated wisdom of the race, is competent to make a satisfactory adjustment of his individual desires to the necessities of biological survival. The need for biological survival is so elementary that it need not be argued and we face a situation in which community patterns of life do not ensure this; either they must be changed to accomplish this or the community must reconcile itself to the consequences of a decline in numbers and the manifold social and economic difficulties following such a decline.

b. Qualitative.—I need not say much about quality here as I have already expressed my views on this subject in Chaps. XXI and XXII. The one assumption I would make is that every child has the right to a decent start in life—an untainted heredity and an environment favorable

to the development of his natural capacities. We should discourage people of defective heredity from having children, even to the point of segregation and sterilization. But before doing so we should make sure that they are defective. We should also do all in our power to discourage people from having children when they are so handicapped by accident that it is reasonably certain they cannot give these children a decent start in life. If only the social (including economic) environment is defective then it is the community's business to see that it is improved.

On the positive side we should educate far more effectively than in the past for parenthood and home life. We can also work toward the creation of a social atmosphere more favorable to the rearing of larger families among those economically and socially equipped to give their children a good start. Since these are the people who now have the smallest families and are setting the pattern of life for people less fortunate than themselves, any change in their attitudes toward the size of the family should exercise a large influence on the community as a whole. These more comfortable people also have more education and should be in better position to appreciate the importance of having enough children to maintain population if any community is to carry forward its ideals and its way of life. If this class does not manifest a sufficient faith in the worth-whileness of the social order which has been so kind to it that it is willing to raise an average of about three children, it can hardly be expected that the less fortunate classes will do so when they, too, have learned how to control births. If our formal education fails to help those who have most of it to make a rational adjustment between personal development and reproduction, then it forfeits claim to our faith in it as the guide to a satisfactory manner of life. Surely no manner of life which results in the dying out of those who have had the best opportunities can long endure. In the broader sense it cannot be regarded as *human* no matter how *personally agreeable* it may be.

Fortunately, as has been shown above, there is no evidence that the quality of the vast majority of the families in the poorer classes, which are still reproducing, is in any way inferior to that of the more fortunate classes. Biologically it is probably not a serious matter that a large part of the next generation comes from the farmers and the laboring classes, but it is certainly a retarding factor in social adjustment to lose the family influence of a large part of the people who have had the best opportunities our society offers.

The measures thus far taken for the improvement of the quality of the population are confined to those calculated to improve health and to prevent the propagation of the defective. In Germany, of course, the forbidding of marriage between Aryan Germans and non-Germans is regarded as such a measure, but I know of no anthropologist or biologist

outside of Germany who so regards it. Any positive measures to improve quality must grow out of the change in social attitudes toward reproduction discussed at the close of the preceding section.

c. Distributive.—On the whole it is probably true that population tends to be distributed over a nation somewhat in proportion to the opportunity to make a living the several areas offer. But there are many obstacles to the achievement of a perfect economic distribution of numbers. Therefore, the first assumption regarding the distribution of population I would make is that it is desirable to remove all the obstacles to a truly economic distribution of population save those which may be deliberately set up to achieve a definite social goal. The second assumption follows directly from this and is to the effect that although a good distribution of population from an economic standpoint is decidedly preferable to a poor one yet the best possible economic distribution may not be the most desirable from a social point of view. As an example of what is meant, I believe that the evidence available today shows that living in crowded urban areas is less healthful than living in less congested areas. It is quite commonly believed, however, that economic efficiency is closely associated with living in cities of the present type. Hence it is claimed that cities cannot be decentralized—reorganized into a different form of urban community, even if it would be good for the people, because it would interfere with economic efficiency and this must be maintained, regardless. Thus the value put upon good health and comfortable living is less than that placed on economic efficiency. Clearly, if one approaches the problem of population distribution with the assumption that nothing is to be done which will interfere with economic efficiency and if it is further assumed that the present distribution of population is the only one consistent with economic efficiency, the whole matter is closed. This is the reason I made the assumption that a desirable distribution of population from the broad social point of view may not necessarily be the same as a desirable one from the economic point of view. I would certainly place a higher value on the health of people than on their economic efficiency, if forced to choose between them. But I do not believe that when the facts are fully known we shall be forced to make such a choice.

I would make another assumption to the effect that any form of population distribution which can be shown to be fundamentally inimical to reproduction must be changed in the interest of national and personal welfare. Thus when the evidence shows beyond doubt that people who live in the larger cities do not reproduce I would say that it must be made possible for people to live in conditions where they will reproduce even if it involves a complete reorganization of the urban community. It is more important to maintain our population than to maintain the economic values in the present type of cities.

> Ill fares the land, to hastening ills a prey,
> Where wealth accumulates, and men decay.
> —GOLDSMITH, "The Deserted Village."

This is a value judgment in which I fully concur. However efficient an instrument the modern city has been for the production of goods and the accumulation of wealth it is leading to the *decay* of men and in so doing it is sealing its own doom—not now, but in the not-distant future.

The specific measures needed to improve the economic distribution of population can only be discovered by long and careful research. Almost nothing has been done in this field. There are, however, some rather obvious measures that might act as palliatives while we were searching for more fundamental factors. We might, for example, develop a more effective system of employment service to act as the connecting link between the individual living in an area of low opportunity and the business needing his labor; we might make sure that private monopolies do not stand in the way of the development of areas and regions which have come to maturity at a relatively late date; we might extend vocational education to ensure a minimum agricultural or industrial training to all workers so that they would not be forced to remain in an area of limited opportunity just because they have no skill needed elsewhere.

But important as economic measures should be in determining policies of distribution, I want to say again that I should not like to see them take precedence over health measures and measures calculated to make it possible for people to live in areas where they will reproduce. In my judgment the removal of many artificial economic obstacles—monopoly, arbitrary freight rates, control of capital by great financial centers, and so forth—will probably hasten the breakup of the modern mononucleated city, but I much doubt that they will be sufficient to ensure it; and the one thing about our birth rate that is certain is that people in the larger cities do not reproduce. Any population policy affecting the distribution of population which did not propose measures calculated to remove the obstacles which large cities place in the way of reproduction as well as measures calculated to improve health would almost certainly be of little avail in ensuring the national welfare over a long period.

Thus, again, in the consideration of population policies affecting distribution, we come to the question of how important we consider reproduction as compared with economic efficiency and the personal advantages to certain groups in our present type of distribution—a question of values and attitudes. This is the reason I find myself again and again coming around to the view that no population policy will be of much avail unless we recognize that it must rest on values which the community accepts and will make a real effort to put into operation. This does not mean that we should not formulate a population policy

and that we should not take measures to effect its aims until the "social attitudes" are favorable. The actual embarkation on a policy may be one of the most potent means to gain consideration for the development of values which might in time make a democratic policy effective. But I do not think we should expect too much in the near future of any policy we might adopt now. Social attitudes change rather slowly even in times of crisis, but they do change, and I see no reason to doubt that if we really want to we can change present social values or develop new ones which will ensure biological survival. It will not be an easy change quickly accomplished, but this is true of most things really worth while so that we should not be discouraged from trying on this account.

References

1. CHAMBERLAIN, HOUSTON STEWART: "The Foundations of the Nineteenth Century," 2 vols., J. Lane Company, New York, 1911.
2. Germany, Statistisches Reichsamt: "Wirtschaft und Statistik," 1921——, Paul Schmidt, Berlin, 1921——.
3. GOBINEAU, JOSEPH ARTHUR, COUNT: "The Moral and Intellectual Diversity of Races," 512 pp., J. B. Lippincott Company, Philadelphia, 1856.
4. *New York Times*, Jan. 23, 1941, p. 5.
5. WHELPTON, P. K.: "Why the Large Rise in the German Birth Rate?" *Amer. Jour. Soc.*, 41 (1935), 299–313.

Questions

1. Describe Germany's population policy and indicate its distinguishing features.
2. "Germany's population policy is less democratic than that being developed in Sweden." Give your own judgment and the reasons by which you support it.
3. Germany's population policy appears to have been fairly successful in accomplishing its purpose, while France's has not. What do you believe to be the reasons for this difference in effects?
4. Criticize the assumptions on which the author bases his suggestions for a population policy for this country. What assumptions, if any, would you put in their place? If you do not think there is need for a population policy in the United States give your reasons.

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