

World Population

PART I

By SIR CHARLES DARWIN

It seems likely that we shall soon have to make a real revolution in our judgments of what is good for the human race. This is because of the extraordinarily rapid increase in our numbers, through which at some time in the future, and that not very far off, the resources of the world are going to be taxed merely in order to keep us all alive. This will bring about a complete reversal of the traditional judgments we were apt to make in the past. Thus in describing some past period, historians very naturally called it a bad period if there were famines or plagues or massacres, that is to say if a lot of people died who need not have died. Put very crudely, a period was good if population numbers increased, and bad if they were prevented from doing so. This is of course a great over-simplification, but if, as seems likely in the future, the sufferings of humanity will be principally due to there being too many of them, our judgment must be revised, and we shall welcome decreases in our numbers. Presumably this does not mean that we shall welcome famines and plagues and massacres, but it does mean that we ought to be giving intense thought to the whole subject of population increase. Can we invent some humane way of avoiding these threatened conditions? As will appear, the time is not long—less than say four generations—before the need to do so will be urgent.

The present rapid increase of our numbers, and the accelerated rate at which they are increasing, constitutes terrible threats against the continuing prosperity of our present ways of life. More and more people are now becoming conscious of these threats, but there has been a tendency in some quarters to belittle them, whether for doctrinal reasons, or from a spirit of uncritical and unthinking optimism. It may be well then to attempt to set out the facts of the situation as it stands now, together with a forecast about the way things are almost certain to go in the next fifty years or so. From these considerations there will then arise the question of what action we could take so as to avoid the threats in the remoter future, now that we can foresee some of them. As will appear, the results are not in the least reassuring.

Some writers have described the present increases in our numbers as an explosion, and it is a good name provided that

we alter our time scale from seconds to centuries. Thus in the ordinary sense an explosion means an enormously rapid expansion which is all over in a couple of seconds, whereas our present increases have been already going on for about two centuries, and they still show no signs of stopping, but rather they are increasing in their pace. Most of us are quite unconscious of all this because we have never seen anything different, nor did our fathers or our grandfathers, or any of our ancestors back for five or six generations. It is evident that the increase has got to stop some day and the question is how and when. Mere arithmetic shows the necessity of considering this, for it is easy to calculate that if the present rates of increase went on for less than a thousand years, which is not a long time as history goes, there would be just about standing room for us on the land surfaces of the earth, and obviously long before this the increases must cease. Thus the time when the explosion will simply have to stop is not really very far off. The consideration of the subject is urgent, and it must not be regarded as a remote and vague speculation into a future so distant that we need feel little interest in it.

Past and Present

The numbers of mankind in the distant past are of course not known with any accuracy, but they must have gone something like this. Leaving aside such very remote discoveries as the use of fire and of flint implements, our numbers have been enormously changed by three great revolutions in man's way of life. The first was the invention of agriculture, when man ceased to be a food gatherer, and became a cultivator. This was round about 10,000 B.C., and as the practice spread, the numbers increased from something like ten million to perhaps fifty million. The second revolution, sometimes called the urban revolution, came about 3000 B.C., when man found a second improvement in his way of living by the invention of city life, which permitted the division of labour, and the development of trade. Once again he responded by gradually increasing in numbers so that by A.D. 1 his numbers for the whole world became something like two or three hundred million. Authorities differ to some extent about which of these two values they take, but the difference is really not at all important in forming a general picture of world history. After this we come of course to the historical periods about which our knowledge is a good deal more accurate. The numbers fluctuated a good deal, but slowly increased, as the urban way of life spread to new parts of the world, but even by A.D. 1750 there were not more than 500 million people. Then something quite new

happened and now, only two centuries later, there are well over 2700 million people.

It had taken nearly two thousand years for mankind to double his numbers, but he now multiplied them by five in two hundred years. This was the third great revolution, and it may be called the scientific revolution. By the study of the laws of nature, a study which began to develop in the 1600's, man gradually acquired a mastery of nature to a degree so much greater than he had ever had before, that it entirely transformed his ways of life, and he responded, just as he had in the earlier revolutions, by vastly increasing in numbers. Whereas the earlier revolutions started in Asia and the eastern Mediterranean, and took thousands of years to spread, the new one, starting predominately in western Europe, has only taken these two centuries entirely to dominate the world.

It has already revolutionised the life of most countries in ways that everyone knows. From the practical point of view I suppose one of its most outstanding features has been the development of all our methods of transportation, which have made it so easy for people to move out of the crowded parts of the world into regions where there was spare space. Furthermore, in the old days when there was a famine anywhere the people there simply had to die, but now the famine can be relieved from other countries where there happens to be plenty.

Another main development has been due to the discoveries in medical science, which have enormously lengthened the average expectation of human life. In the old days the expectation of life for a child at birth was very small on account of the terrible infantile mortality which used to be universal, but now those days are over for many countries, so that a new-born child may look forward to a good many years of life. The same is true for older people too, and anybody can now have a fair expectation of living till say seventy. Moreover, this expectation is increasing all the time, so that the average age of mankind is increasing year by year. This increase of course contributes to the rate at which our total numbers are growing, but it must not be thought that it is the main cause of it for even without it our numbers would be increasing quite terrifyingly fast. It is going of course to give rise to many social difficulties, such as our having to support a lot of pensioners who are past work, and this will make problems, but that is not what concerns us here.

It is interesting to consider how the present increases are spread over the world. There is of course great variation. We are all familiar with the case of India, which has five million extra mouths to feed every year, and Japan which, do what it may, can hardly

avoid having a hundred million people within the next twenty years. With the exception of one or two countries western Europe is not increasing very fast, though in no country are the numbers actually diminishing. One of the most rapidly increasing countries in the world is the United States. They are increasing at a rate a good deal greater than India, and the increases are affecting all levels of society.

This is a most important, and rather unexpected fact. As short a time as ten years ago, many people believed that it was mainly the under-developed countries that were increasing, and that the increases would slow down and stop as soon as these countries reached a pitch of prosperity like that of Europe. Their cure for the danger of over-population then was to improve the conditions in these countries one by one up to the European level until finally the world had a constant population lapped in a millenium of comfortable luxury. Unfortunately for this argument we are now seeing that the country which is indisputably the most prosperous in the world is one of those that is multiplying most rapidly. Evidently prosperity will not stop the increases.

The Next Fifty Years

In order to see the way things may be expected to go in the future, we must act like the forecaster of the weather. He takes into account all the information available about present conditions, and then he forecasts what the weather will be like twenty-four or forty-eight hours hence. He is not of course always right, and most of us are specially tempted to recall his failures, but in fact he is usually right four times out of five, and surely that is a useful forecast to have.

The forecast I shall attempt here is for the next fifty years, and the information for it is furnished by the demographers. These are the people who are experts on censuses and such matters. I shall begin by considering how many people there are expected to be, and later I shall examine what sort of a life they may hope to live, which will call for a consideration of agriculture, and the other necessities of life.

Numbers

The demographers say that when the present trends in numbers are considered, it becomes almost certain that fifty years hence our numbers will have doubled from what they are now. Our crowded world of 2700 million will have become a much more crowded world of over 5000 million. These large numbers are hard to grasp, and smaller ones may be more convenient to think about. At the present time at the end of each

year there are 40 million more human beings than there were at its start. Moreover, there is every expectation that this number will itself be growing in each successive year, just as it has done in every year during the past fifty years. Even this figure of 40 million is rather large to think about, and the same fact is expressed by saying that in every twenty-four hours, year in year out, there are well over a hundred thousand more people alive at its end than at the beginning; this is the difference between the number of births and the number of deaths during the day. It should be added that this figure of 100,000 is a very cautious estimate, for some of the experts place the figure as high as 140,000, but there is no need to be as precise as this in order to see the general prospects.

In dealing with such very large numbers it is natural at first sight to think that the larger they are the more unreliable the results will be, but the reader may be reminded that that is not usually the way with statistics. Materially to alter the very large number there has to be a very important cause, and it is unlikely that such a cause will be overlooked in the way its effect might be if the total number were smaller. This point can be illustrated by the consideration of some of the possible catastrophes which may be thought likely to upset the prediction.

Thus in the past there have been disastrous famines every few years in some part or other of the world. I think we should agree that it was a very serious famine indeed that would have killed ten million people, and that this sort of thing has only happened rather rarely. Yet that number would be replaced in three months. Anyone who thinks that famines might stop the present increases in our numbers has got to believe that we shall start having four such famines somewhere in the world during every single year. This could only come about by a sudden radical change in the earth's climate, and we have no reason to expect it, and indeed the fact that the earth's climate has been roughly constant for many millions of years in the past makes it quite fantastically improbable.

For the like reason we can leave out the consideration of war, at any rate war of the old kind. Thus the First World War killed ten million men in four years. Forty years ago the annual increase was not as great as it is now, but even then that number would have been replaced in less than six months. Of course an atomic war would be very much more serious as far as we can judge, but the effects even of that would be unlikely to make much difference to the mere matter of numbers, whatever it might do through the breakdown of world economy. Thus if a hundred million were killed this would be easily the greatest disaster that

has ever struck mankind, but the number would be made up again in less than three years. We cannot of course foresee what would be the other effects of such a calamity, but it does at least seem unlikely that the folly of the human race will go so far as to insist on having an atomic war every three years. It thus looks very improbable that any kind of war will seriously diminish our total numbers fifty years hence.

There is one other cause which it might be thought would affect the forecast more seriously, and it has the advantage of not being a catastrophe like those I have considered, but that it is essentially humane, and it is indeed one of the most hopeful prospects we have of controlling our numbers. This is the practice of birth control. It is I think by now recognised that man's instincts are too strong for it to be possible to reduce the increases by the prescription of sexual abstinence, but the developments of recent times have made this unnecessary. In many countries the practice of contraception is already wide-spread, but it must be recognised nevertheless, that it is a comparatively small fraction of the world that uses it. There are of course objections against it that have been urged on doctrinal grounds, but even apart from that it can only be a small fraction of the human race that now use the practice.

It must be recognised that it is the best and most humane hope that we have of consciously restraining our increases, but that a great deal of work is still needed on the subject. What is required is something easy to use even by the least educated, and cheap and acceptable, and in fact nothing actually as yet exists having all these qualities. It is possible that any day a good solution of the problem might be found, but even so it is hard to see how it could materially affect the numbers fifty years hence. To affect the numbers of mankind materially it would be required on a great scale, and it would take some time to set up the factories for it, but even more serious than this, there would have to be a vast educational campaign dealing with the majority of the human race—perhaps 1000 million adult human beings—if it were to have any material effect on our numbers. When we recall that the policy is vehemently opposed in some quarters on religious grounds it seems unlikely that in the short period of fifty years any really great effect could be shown. This is not to belittle it, and it might well become more notably effective over a longer period, but it can hardly have any material influence on the forecast of the numbers of the human race fifty years hence.

We have to conclude that short of some crushing and quite unforeseeable disaster the numbers of mankind will be round about 5000 million fifty years from now.

[TO BE CONTINUED

THE EMERGENCE OF RACIAL GENETICS

BY R. RUGGLES GATES

The desirability of founding an additional scientific journal to discuss the problems of race may be questioned by some who are concerned with other aspects of anthropology. But everyone agrees that races or ethnic groups exist and that they are in fact the raw material by means of which human evolution has taken place. The increasing rate with which racial disturbances have been occurring in many parts of the world since the end of the second world war makes it abundantly clear that the subject needs discussion, even though some of these disturbances are the result of propaganda, and others of race antagonism which has old historical foundations.

A scientific approach to racial questions, free from sentiment, propaganda or bias, may lead to a more reasonable attitude to the problems which agitate considerable sections of mankind. This need for a calmer approach to problems of race on the part of civilised peoples as well as more primitive tribes makes it desirable that a journal should exist in which the problems of racial origin and racial relationships can be quietly discussed, without rancour or bigotry and with the primary aim of elucidating facts.

My own contributions to the study of race began many years ago with an interest in the racial significance of the blood groups. An expedition down the Mackenzie River in 1928, financed by the Hudson's Bay Company, had as one of its aims the blood grouping of Indian tribes and Eskimos. It also yielded a study of families derived from Eskimo x Nordic which gave striking evidence of genetic segregation in racial crossing (Gates 1929, p. 336.)¹ The factual evidence regarding human racial genetics has grown gradually since that time. My interest in this has led to travels and observations in many parts of the world. Eugen Fischer's well known study of Dutch x Hottentots came much earlier (1913).

In 1952 a study, financed by the Wenner-Gren (Viking)

¹ *Heredity in Man*. London: Constable, pp. 385.