Population

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POPULATION

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ABSTRACT

There are three types of countries in the world today as regards their population growth. *Group A.*—These countries have a very rapidly declining birth-rate, and although their death-rates are low their rates of natural increase are declining and they are rapidly approaching a stationary or decreasing population because of the general practice of conception control. *Group B.*—Birth-rates are coming under control in these countries, but rather slowly. Death-rates are declining more rapidly than birth-rates, however, so that natural increase is rising or at least is not declining to any great extent. *Group C.*—In these countries both birth-rates and death-rates are subject to little voluntary control as yet and the positive checks determine the growth of population. *Land for expansion.*—The land needed for the expansion of the peoples now entering upon a period of rapid population growth (practically all of those in Group B and some of those in Group C) is practically all being held by the peoples in Group A, who no longer have an expanding population to settle these lands. One of the most urgent problems of the next few decades is going to be the readjustment in land holdings demanded by this shift in the expanding peoples from northwestern Europe to eastern and southern Europe and to certain parts of Asia.

A little more than ten years have now elapsed since the close of the World War. They have been momentous years in many respects, but probably the changes of greatest moment, those which will most influence the future history of mankind, are those that are taking place in population growth. We can now discern quite clearly tendencies about whose existence there was much uncertainty before the war. And because they can now be seen so distinctly we may assess their significance more certainly than we have been able to do hitherto.

In Table I, we have brought together data on births, deaths, and natural increase for a number of countries. Our aim here has been to present typical data rather than complete data. We are interested in pointing out what appear to us to be the most significant tendencies in the population movements of different countries rather than in stating with precision the total growth in the world or in any given part of it.

An examination of this table will show that the different coun-

TABLE I

BIRTH-RATES, DEATH-RATES, AND RATES OF NATURAL INCREASE FOR CERTAIN COUNTRIES 1908–13, 1920–23, 1924, 1925, 1926, AND 1927

	1908–13	1920–23	1924	1925	1926	1927
Australia:						
Births	27.3	24.8	23.2	22.9	22.0	21.7
Deaths	10.8	9.9	9.5	9.2	9.4	9.5
Natural increase	16.5	14.9	13.7	13.7	12.6	12.2
Austria:						
Births	.....	22.8	21.7	20.6	19.2	17.8
Deaths	.....	17.2	15.0	14.4	14.9	14.9
Natural increase	.....	5.6	6.7	6.2	4.3	2.9
Belgium:						
Births	23.4	21.2	20.1	19.8	19.0	18.2
Deaths	15.7	13.6	13.0	13.1	13.3	13.0
Natural increase	7.7	7.6	7.1	6.7	5.7	5.2
Canada:						
Births	.....	28.4	25.7	25.8	24.8	24.6
Deaths	.....	11.9	10.8	10.6	11.4	11.1
Natural increase	.....	16.5	14.9	15.2	13.4	13.5
England and Wales:						
Births	24.9	22.0	18.8	18.3	17.8	16.7
Deaths	14.1	12.2	12.2	12.2	11.6	12.3
Natural increase	10.8	9.8	6.6	6.1	6.2	4.4
France:						
Births	19.5	20.1	18.7	18.9	18.8	18.1
Deaths	18.6	17.3	16.9	17.5	17.4	16.5
Natural increase	0.9	2.8	1.8	1.4	1.4	1.6
Germany:						
Births	29.5	23.8	20.2	20.4	19.5	18.3
Deaths	16.5	14.3	12.1	11.8	11.7	12.0
Natural increase	13.0	9.5	8.1	8.6	7.8	6.3
Netherlands:						
Births	29.1	26.9	25.1	24.3	23.8	23.1
Deaths	13.9	11.1	9.8	9.8	9.8	10.3
Natural increase	15.2	15.8	15.3	14.5	14.0	12.8
New Zealand:						
Births	26.2	23.4	21.6	21.2	21.1	20.3
Deaths	9.4	9.2	8.3	8.3	8.7	8.5
Natural increase	17.0	14.2	13.3	12.9	12.4	11.8
Sweden:						
Births	24.4	20.8	18.1	17.5	16.9	.....
Deaths	14.0	12.5	12.0	11.7	11.8	.....
Natural increase	10.4	8.3	6.1	5.8	5.1	.....
Switzerland:						
Births	24.7	20.2	18.8	18.4	18.2	.....
Deaths	15.2	13.0	12.5	12.2	11.7	.....
Natural increase	9.5	7.2	6.3	6.2	6.5	.....
United States:						
Births	24.8	23.2	22.6	21.4	20.6	20.4
Deaths	15.9	12.3	11.8	11.8	12.1	11.4
Natural increase	8.9	10.9	10.8	9.6	8.5	9.0
Bulgaria:						
Births	41.0	39.9	39.7	37.0	.....	.....
Deaths	22.4	21.5	20.7	19.2	.....	.....
Natural increase	18.6	18.4	19.0	17.8	.....	.....

TABLE I—*Continued*

	1908–13	1920–23	1924	1925	1926	1927
Czechoslovakia:						
Births	31.1	27.7	25.6	25.0	24.4	23.3
Deaths	21.0	17.3	15.2	15.2	15.5	16.0
Natural increase	10.1	10.4	10.4	9.8	8.9	7.3
Hungary:						
Births	.....	29.5	26.8	27.7	26.7	25.2
Deaths	.....	20.2	20.3	16.9	16.5	17.6
Natural increase	.....	9.3	6.5	10.8	10.2	7.6
Italy:						
Births	32.4	30.4	28.2	27.5	27.2	26.4
Deaths	20.4	17.6	16.6	16.6	16.8	15.5
Natural increase	12.0	12.8	11.6	10.9	10.4	10.9
Poland:						
Births	.....	33.9	34.6	35.2	33.0	31.6
Deaths	.....	21.0	17.9	16.7	17.8	17.4
Natural increase	.....	12.9	16.7	18.5	15.2	14.2
Roumania:						
Births	43.1	36.5	36.7	35.2	.....	.....
Deaths	24.7	23.5	23.3	21.0	.....	.....
Natural increase	18.4	13.0	13.4	14.2	.....	.....
Spain:						
Births	32.1	30.4	29.9	29.4	29.9	28.6
Deaths	22.8	21.6	19.8	19.7	19.0	18.9
Natural increase	9.3	8.8	10.1	9.7	10.9	9.7
India:						
Births	38.5	33.0	34.5	33.6	.....	.....
Deaths	32.1	27.6	28.5	24.7	.....	.....
Natural increase	6.4	5.4	6.0	8.9	.....	.....
Japan:						
Births	32.9	35.1	33.8	34.9	34.8	.....
Deaths	20.5	23.3	21.2	20.3	19.2	.....
Natural increase	12.1	11.8	12.6	14.6	15.6	.....
Russia:						
Births	45.6	41.0	42.7	.....	.....	43.4
Deaths	28.9	22.0	23.2	.....	.....	23.0
Natural increase	16.7	19.0	19.5	.....	.....	20.4

tries fall into three main groups: (A) This includes practically all of Europe west of a line drawn from Trieste to Danzig, north of Italy and Spain, and the countries largely settled by peoples emigrating from this area within the last three hundred years. (B) This includes Italy, Spain, and the Slavic peoples of Central Europe. (C) This group includes Russia, Japan, and India for which data are given here and we shall make no great mistake if we include with them most of the peoples of Asia, Africa, and South America not included in Group I.

Briefly stated, the characteristics of these groups from the standpoint of their vital statistics are: Group A: Very rapidly

declining birth-rate and death-rate with the former declining more rapidly than the latter so that the rate of natural increase is also declining. Group B: Evidence that decline in both birth-rates and death-rates is under way in certain classes, but that the death-rate is declining as rapidly or even more rapidly than the birth-rate with the result that the rate of natural increase will probably for some time remain as great as now, or even become larger in the near future. Group C: Both birth-rates and death-rates are less controlled than in either A or B. But in some of these countries, e.g., Japan, there is some indication that death-rates are coming under control faster than birth-rates. In such of these lands as are developing modern industry and sanitation, there is likely to be a very rapid increase in numbers during the next few decades. In many of these lands, however, both birth-rates and death-rates are quite uncontrolled and we may expect either a rapid increase or almost a stationary population dependent upon the harshness of the "positive" checks to population growth, viz., disease, hunger, war, etc.

For a number of years it has been well known that the birth-rate was declining in Group A. About the beginning of the last quarter of the nineteenth century, it became apparent that a decided change was taking place in the birth-rate in England and Wales. The same phenomenon had been observed in France practically since the close of the Napoleonic Wars, and in Sweden the same movement was apparent as early as 1865, although it has not been continuous since that time. Near the end of the nineteenth century and in the early years of the twentieth a number of other countries showed a decline in their birth-rate, and that this was a general movement among the peoples in Group A was quite generally recognized before the war.

Not a great deal of significance was attached to this movement, however, because up to that time the death-rate had fallen as fast as or even faster than the birth-rate in most countries and the growth of population was greater than it had ever been. An examination of the rates of natural increase in Table I will show that in 1908–13 very few countries in this group had a rate of less than ten and that rates of twelve and more were by no means un-

common. The population of the Group A countries was expanding at an unprecedented rate in the latter part of the nineteenth century and in the early years of this century.

The war did not introduce any change in the tendencies of either the birth-rates or the death-rates in these countries. But it did hasten the decline in the birth-rate in most of them, as can be seen in Table II.

TABLE II

DECLINE OF THE BIRTH-RATE IN CERTAIN COUNTRIES 1896–1905 TO 1908–13 AND ESTIMATED AND ACTUAL BIRTH-RATES 1923–27

Country	Birth-Rate in 1900 as an Average of the Birth-Rate 1896–1905	Birth-Rate in 1910 as an Average of the Birth-Rate 1908–13	Average Annual Decline of the Birth-Rate 1900–1910	Estimated Birth-Rate in 1923–27	Actual Birth-Rate in 1923–27
Germany	35.2	29.5	.57	21.0	19.9
France	21.8	19.5	.23	16.1	18.7
England and Wales	28.6	24.9	.37	19.4	18.3
Italy	33.2	32.4	.08	31.2	27.3
Sweden	26.4	24.4	.20	21.4	17.8
Australia	27.0	27.3	+.03*	27.7	22.7

* Increase.

Of the six countries given here France is the only one in which the birth-rate is higher today than one would have expected if he had estimated it for 1923–27 from data available at the outbreak of the war, on the assumption that the downward tendency would continue at the same absolute rate as it had shown from the beginning of the century to 1913. Of course, one cannot say that the war was the causal factor in increasing the absolute decline in the birth-rate which has taken place in the last fifteen years, but certainly it may be regarded as a turning point of very great significance.

Furthermore, in the Group A countries engaged in, or greatly affected by, the war there was no compensation for the deaths suffered in and the lack of births resulting from the war, such as is commonly supposed to take place. The average birth-rate for the years 1920–23, the years of highest birth-rates following the war, was lower in every case, except in France and Holland, than the average for pre-war years. Not only did this compensation fail of achievement, but, after this brief period of a fairly high

birth-rate, the decline became more marked than ever in almost all of these countries. It became so rapid that it overhauled the death-rate and, for the first time since vital statistics became fairly reliable, the rate of natural increase began to decline in practically all of these countries.[1] The net result of these recent movements in Group A countries is that the rate of natural increase is far less than it was in 1908–13. In England and Wales in 1927 it was only 40.7 per cent of what it was in 1908–13, in Germany only 48.7 per cent, in Australia only 73.9 per cent, in New Zealand only 69.1 per cent, in Sweden only 49.0 per cent, and in France, though it is a trifle higher, it is so low absolutely that it is negligible. Clearly the Group A countries have entered upon a new era in their population growth which is worthy of the most careful consideration.

Dublin and Lotka have shown that, with the specific birth-rates and death-rates of 1920, our own rate of natural increase was really only 5.47 instead of 10.99 as the crude rate indicated.[2] This comes about by reason of the changes which are taking place in the age constitution of our population as a consequence of our declining birth-rate. Since the same sort of change is taking place in all the countries in Group A, it may be worth our while to pause for a moment to notice the effects of a declining birth-rate upon the age constitution.

In Table III, we have given the proportion of the population in certain age groups at different periods for several countries. The general tendency of Group A countries is to have fewer children (0–19), fewer reproductive adults (20–39), and more in middle life and over (40 and above), as time goes on. For France[3] and

[1] In several countries the birth-rate had declined faster than the death-rate at a somewhat earlier period. In France there is clear evidence that this happened at about twenty year intervals during the nineteenth century, 1830, 1850, 1870, and 1890. In this country the marked changes in increase of population shown in the censuses of 1870 and 1900 undoubtedly reflect a marked decline in the birth-rate without a similar decline in the death-rate.

[2] L. I. Dublin and A. J. Lotka, "On the True Rate of Natural Increase," *Journal of the American Statistical Association,* September, 1925, pp. 305–39.

[3] Alfred Sauvy, "La Population française jusqu'en 1956," *Journal de la Société de Statistique de Paris,* December, 1928, pp. 321–27.

the United States[4] in addition to current data, we have estimates for a considerable period in the future. They show clearly the inevitable result of the tendencies now at work in all of these Group A

TABLE III

SHOWING AGE GROUPS IN VARIOUS COUNTRIES AT DIFFERENT TIMES

COUNTRY and DATE	PROPORTION OF TOTAL POPULATION IN GIVEN AGE GROUPS AT SPECIFIED DATES			
	0–19	20–39	40–59	60 and over
England and Wales:				
1901	42.40	32.35	17.85	7.40
1911	39.89	32.56	19.52	8.04
1921	36.9	30.7	22.8	9.6
Germany:				
1900	44.23	30.10	17.86	7.80
1910	43.73	30.28	18.11	7.88
1925	36.2	32.5	22.1	9.2
France:				
1901	34.62	30.33	22.59	12.45
1911	33.89	30.50	23.04	12.57
1921	31.2	29.7	25.3	13.8
1956*	29.1	28.3	26.7	15.9
Sweden:				
1900	41.89	27.12	19.07	11.92
1910	40.99	28.07	18.98	11.95
1920	38.8	29.5	19.5	12.2
United States:				
1900	44.3	32.1	16.9	6.4
1920	40.7	32.4	19.4	7.4
1975*	30.9	30.6	21.9	16.6
Australia:				
1901	45.1	32.7	15.7	6.2
1911	41.7	32.7	18.7	6.4
1921	40.2	32.1	19.9	7.4
Spain:				
1900	43.6	29.4	19.5	7.3
1920	43.9	28.7	19.1	7.9
Italy:				
1901	43.45	27.26	19.60	9.69
1911	43.17	27.32	19.01	10.15

* Estimated.

countries. It is just because of these changes in the proportions of people in the various age groups, approximately one-half of whom are women, that Dublin and Lotka find that the true birth-rate in

[4] Estimated from data prepared by my colleague, P. K. Whelpton, in working out his estimates of our future population, *American Journal of Sociology*, September, 1928, pp. 253–73.

1920 was 20.9 instead of 23.4. It will, of course, still further decline as the proportion of women 20–39 becomes still smaller, even though every woman on the average bears as many children as at present.

Likewise the death-rate will increase as the proportion of the population over forty years of age increases. This statement needs little proof, for it is quite obvious that a population like Australia's in 1921, having only 27.3 per cent of its population over forty, will have a lower death-rate than France, which had 39.1 per cent of its population in this group. It may, however, be worth while to give some concrete examples of what these changes in age constitution means in terms of deaths.

The death-rates of 1921 for England and Wales show that approximately 15,200 children out of each 100,000 born will die before they reach twenty years of age. The wastage between birth and twenty years is then 15.2 per cent. In the next age group, 20–39, the wastage is only 8.3 per cent, in the third group, 40–59, it is 20.3 per cent, and in the first twenty years of the next group, i.e., 60–79, it is 69.9 per cent. Between 80 and 100 the wastage is approximately 100 per cent. Now it is easy to see that if we apply these wastage rates to 1,000,000 people divided into age groups as in England and Wales in 1901 and 1921, we shall get quite different results. Up to the eightieth year of age the total wastage would be greater in the 1921 population by about 8.7 per cent, owing entirely to differences in age constitution. If, instead of comparing the population of England and Wales in 1901 and 1921, we were to compare the population in England and Wales in 1921 with that in France in 1956 or in the United States in 1975, it is evident that the wastage would be very much greater in these latter populations.

In adjusting the age groups in the United States to the specific birth-rates and death-rates of 1920, i.e., by stabilizing our population with these rates, Dublin and Lotka found that a death-rate of 15.4 would result. It would be still higher in a population distributed as ours is likely to be in 1975, unless in the meantime considerably greater improvements in health take place than we now have reason to anticipate.

Even France, in which the stabilization of age groups to a low birth-rate has already been largely achieved, will suffer still further decline in its birth-rate and rise in its death-rate from future changes. These will not be as great as those that will be experienced by most of the other countries in Group A, but they will be sufficient to create a considerable deficit in births after 1935, as M. Alfred Sauvy has shown.[5] Indeed, in 1945, with present specific birth-rates and death-rates there will be 102,000 fewer

TABLE IV

SHOWING DECLINE IN FECUNDITY OF MARRIED WOMEN 1910–11 TO 1924, ALSO NUMBER OF CHILDREN SURVIVING THE FIRST YEAR OF LIFE PER 1,000 WOMEN

COUNTRY	LIVING BORN LEGITIMATE CHILDREN PER 1,000 MARRIED WOMEN AGED 15–45			INFANTS LIVING TO ONE YEAR OF AGE PER 1,000 WOMEN AGED 15–45, 1924–25
	1910–11	1924	Per Cent of Increase (+) and of Decrease (−) 1910–11 to 1924	
England	199	148	−26.6	70
Germany	277	146	−35.6	71
France	134	141	+ 5.2	74
Denmark	226	181	−19.9	76
Belgium	187	160	−14.4	77
Switzerland	220	175	−20.4	72
The Netherlands	269	239	−11.1	109
Italy	265	250	− 5.7	110
Spain	249	248	0.0	115

births than deaths in France. This will become somewhat less as the small group of females born during the war passes out of the more prolific ages, but by 1955 the birth-rate will be 17.0 and the death-rate 19.1 and the deficiency of births will amount to about 80,000.

It may be said that the condition in France is fairly well known and that it constitutes an exception among these Group A nations. This is not the case, however, as Table IV clearly shows.[6] There has been a very marked decrease in the legitimate birth-rate in

[5] Alfred Sauvy, *op. cit.*

[6] The data in this table were taken from Henri Bunle, "Chronique de Demographie," *Journal de la Société de Statistique de Paris*, November, 1928, p. 310. He gives credit there to *Wirtschaft und Statistik* (April, 1928), p. 300.

practically all of these countries, save France. It varies from about 11.0 per cent in Holland to nearly 36.0 per cent in Germany. But the most significant fact shown here is that the number of children surviving to one year of age per 1,000 women aged 15–45 is even lower in some of these countries than in France and is notably higher only in Holland. (Spain and Italy do not belong in Group A.) There cannot be the least doubt that such a survival rate as shown here indicates a close approach to the time when all of these countries will have fewer births than deaths.

The countries settled by these northwestern Europeans have not proceeded as far in the direction of a stationary or a declining population as the mother-countries, but they are well launched on the same course. This has been clearly shown for the United States by the work of Dublin and Lotka already referred to. In order to see how Australia stood in this matter, we have applied Dublin's formula to its vital statistics with the result that its crude rate of natural increase is shown to be just twice as great as its true rate. There is every reason to believe that this same situation prevails in practically every country where there has been a rather rapid decline in the crude birth-rate during the last twenty-five to fifty years.

We may, then, very briefly sum up the situation in these Group A countries by saying that, since the last quarter of the nineteenth century, they have passed from the state of having a very high rate of natural increase into the state where they have quite low rates of increase and will shortly become stationary and start to decline in numbers.[7] In this part of the world a new era in population movements has begun which cannot but exert a profound influence upon the future of mankind. We shall undertake to point out the significance of this change after we have discussed the growth of population in Groups B and C.

In Group B, we have placed those countries where there is clear evidence of a decline in both birth-rate and death-rate but where it appears probable that the death-rate will decline as rapidly or even more rapidly than the birth-rate for some time yet.

[7] In this whole discussion we have assumed that there was no immigration into this group from other groups.

The condition in these Group B countries today is much the same as existed in the Group A countries thirty to fifty years ago.

Spain and Italy together have birth-rates and death-rates about the same as those in England and Wales thirty-five or forty years ago, but, since they have about twice as many people, they are of course adding to their numbers at about twice the rate of England at that time. The Slavic countries of Group B have higher rates than Spain and Italy. They have approximately the same birth-rates that prevailed in Germany forty years ago, but, since they have lower death-rates, they are increasing more rapidly than ever Germany did. Besides they have about twice the population of Germany in 1880, hence they are expanding more than twice as fast as Germany ever did. As a whole, then, this part of Europe is adding to its numbers at a rate never equaled on the continent by Group A peoples. These Group B peoples have also entered upon a new era of growth, but it is quite a different era from that of the Group A countries. The rate of natural increase will now average twelve or a little over for these Group B peoples as a whole. At this rate they will double in numbers in about fifty-eight to sixty years. Since there were about 157 millions of them in 1920, we can readily appreciate some of the territorial difficulties that are likely to arise in this part of the world within the next two generations.

It will, of course, be said that the birth-rate is likely to decline faster in these countries than it did in the Group A countries because the greater ease of communication makes the spread of contraceptive knowledge easier than it has been in the past. This may be true, but we should notice in this connection that these Group B countries are more rural today than the Group A countries were forty years ago. This is a fact of prime importance because everywhere in the Group A countries rural populations show a greater resistance to the spread of birth-control than the city populations, and there is no reason to believe that the same will not be true in Group B countries. As evidence that this is the case we may cite some birth-rates and death-rates in Hungary and Poland in 1927. In Hungary in the cities of over 10,000 the birth-rate was 23.4 and the death-rate 18.2, leaving a natural increase of 5.2. In the rural

districts the rates were 27.9, 16.4, and 11.5 respectively.[8] The increase is more than twice as great in the rural districts as in the cities. In Poland apparently the same situation exists, for in cities of over 100,000 the birth-rate in 1927 was 20.8 while in the country as a whole it was 31.6. Clearly there is the same lag in the adoption of birth-control among the rural people in these B countries as there was in the A countries.

The rapidity with which the birth-rate will fall in these B countries appears, then, to depend on the speed with which their industrialization takes place. That industry is growing in them is well known, but we may be permitted to doubt whether their urbanization will proceed as rapidly as did that of Germany after the Franco-Prussian War.

It should also be noted that the data relating to Spain and Italy in Table III show that the decline in the birth-rate, being altogether offset by the decline in the death-rate, has not yet produced any appreciable change in their age groups. If the decline in the birth-rate continues, as it undoubtedly will, it will affect the age groups in these countries in the same way as in the A countries, but it will take three or four decades for this to manifest itself in any rapid decline of the rate of natural increase from this cause.

The differences in the legitimate birth-rates between Spain and Italy and the A countries shown in Table IV are also clear proof that the former are in quite a different stage of their population growth than the latter, and that the rest of the B countries resemble Spain and Italy far more than they do the A countries can admit of no doubt. These B countries are entering upon a period of growth such as has never been manifested by any population of like size, 157 millions (1920–21), in the history of the world. The population of the A countries in Europe forty years ago was just about what that of these B countries is now, but France even then had almost no natural increase, so that in point of fact the population from which growth is taking place today in the B countries is considerably greater than that of the A countries in Europe in their

[8] Emile Horn, "Annuaire Statistique de la Hongrie," *Journal de la Société de Statistique de Paris,* December, 1928, p. 328.

heyday of growth. This fact should be borne in mind, for it has great significance, as we shall see later.

It may well be questioned whether the three countries for which we have vital statistics in Group C should not rather be placed with Group B than with the countries for which there are no data. The reason for placing Russia, Japan, and India in another group is that we do not yet have any clear evidence in their vital statistics that the birth-rates or death-rates are declining in any considerable part of their populations. We do know, however, that in certain sections of the population the birth-rate is declining and we know from their present numbers that their present rates of growth cannot have prevailed for any great length of time. Hence, we can be reasonably certain that there has been some release of pressure on resources in rather recent years. But when these C countries are compared with A and B countries, we are fully justified in assuming that in the former neither births or deaths have come under voluntary control to anything like the same extent that they have in the latter.

As a consequence of this relative lack of voluntary control over births and deaths, it appears that the growth of these Group C peoples, who constitute about 70 to 75 per cent of the population of the world, will, in the near future, be determined largely by the opportunities they have to increase their means of subsistence. Malthus described their processes of growth quite accurately when he said "that population does invariably increase, where there are means of subsistence . . . . ." The differences in the means of subsistence are undoubtedly at the base of the differences in the rates of growth of the three countries for which data are given. India has a relatively small rate of increase, Japan has a much higher rate, and, of late, Russia has shown one of the highest rates ever known. Can anyone doubt that the chance to increase the means of subsistence is least in India, that it has increased considerably in Japan with the growth of industrialism, and that it is very great in Russia both because of the new lands available for settlement and because of the possibilities of industrial development.

For the immediate future, then, we may expect that population will increase in these C countries in inverse ratio to the severity of

the positive checks, hunger, disease, war, and any customs calculated to enhance the death-rate.

In order to get any very clear idea of the way in which this 1,250 millions or more of men are likely to grow in the near future, it would be necessary to study the possibilities of increasing the means of subsistence in each group of any importance. Manifestly we could not do this here even if we were competent. But we will take time to call attention to some of the more important facts operative in determining the population growth of the three countries for which we have given birth-rates and death-rates.

Japan is a small, poor country that through modernization of its industry and some improvement in its agriculture has brought about some release of the positive checks (this seems clear even though we cannot prove this from the recorded death-rates) and now has a very great power of expansion. At the rate of natural increase it had in 1926, it would have an excess of births of about 930,000 annually. It is no wonder that Japanese statesmen feel that they must keep their economic footing in Manchuria. They have no adequate colonies and their mineral resources are too small to support any very great further increase in industry. Japan is coming to the end of the relief from positive checks which she found in modernizing and expanding her industries at home. That the Japanese are coming to realize this is indicated by the differential birth-rate of cities and rural destricts in Japan.

The cities of Japan having over 50,000 inhabitants had a birth-rate of 27.87 in 1922, while the smaller cities, those having less than 50,000, had a birth-rate of 29.18. The birth-rate for the entire country (including cities) was 34.16. Since about 55 per cent of the entire population was in these cities, it is clear that something is acting to reduce the birth-rate in the industrial communities. Whether it is postponement of marriage, birth-control, or some distinctive trait of social organization in Japan, we cannot say positively, but the Japanese advocates of birth-control are disposed to attribute this difference largely to birth-control. If this is the case and if the fact that Japanese birth-rates do not show any clear downward trend is due largely to better registration of births, then Japan belongs with the B countries rather than with

the C group. But even if this is the case, there appears to be no reason to doubt that Japan's population will for some time to come expand as rapidly as new means of subsistence are opened to it.

India has done but little in developing modern industry and the possibilities of agricultural expansion have been small. Hence the population has not been given the relief from pressure on subsistence that it has enjoyed for a decade or two in Japan, and its growth has been relatively slow. Both birth-rates and death-rates in India appear to fluctuate rather violently, which is, perhaps, the best proof that the positive checks, hunger and disease particularly, are very active in India. Since this is clearly the case, the growth of India's population within its present boundaries can be pretty clearly foretold. It will grow but slowly, and from time to time the increase of population arising from temporary release of pressure will be wiped out by famines or by epidemics, like the influenza of 1918–19, which probably killed not less than ten millions.

Russia, on the other hand, in contrast to both Japan and India, is enjoying a period of relief from population pressure which only abundant new lands with great resources can give to a people. At its present rate of increase, it will add about three millions yearly to its numbers and will double in approximately thirty-five years. Russia's expansion during the remainder of this century bids fair to rival our own expansion from the adoption of the constitution to the Civil War. But, starting with a population thirty-five to forty times as great as ours, Russia may very well rival China and India in numbers by the year 2000.

Of course birth-control is abroad in the world and we cannot tell how soon it will begin to operate rather widely in Russia. It is reported that the Soviet government, unlike many governments, is not hostile to its practice. But a birth-rate of 43.4 in 1927 does not indicate that it is being very extensively practiced there, although in the Ukraine where the birth-rate is 31.5, in Leningrad where it is also 31.5, and in Moscow where it is 33.4, it appears that birth-control is gaining a foothold. But even so there is very good reason to believe that the growth of Russia during the next three or four decades will be one of the outstanding events of the

modern world. Russia is the one nation in the world today whose population appears to have great expansive power, that also possesses the territory to satisfy this expansive impulse.

With this very brief and sketchy outline of world population movements before us, we shall point out what seems to us to be the most important problem arising out of these new movements in world-population growth.

Accepting an estimate of approximately 1,730 millions as the population of the world in 1920,[9] the numbers and proportions in the three groups of peoples into which we have divided the world's population is shown in Table V.

TABLE V

NUMBERS AND PERCENTAGE OF THE POPULATION OF THE WORLD IN CERTAIN GROUPS (IN MILLIONS) ABOUT 1920

	Number	Per Cent
The world	1,730	100
Group A	320	18.5
Group B	157	9.0
Group C	1,253	72.5

The Group A people may be divided into two sub-groups, (1) those living in Europe and (2) those living elsewhere. In the former group there are about 189 millions and in the latter about 131 millions. We have shown that the European part of this group is very rapidly approaching the stage of no increase and that this will soon be followed by its actual decline in numbers. The extra-European part of this group is still increasing considerably but not nearly as rapidly as formerly and within a decade or two it will, no doubt, be in the same position as the European part today. In other words, Group A has practically ceased to be an expanding group.

On the other hand, Group B is just entering on its heyday of expansion, as are also some of the peoples in Group C, notably Russia and Japan. Now, Group B with Russia and Japan have a population of about 360 millions, or 12.5 per cent greater than

[9] This is less by about one hundred millions than many estimates because we do not believe that China's population is more than about 330 millions instead of the 436 millions often attributed to it.

Group A. But, except for Russia, none of these growing peoples has any territory into which it can freely expand, while some of the Group A peoples, particularly Great Britain, France, Holland, and Australia hold enormous land areas which they cannot settle and at present will allow no one else to settle. Here we have in its crudest form the most urgent population problem of the near future. Peoples who have ceased to expand in numbers (France) or almost ceased to expand (Great Britain and Australia) are now holding great areas of unused lands, while the peoples who are just coming into their great period of expansion are confined to rather narrow territories that in some cases are also almost destitute of mineral resources.

Furthermore, in a little time we may see the Chinese and the Indians added to the peoples who now feel the impulse to expand. This would mean that, in the expanding group needing larger resources, we would have over 1,000 millions of people. These peoples are almost certain to feel that they are being badly used if they are not allowed to expand into the unused lands held by the peoples in Group A. Is it probable that the peoples in Groups B and C will sit quietly by and starve while the Group A peoples enjoy the lion's share of the good things of the earth? We shall not try to answer this question here. But we must not forget that the lands these thousand millions of people will want are actually being held largely by the British, the French, and the Dutch, and that together these three peoples number only a little over a hundred millions. The redistribution of the lands of the earth is the problem of problems that we must face in the world today as a consequence of the new population movements that are now taking place. Can it be effected peaceably or must it be achieved by war?