

SIGNIFICANCE OF POPULATION TRENDS TO AMERICAN AGRICULTURE¹

by O. E. BAKER²

☞ THE decline of the birth rate to continuously lower levels is no longer of merely academic concern. Monetary rewards to large families, penalties against the unmarried and childless, fiat against abortion, and appeals to patriotic duty are being tried by more than one European state in a frantic effort to stem the downward trend of the birth rate. Whatever may be the implication of declining fertility in this country, it is generally agreed that fundamental readjustment must be made at least in our commercial structure, which has been geared to the expectation of increasing population. In the present article Dr. Baker expresses a genuine concern over the possible repercussions of the dwindling birth rate on agricultural problems. Other approaches to the problems presented in this paper will be developed in an early issue of the *Quarterly* by Dr. Frank Lorimer, secretary of the Population Association of America.—THE EDITORS.

THE prospect of the early approach of a stationary and later probably declining population in the United States and in northwestern Europe profoundly alters, in my opinion, the long-time outlook for agriculture in the United States. Until recently the farmers have enjoyed a rapidly expanding market for farm products. Prior to the Civil War the population of the nation, and doubtless its consumption of farm products, increased a third each ten years. After the Civil War the rate of increase lessened, until during the World War decade, and the decade of urban prosperity that followed, the increase of population was less than one-sixth each ten years. But exports to Europe were heavy during much of this period, particularly at the beginning of the Century and for a few years following the World War. During the decade we are in, 1930 to 1940, population, almost certainly, will increase not over one-twelfth; and during the decade 1940 to 1950, the increase

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probably will be not over one-twenty-fourth. About 1950, perhaps before, births appear likely to balance deaths; and, unless the restrictions on immigration are relaxed, the crest of the nation's population will be reached. For a few years the population may then be expected to remain almost stationary and later decline, because there are not enough children being born in the nation to maintain its population permanently stationary. The decline should be gentle at first, and accelerate gradually. For a quarter-century the prospect is for an almost stationary population.

A stationary population is probably the most desirable condition, for one reason because a larger proportion of the population is in the productive age groups—20 to 60 or 15 to 65 years of age—than in an increasing or decreasing population. Other factors remaining equal, production and standard of living should be higher. But a declining population, particularly if the decline be rapid, will have serious economic and social consequences, in my opinion—perhaps political consequences also. And if present trends in birth rates continue the decline in population will be rapid a few decades hence.

WILL BIRTHS CONTINUE TO DECLINE?

The weight of evidence, it seems to me, favors a continued decline in births for at least two decades at a rate not much less than during the last decade.

1. In Great Britain, a nation where economic conditions and social ideals and institutions are similar to ours, the number of births started to decline in 1909, which is about sixteen years earlier than in the United States, and the decline continues. (*See Figure 1.*) The Registrar General's report for the first three months of 1936 indicates that deaths exceeded births in Great Britain—for the first time since vital statistics have been collected (excluding war deaths)—but during the second quarter of 1936 births again exceeded deaths. The population of Great Britain is near the crest.

In Germany the decline in births started also in 1909, but in 1934 births increased, and a rate of about 18 per thousand population has

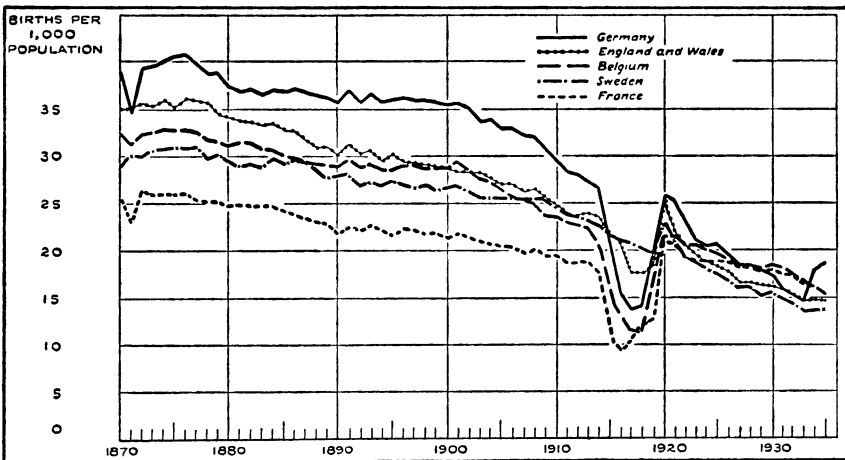
been maintained for two years. Professor Whelpton concludes, I believe correctly, that this increase is attributable mostly to reduction in abortions. How long this birth rate in Germany will be maintained is uncertain.

2. There is a vast number of persons in the lower income groups in the cities of the United States, and probably an even greater number in the rural regions, in which the birth rate is still relatively high. (See Figure 2.) I expect the birth rate will decline for many years among these peoples, as the influence of the philosophy and example of the middle classes in the cities spreads downward and outward.

3. Most of the youth of the nation, so far as I can judge, are not interested in raising a good-sized family. Few children or none is an advantage to the individual from the standpoint of standard of living, particularly in the cities, and unless there is loyalty to a cause the immediate interests of the individual tend to dominate his decisions.

4. The birth rate in the cities is much lower than in rural areas

Fig. 1. Annual number of births per 1,000 population in five countries of north-western Europe, 1870-1935.¹

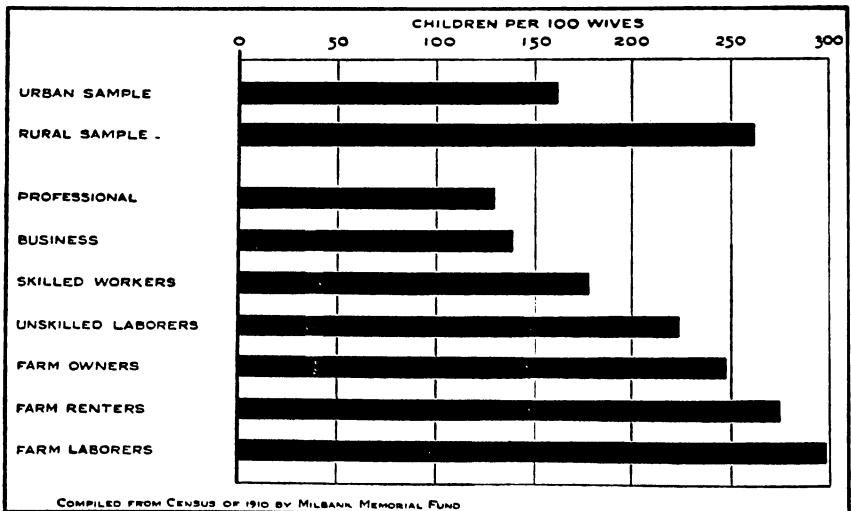


¹ Birth rates are declining in northwestern Europe, which has hitherto provided the principal market for American farm products. The marked decrease in these countries in the years of the World War was merely a dislocation in an otherwise steadily declining trend. This tendency is occurring wherever industrialism and urbanization are important. In Great Britain, for example, the population seems likely to reach a maximum about 1940 and a few years later will begin to decline. The decline will be slow at first but probably will accelerate with the passage of time. Since ten adults are rearing only about seven children, Great Britain in a century may have only one-third of the present population, unless the birth rate rises or there is immigration from abroad.

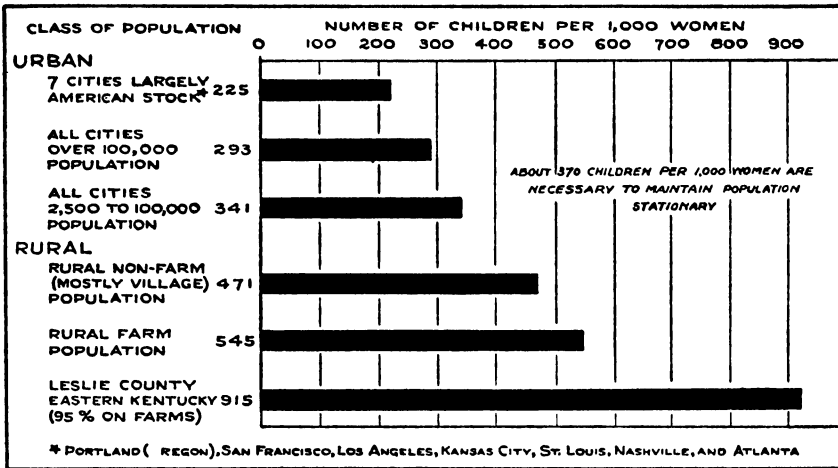
(Figure 3), and the cities are likely to include an increasing proportion of the nation's youth and young married people, because of progress in agricultural technique and migration from farms, at least until the next depression. Even during the depression years 1930-1934 it appears that the net movement from farms was about 600,000, mostly youth. Only in 1932 did the movement to farms exceed that from farms.

5. The crest in the wave of births was during the years 1921-1924. (See Figure 4.) In 1921 nearly 3,000,000 children were born; in 1934, also in 1935, about 2,300,000. For about fifteen years, therefore, the number of women of ages during which most children are born will continue to increase. The birth rate, as measured by the ratio of children under five years of age to women of child-bearing age, has been declining for a century (Figure 5); but until 1921 the increasing number of potential mothers more than counterbalanced this declining birth rate. After about 1950 there will be a decreasing number of potential mothers. The declining number of such women will supplement the decline in births—both factors will work in the same direction.

Fig 2. Children born per 100 wives under 45, for social classes in selected northern and western cities and rural areas of the United States in 1910.¹



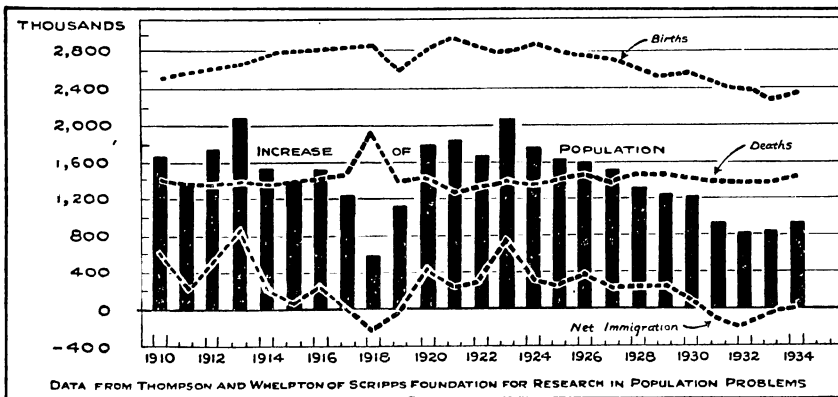
¹ Standardized for age. For data upon which the above chart is based, see: Sydenstricker, E. and Notestein, F. W.: Differential Fertility According to Social Class. *Journal of the American Statistical Association*, March, 1930, pp. 9-32. Tabulations from the 1900 Census returns and recent data from various private sources show essentially similar results.



¹ About 370 children under five years of age per 1,000 women fifteen to forty-four years of age, inclusive, are required to maintain population stationary at the 1930 expectation of life in the United States. In 1930 the seven cities largely of American stock, represented in the top bar, lacked, therefore, nearly 40 per cent of having enough children to maintain their population permanently stationary without accessions from outside, and all cities of over 100,000 population had a deficit of over 20 per cent, while the smaller cities had a deficit of about 8 per cent. On the other hand, the rural non-farm (mostly village and suburban) population had a surplus of 27 per cent, and the farm population a surplus of nearly 50 per cent. In 1930 urban deficit and rural surplus about balanced. Since 1930 there has been a further decline in births of more than 10 per cent in the nation as a whole.

Fig. 3. Number of children under five years of age per 1,000 women of child-bearing age in urban and rural populations of the United States, 1930.¹

Fig. 4. The annual increase of population of the United States, births, deaths, and net immigration, 1910-1934.¹



¹ Fifteen years ago the population of the United States was increasing about 1,800,000 a year. Now the increase is only 800,000. A stationary population is approaching rapidly, but it appears to be ten years off or longer. The number of births has been trending downward since 1921. There is now about 11 per cent fewer children under ten years of age than when the census was taken six years ago. The number of deaths remains almost stationary but must increase soon, because of the rapid increase in old people. There was 34 per cent more people over sixty-five years of age in the nation in 1930 than in 1920, and another increase of one-third is inevitable between 1930 and 1940.

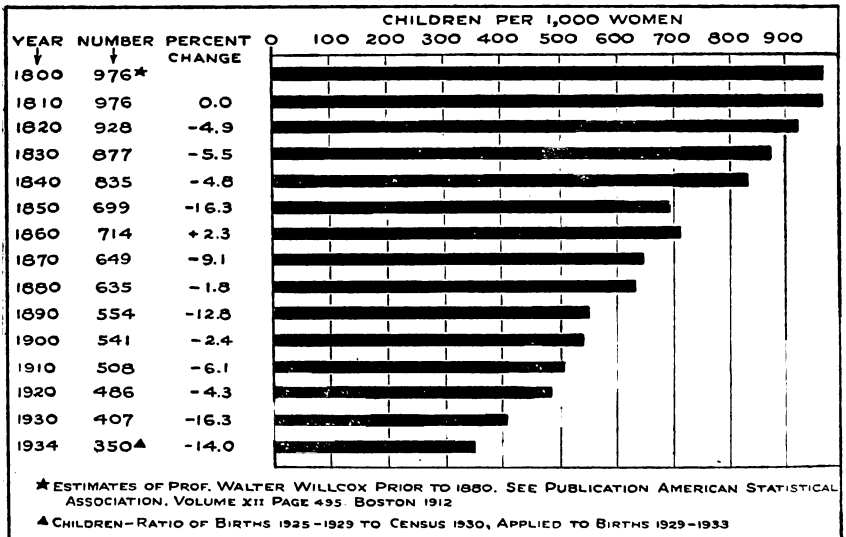
For these and other reasons I expect the decline in births, unless there is a great change in the ideals of the people, particularly of the city people, will persist for at least several decades.

SOME IMPLICATIONS OF THE DECLINE IN BIRTHS

This brings us to the second question—what effects will the decline in births and later in population, have upon agriculture?

First let us consider a development about which there can be no difference of opinion—a decline in births involves first a decline in number of children, later a decline in youth and the middle-aged, and, finally, a decline in old people, provided immigration from abroad is immaterial. Today we are in the first stage of the process, which is characterized by a decline in children and an increase in middle-aged and old people. There is about 11 per cent fewer children under 10 years of age than there was six and one-half

Fig. 5. Number of children under five years of age per 1,000 women of child-bearing age, United States, 1800-1930, and estimate for 1934.¹



¹ The birth rate, as measured by the ratio of children under five to women sixteen to forty-four years of age, inclusive, has been decreasing in the United States for more than a century. But from 1920 to 1930 the decline was over twice as rapid as in previous decades, except those ending in 1850, 1870, and 1890, when, it is evident, there was an abnormal underenumeration of young children. And from 1930 to 1934 the decline was almost as great as in any previous decade. The significant fact shown by the graph is that the declining birth rate is a long-time trend, and that the rate of decline has become more rapid in recent years.

years ago, when the census was taken; and about 17 per cent more people over 65 years of age. Inevitably there will be twice as many old people in the nation twenty-five to thirty years hence as at present, and nearly three times as many fifty years hence. They are living now and the number reaching these ages can be estimated within probably 5 per cent of error by using life tables. But during the next fifteen years there will be a great increase in number of families in the nation, as the children born during the crest in the wave of births from 1921 to 1924 reach the age to marry. Millions of additional houses will be needed during the next decade or two.

But the decline in children is probably affecting already the demand for certain agricultural products. Four urban studies indicate that children consume 50 to 100 per cent more milk per capita than adults.³ If this be the case, the consumption of milk is already being affected by the change in age composition of the population. On the other hand, if adults consume more cereals and meat than children, as appears probable, the demand for these foods may continue to increase after the population of the nation begins to decline. But, speaking broadly, a decline in population will soon be followed, very likely, by a decline in consumption of farm products—for consumption per capita of the foods and fibres, in the aggregate, has not varied more than a few per cent for a third of a century at least, and the trend, if not horizontal, is slightly downward. (See Figure 6.)

A second consequence of a declining national population, provided the difference between urban and rural birth rates persists, will be a more rapid decline in urban than in rural population, un-

³ Howe, Charles B. and Warren, Waite C.: *The Consumption of Dairy Products in Seven Metropolitan Cities of New Jersey*. New Brunswick, New Jersey, October, 1932, pp. 68-84.

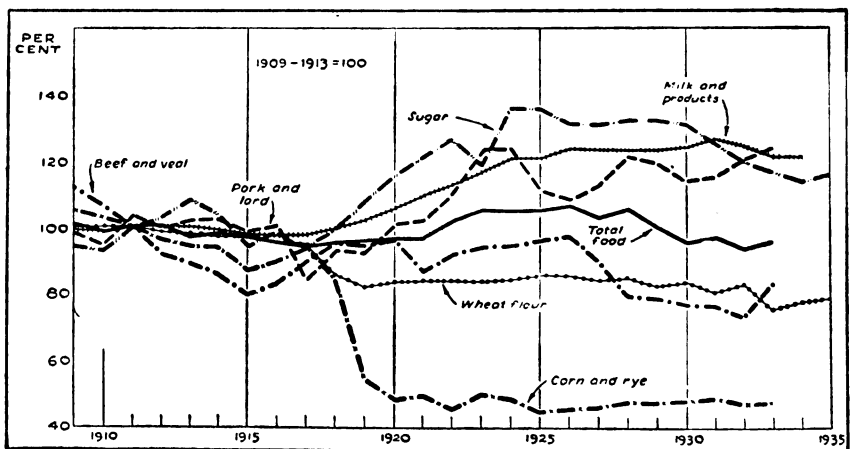
Cowden, T. K. and Sturges, Alexander: *The Consumption of Fluid Milk and other Dairy Products in Philadelphia, Pennsylvania*, June, 1934. Preliminary Report, Pennsylvania Agricultural Experiment Station, July, 1934, Technical Paper No. 659, pp. 19-20, 28-31.

Waugh, Frederick V.: *The Consumption of Milk and Dairy Products in Metropolitan Boston in December, 1930*. United States Bureau of Agricultural Economics, and Others, September, 1931, pp. 22-23.

less migration from rural to urban areas is accelerated. The great uncertainty in the population prospect is not the total number of people in the nation, but their residence—whether increasingly rural or urban.

Now it is obvious that if the number of people associated with agriculture increases while the number not so associated soon becomes stationary and later declines, and per capita consumption remains stationary, a less commercial agriculture is inevitable, provided exports of farm products do not increase greatly. The outlook for any great increase in exports, except of cotton, tobacco, and fruit, is not bright. The population of most European countries which formerly received most of our exports of food-stuffs is almost stationary, and probably will soon decline. Meanwhile, the governments of these countries must protect the farmers, for they provide not only the food needed by the urban people, but also more than their share of the soldiers in war and citizens in peace.

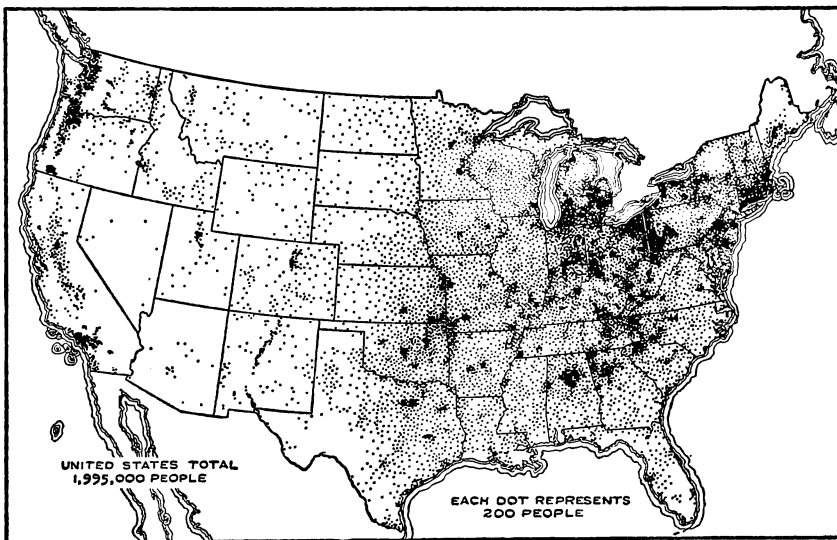
Fig. 6. Changes in consumption of specified food products per person in the United States since 1909.¹



¹ The need for farm land may be greatly affected by the diet of the people. Notable changes occurred during and after the World War. The per capita consumption of corn for human food apparently dropped one-half between 1911 and 1920, and of wheat about one-sixth, mostly between 1917 and 1918; while the per capita consumption of sugar increased a third between 1918 and 1924, and of pork and lard about a fourth between 1919 and 1923. The curve for beef and veal shows a cycle seventeen years in length, with a slightly downward trend, but the per capita consumption of milk and dairy products has been well maintained. Combining all the foods, it appears that there has been a slight downward trend since 1928. The meat and milk estimates are preliminary and subject to correction.

We had a foretaste of the consequences of an increasing farm population during the depression. In January, 1935, when the Agricultural Census was taken there were enumerated 2,000,000 survivors of the "back-to-the-land" movement—people living on farms who were not living on farms five years before. (See Figure 7.) And about 2,000,000 more people, mostly farm youth, were backed up on farms, who, under predepression conditions, would have migrated to the cities. Five hundred thousand new farms were established between 1930 and 1935 according to the census, and most of these farms were located in areas of poor soils and cheap land, also generally of high birth rates, notably in the Southern Appalachians. (See Figure 8.) Probably half of these farms might be designated as "submarginal." In several counties of eastern Kentucky the increase

Fig. 7. Geographic distribution of people living on farms January 1, 1935, who were not living on farms five years before (children under five excluded).¹

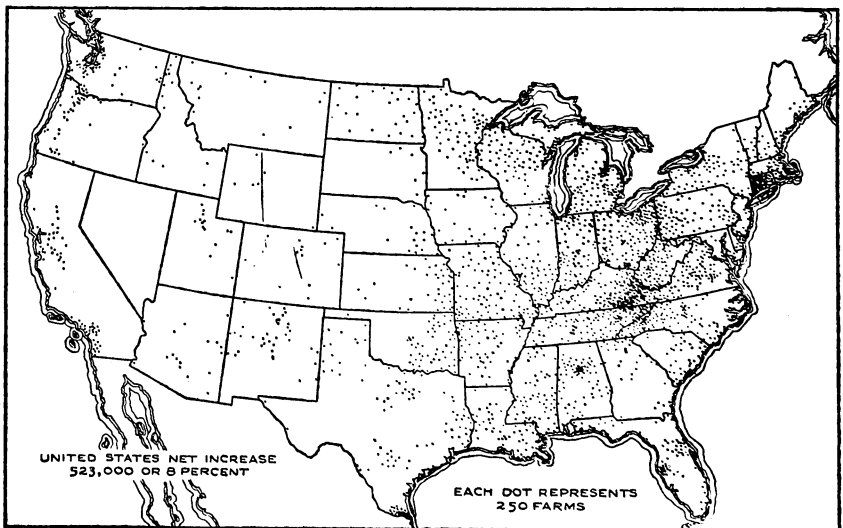


¹ The location of the people living on farms in 1935 who were not living on farms five years before is similar to that of the increase in number of farms (Figure 8). But the density of this "back-to-the-land" population is greater in the manufacturing belt of western Pennsylvania, eastern Ohio, and southern Michigan, also around Philadelphia, on the Piedmont of the Carolinas and Georgia, around many cities in the central West and Southwest, and in the Pacific Coast States. It is significant that the number of these people who were not living on farms five years before exceeded the increase in the farm population in most of the Corn Belt and of the Great Plains region, also in New York, in all of the Cotton Belt states, except Arkansas, and in the Pacific Coast states. Apparently the migration from farms in these states during the depression exceeded the natural increase in the farm population.

in number of farms exceeded 50 per cent in the five years and from one-third to two-thirds of all the families in the counties were on relief in 1934. A large increase in farms occurred also around most cities, particularly the industrial cities.

I anticipate that a rapidly declining national population will be accompanied by many of the characteristics of an economic depression, including population pressure on the poorer lands. The commercial demand for most foodstuffs will decline, unemployment may increase, particularly of those past the prime of life; while the diminishing number of children and youth and increasing number of aged may induce a pessimistic attitude toward the future on the part of many people. The farmers of the United States during the next fifty years must make, in all likelihood, many adjustments in agricultural methods and manner of life, as a consequence of the low and persistently declining birth rate in

Fig. 8. Geographic distribution of increase in number of farms 1930-1935.¹



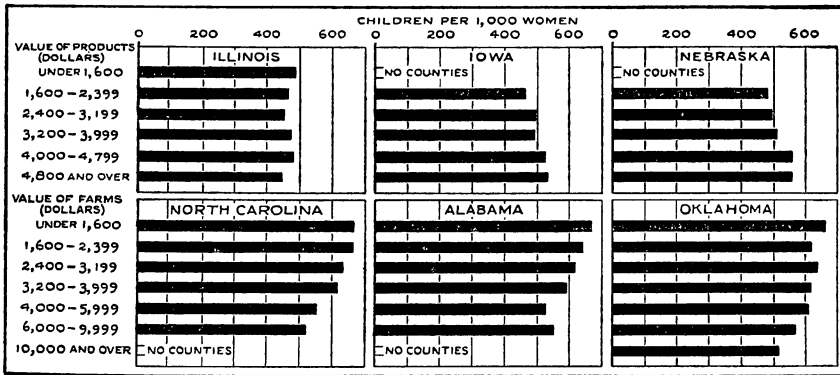
¹ This map indicates clearly that the increase in farms between 1930 and 1935 was relatively greatest, in general, in areas of poor soils or hilly surface. The Southern Appalachians, the cut-over lands of the upper Great Lakes region, the eroded Indian reservation lands of the Southwest, the stony cut-over lands of western Washington and northwestern Montana, are all areas of cheap land and more or less self-sufficing or part-time farming. By contrast, the percentage increases were small in areas of commercial agriculture such as the prairie portion of the Corn Belt, the wheat regions, and the Cotton Belt. In many counties of these areas a decrease occurred.

the cities. But, after all, the farmers' problems are no more difficult, perhaps not as difficult, as those that will face the people living in cities.

A third major consequence of a declining population relates to distribution of wealth. Since the decline in birth rates in the cities and in the farm population of the South, at least (Figures 3 and 9), is more rapid in the middle and upper classes than in the lower, measured by wealth, the tendency will be toward increasing concentration of wealth. Moreover, when parents have only one or two children, it is obvious that through inheritance wealth tends to concentrate. When such children marry, the wealth of two families may be concentrated into one family. This is, in my opinion, one of the major factors accounting for the concentration of wealth in the United States.

Fourthly, our economic system penalizes parenthood on the farms as well as in the cities, though perhaps in lesser degree. The farm youth not needed in agriculture, because of the progress in

Fig. 9. Number of children under five years of age per 1,000 women of child-bearing age in 1930 in rural-farm populations of specified areas according to value of farm products or value of farms in 1929.¹



¹ In the cities the birth rate, as measured by the number of children under five to women fifteen to forty-four years of age, inclusive, decreases rapidly with rise in economic and social status, except that a few families who have inherited wealth, and whose young people need not, therefore, economize in number of children, apparently have almost as many children as the poor. The general decrease in number of children with increase in wealth is, it would seem, true of the farm population in the Southern states also; but in at least two of the Corn Belt states there is an increase in the size of the family with increase in income. Like the established families of wealth in the cities, the families on the best farms of the Corn Belt seem likely to produce far more than their proportion of the nation's leaders in the future.

technique as well as the high birth rate, have migrated to the cities. About half the farm youth migrated during the decade 1920-1930, some 6,300,000 net. These youths not only were born, but also fed, clothed, and educated mostly at the expense of the farm people. If merely \$150 a year be allowed as the average cost of raising a child on the farms of the nation, and assuming that at fifteen years of age he or she is self-supporting or leaves the farm, it appears that the farming people contributed during that decade some \$14,000,000,000 in the youth supplied to the cities. Nor is this all—when the farmer and his wife die the estate is divided among the children. About one-sixth of the farmers died during that decade, and, apparently, some \$4,000,000,000 or \$5,000,000,000 was transferred to the cities as a result of the settlement of farm estates. In addition, the Bureau of Agricultural Economics estimates that some \$8,000,000,000 was paid to nonfarm people as interest on farm mortgage debt, and some \$10,000,000,000 as rent to nonfarm persons owning farm land. Much of both of these payments was doubtless the result of prior migration from farms. These items total about \$36,000,000,000, which is nearly one-third of the gross value of farm products during that decade. But if this migration had not occurred there would have been a notable increase in number of workers on farms and a notable decrease in production per worker—doubtless also in standard of living among the farming people.

The immediate economic interest among farming people is to reduce their birth rate. But if there be no surplus farm youth migrating to the cities, the population of many cities after a few years would decline rapidly. This would mean a declining market for farm products. Thus a spiral of cause and effect phenomena would be engendered, with a rapidly descending trend. The farmers of the nation face a dilemma as a result of urban people failing to reproduce the race.

Time does not permit the consideration of other implications in the population prospect of significance to agriculture. But I should

note before concluding that these consequences of a declining birth rate will develop slowly and silently—they will come not like a thief in the night, but rather like the progress of the seasons. There will be warm days and then cool days, as in autumn. Periods of economic prosperity and then of depression are likely to recur. During the periods of prosperity farm youth doubtless will migrate in large numbers to the cities, full of hope and strength and courage. Many of these youth will later inherit farms, which they will sell on mortgage or rent to tenants. Then during periods of depression others, less fortunate, will return to farms seeking shelter and sustenance with relatives and friends—older, broken in hope, and sometimes in health. Wealth will be transferred to the cities and poverty to the rural areas.

IN CONCLUSION

These developments can be retarded—but that they will be is uncertain—by the rapid decentralization of population, which will probably involve much decentralization of industry and commerce, by the spread of part-time farming, and by a revolution in the thought of the middle and upper classes relative to their responsibility for the reproduction of the race and the preservation of the family. In the farm population this revolution, it is hoped, will be reflected in a great increase in number of farms transmitted from generation to generation by inheritance.

However, the ultimate solution of this problem, which is none other than the preservation of civilization, will be found, in my opinion, in the gradual replacement of the spirit of selfishness, so prevalent in our present capitalistic system, and which is now having unexpected effects on the birth rate, by the spirit of sacrifice, so characteristic of the rural family. The great need, it seems to me, is loyalty to an ideal. There are many worthy ideals—loyalty to the state, loyalty to science, loyalty to the church—but I wish to submit to you as the most fundamental of these ideals, loyalty to the family.

This conclusion may seem to some of you utterly idealistic. May I call your attention to the power of ideals in revolutionary philosophies throughout history and to the strength that resides in the spirit of sacrifice. If our liberalistic, more or less democratic, economic and social system is to survive, it, too, must stimulate the spirit of sacrifice; or else find a way to reduce the penalties on parenthood.