

PUBLIC HEALTH PRACTICE AND POPULATION PRESSURE IN THE TROPICS¹

PAUL F. RUSSELL

Division of Medicine and Public Health, The Rockefeller Foundation

We who are here today have special concern in the well-being of tropical peoples. Furthermore, our interest is not simply theoretical. It is practical. Consequently, it disturbs us to be told that modern health practice in the highly populated tropics may actually be doing harm. It therefore seems appropriate at this time to discuss some aspects of this question about public health and population pressure.

We all realize, I believe, that rapid growth of population in areas already densely peopled creates problems which cannot be solved solely by improving public health. We also know that the world's population is increasing. It approaches 2.5 billions and some demographers assume that if existing trends continue, the total by the year 2000 will exceed four billions. But Notestein (1950) after carefully examining the question, says that the only way to test the assumption is to keep alive until that date! However, death rates more and more frequently fall well below birth rates, a phenomenon that in time could make it impossible to raise the world's living standards. It might even tear them down, in spite of modern technology.

This possibility, remote though it may be, excites much comment in which an apprehension about lower death rates seems to overshadow all other considerations. And although many factors are involved in the lowering of death rates, the effect of controlling disease is so plain that physicians and sanitarians are sometimes held solely responsible for the ills of overpopulation, present and expected. More and more frequently, we read of "dangerous doctors" who are "biological illiterates." "When such men expose millions of their fellow beings to the evils of starvation and disease," we are told, "they must be made aware of the ignorance and the immorality of their acts" (Cook, 1951). Again, sanitarians are "setting the stage for disaster," then, "like Pontius Pilate, washing their hands of the consequences" (Vogt, 1948). We even see the word "fortunate" applied to the estimate that only 12 per cent of the world's population is yet receiving any large proportion of modern health service (Davy, 1951).

So, some imply, and others insist, that we must slow down or stop our efforts to control important diseases in overcrowded tropical areas. Malaria control in British Guiana, for instance, is deprecated because the birth rate has risen while infant mortality has dropped (Cook, 1951; Giglioli, 1951). Sanitarians consider the successful use of residual DDT in that country an outstanding achievement. But others react to it by commenting that "the gadgets of short-term public health can speed the production of festering slums much faster than was possible in the past" (Cook, 1951).

¹ President's Address, American Society of Tropical Medicine, Nov. 1951.

Again, progress in control of communicable disease in Puerto Rico is viewed by some as just another aspect of a "debacle." The new vital tools of public health practice are said to be "creating problems faster than they are solving them." It is concluded that in Puerto Rico "The United States, having provided just enough minor health improvements to insure more births than deaths has unwittingly encouraged the survival of the unfittest to an extent scarcely equalled in the entire civilized world" (Matsner).

Many similar quotations could be given. Clearly, some sociologists and sanitarians are questioning the worthwhileness of disease control in densely peopled countries. Most of the doubters take the view that increased population pressure is due almost entirely to the asepis, vaccines, environmental sanitation, insecticides and antibiotics of the last hundred years. The fact that improved agriculture may also increase populations is seldom mentioned. But the important point is that we are discussing a trend of thought, a point of view which appears to be gaining adherents and which deserves our careful attention.

The problem is exceedingly complicated and only a few points can be mentioned here. For example, Pearl and Reed in 1920, and Verhulst in 1838 (Pearl, 1927) described a logistic curve which indicates that populations of animals or man do not expand indefinitely without limit. The curve of growth always levels off and becomes asymptotic. And there is no inevitable rate of population growth. The primary forces of natality and mortality will be modified by changes in public policy, public health, food supply, industrial production, status of women, and many other economic, political and social factors. As to food, for example, who knows whether the Nobel prize winner who recently said that today's knowledge of agriculture could produce adequate and nutritious food for four billion people, is right or wrong? Who can estimate the effect in the future of widespread practical photosynthesis and the production of food from nonedible chemicals and crops? The equation of population and food is much more complicated than any present formulation.

However, all calculations as to rate of growth of population and of food supply are beside the main point except, as Notestein (1951) points out, that "they demonstrate a principle that many people are unwilling to face. Sustained population growth, even at a relatively low rate, is not possible for any period of time significant in the history of the human race. In principle, there must come a time at which low death rates could not be maintained without comparably low birth rates. This is an inexorable fact of nature. . . . Death rates must rise or birth rates must fall."

Some commentators on this difficult subject revert to the Malthusian dilemma. You will recall that, at the end of the 18th century, Malthus (1798) concluded, without the help of today's knowledge of public health, soil science, plant genetics and many other pertinent variables, that population growth is determined principally by three factors, namely war, disease and, most of all, food supply. Since he believed that population would always increase faster than food supply, Malthus saw a dilemma; either the death rate must become higher or else human misery must increase.

The use of this word "dilemma" persists in current discussions. Yet actually we are not faced with a dilemma at all. We face a problem. Of course, to avoid increasing population pressure with its concomitant evils, the death rate must rise or the birth rate must fall. But since the latter event would be helpful and not at all disastrous, there can be no true dilemma, no horns of equally undesirable alternatives. We face, not a choice between two evils but, on the contrary, a task well within the scope of man's intelligence and technological potentialities. The evidence available indicates that this problem can be solved. Slowly but definitely it becomes widely apparent that *restraint of birth has equal importance with restraint of death and that the one is no more unnatural or illogical or impossible than the other.*

What are some of the conditions which already are known to lower birth rates? According to Thompson (1948), urban birth rates are lower than rural and the rate decreases as the size of cities increases. Again, the higher the economic status the lower the birth rate, whether rural or urban; the more skilled the father in his trade, the lower the birth rate; and the more schooling possessed by the mother, the lower the birth rate. These are general findings which indicate that birth rates fall, albeit gradually, as standards of living, education and health rise. In such observations it has been reported that planned parenthood has been the chief cause of lower birth rates. Such factors as ambition to get ahead, desire for more comfort and greater freedom, efforts to maintain higher family standards of living, hopes that because they are fewer, the children will be better educated and will have greater opportunities to succeed, all these motives increase as community welfare rises to higher levels. All tend to lower the birth rate.

These benefits of better education and more productive agriculture and industry have been obvious social needs for a long time. But they cannot be much developed in a community where disease is unchecked. Also, it is the absence of public health, with resultant high death rates, which has fostered the growth of social systems responsible for high birth rates. For these reasons, among others, the problem of population densities will not be solved by neglecting to suppress disease at home or abroad, by utilizing deliberately those forces which heedlessly destroy human lives and cultural institutions (Russell, 1951). Rather, let modern health practice be a major activity around which other public services will combine their efforts to change the social fabric for the common good. Experience teaches that without reasonable public health there will not be much planned parenthood or development of public welfare.

But we are told that we should reduce our medical and public health practice in crowded tropical areas until that essential force of public opinion can be developed which will bring birth rates down to equality with death rates. Attempt economic development, improved agriculture and mass education first; postpone energetic practice of public health until there is a widespread desire for family limitation. Some recent authors seem to say, "Do not check diseases like malaria with modern weapons in such places as India because you will upset nature's balanced human ecology. You will increase population pressure, thereby adding

to human misery. For the present, let disease keep down the population much as it has in the past. Then, while pestilence kills off surplus children, we will raise the economic level, develop education, increase the food supply, and implant in the people a desire for limited families. Afterwards, it will be safe to introduce the newer public health gadgets."

Such a view seems utterly inconsequential and without foundation in fact or morals. This crude policy has not a single success on record. And how can one properly speak of a "balanced human ecology" in disease-ridden countries where for centuries the average farmer has not had enough to eat! Moreover, anyone attempting today to decide what populations should be deprived of modern public health would certainly "create problems faster than he could solve them."

The needs are apparent. Huxley (Cook, 1951), for example, and many others have emphasized the importance of a positive population policy for the world as a whole and for each nation in it. Future generations must not be born into increasing misery. The human race must not be allowed to suffer genetic degeneration. We realize this but we do not agree that the answer lies in a lessening of our efforts. On the contrary, our task now, as physicians and sanitarians, is to expand our practice and to organize team work with other scientists and educators in tropical areas that we may devise and operate logical population practice. A major and specific effort should be made to bring together geneticist, mathematician and physiologist, with medical and sanitary scientists, for the advancement of the much neglected study of human heredity and population growth.

Too often the phrase "population policy" connotes simply some contrivance or other for stimulating migration or for encouraging or discouraging child-bearing. While fertility regulation in most cases and migration in some are indeed basic, yet, as Myrdal (1947) points out so clearly, a population policy should permeate the whole fabric of social life. Our help is required in organizing practical programs which will combine the techniques that influence birth and death into a logical and balanced community effort. *Man, who has so brilliantly devised measures for restraining death, may be expected to have similar success in regulating birth.* And, it is reasonable to believe that we can bring about the necessary social changes more quickly and more thoroughly where our control of disease is most effective, where our specialized practice is best developed. Of course, one cannot expect a perfect timing of effort which would completely avoid population pressure. But the forces concerned are controllable.

Finally, the world needs today not more disease but more vision! Why emphasize the limiting value of death? How infinitely more intelligent is the idea that family size should be such as will permit economic opportunity, health and social well-being for all!

So, we should not be deceived. We cannot help by withholding our aid! Rather let us maintain our ideals of service. *Let us lead the way with balanced medical and health care programs, designed for sustained public welfare.* Keeping better health as our own main objective, let us integrate our activities with

those of agriculturists, demographers, economists, educators, political and religious leaders, and social scientists. Let us join in planning a social reorientation which will result not in bigger populations but in healthier communities. In this way we shall accelerate progress towards higher planes of health and living. And thus we may play our chosen parts, confident that we are contributing to the welfare of mankind throughout the world.

REFERENCES

- COOK, R. C. 1951, *Human Fertility: The Modern Dilemma*. With an introduction by Julian Huxley. 380 pp. Wm. Sloane Associates. New York.
- DAVY, T. H. 1948, 1951, Population growth in the Tropics, *Health Education Journal* (England) *See also*: Colonial medical policy in relation to population growth, *Eugenics Review* (England) **42**: 190-201, 1951. *See also*: The function of medical services in the Tropics, *Jl. Roy. Sanitary Inst.* **71**: 569-572, 1951.
- GIGLIOLI, G. 1951, The malaria eradication program in British Guiana, *Jl. Nat. Mal. Soc.* **10**: 142-161.
- MALTHUS, T. R. 1798, *An Essay on the Principle of Population*. 9th Edition 1888, Reeves & Turner, London.
- MATSNER, ERIC, quoted by Cook (1951), pp. 18-19.
- MYRDAL, A. 1947, *Nation and Family*. 441 pp. Kegan Paul, Trench, Trubner & Co., Ltd., London.
- NOTESTEIN, F. W. 1950, The population of the world in the year 2000, *Jl. Am. Statistical Assoc.* **45**: 335-345.
- NOTESTEIN, F. W. 1951, The needs of world population, *Bull. Atomic Scientists* **7**: 99-101, 128.
- PEARL, RAYMOND 1927, The growth of populations, *Quart. Rev. Biol.* **2**: 532-548.
- RUSSELL, P. F. 1951, Malaria and society. *Jl. Nat. Malaria Soc.* **10**: 1-7.
- THOMPSON, W. S. 1948, *Plenty of People*. 281 pp. The Ronald Press Co., New York.
- VOGT, WM. 1948, *Road to Survival*. Wm. Sloane Associates. New York.