

PROBLEMS RESULTING FROM POPULATION GROWTH

A symposium presented at The Ohio Academy of Science at Capital University

April 18, 1959

1. Problems Resulting from Population Growth

JORGEN M. BIRKELAND, *Chairman, Department of Bacteriology,
The Ohio State University, Moderator*

2. The Expected Growth of Population in the United States

ARTHUR A. CAMPBELL, *Scripps Foundation for Research in
Population Problems, Miami University*

3. The Loss of Land to Urban Growth and Industrial Development
(a slide talk summarized in Birkeland's paper)

HAYDEN W. OLDS, *Chief, Division of Wildlife, Ohio Department
of Natural Resources*

4. Will We Have Enough Food and Fiber?

CHARLES J. WILLARD, *Department of Agronomy, The Ohio State
University*

5. Can Technology Solve the Materials-Needs Problems of the World?

ALFRED B. GARRETT, *Chairman, Department of Chemistry, The
Ohio State University*

6. What Effects Has Population Growth on People?

DAVID F. MILLER, *Chairman, Department of Zoology and Ento-
mology, The Ohio State University*

These several papers, with the exception of J. M. Birkeland's, were presented before the Conservation Section of The Ohio Academy of Science at the 1959 annual meeting of the Academy. Dr. Birkeland was moderator of the discussion and subsequently prepared the introductory paper published herein which also summarizes the ideas and conflicts which emerged from the discussions. Carl S. Johnson of The Ohio State University, program chairman for the Conservation Section, served as the symposium editor.

THE OHIO JOURNAL OF SCIENCE 60(4): 207, July, 1960.

PROBLEMS RESULTING FROM POPULATION GROWTH

JORGEN M. BIRKELAND

Chairman, Department of Bacteriology, The Ohio State University

In the year or so since the papers in this series were presented at the annual meeting of The Ohio Academy of Science, the world population has increased by over 40 million; death rates from all the important infectious diseases have declined; food surpluses have continued to pile up in the United States; and in the rest of the world millions on millions have gone from day to day with barely enough calories to keep alive and reproduce, but not enough to walk upright in decency and with human dignity.

Ever since Malthus, in 1798, published his famous essay on population in which he "proved" that man's capacity to reproduce exceeded the earth's capacity to produce food, there have been countless writers who have "disproved" the Malthusian doctrine. But in spite of the discovery of new food producing areas, in spite of man's increasing mastery over nature through science and technology, by which he has been able to produce more food, in spite of the industrial revolution, all of which had the effect of postponing the evil day of reckoning, until many felt that the dire prophesy of Malthus had been thoroughly disproved, the problem, the nasty problem of over population, somehow still haunts us.

It haunts us chiefly because the rate of population increase has increased so rapidly in the immediate past that if the present rate continues for another forty years, the world population will more than double in the period from 1960 to 2000. It took over a million years to reach a population of 2.8 billion; it will take only forty years to reach a population of 6 or more billion. By 2050 the population might be 9 to 10 billion, and nobody cares or dares to predict much farther ahead.

There are those who see nothing but good in numbers, "The more the merrier"; there are others who see little merriment in half-starved billions of humans.

There are those who say that they need not starve, that the world can feed even 10 times our present population, and that therefore there is no population problem as such.

There are those who point to the limitation of other natural resources, such as energy and minerals. These and other questions are considered in the papers that follow.

In the past, most predictions as to the rate of population increase have been rather consistently inaccurate. Dr. Campbell's paper deals effectively with the problems of forecasting population growths and, on the basis of his analysis and his most conservative projections, we must look forward to such a rapid increase in the United States in the next twenty years that the fundamental aspects of our daily lives will be profoundly changed.

When we think of Malthus, we think of food and starvation. Professor Willard emphasizes several points which are either overlooked or forgotten in many of the discussions of the food and population problem. Although he does not see any immediate threat of starvation in the United States and feels that the world, by mobilizing all its resources, can certainly support many more people than we now have, he still feels that eventually the population growth will outstrip the earth's capacity to feed the people and that, consequently, population control is inevitable. What he does realize, but does not emphasize, is the fact that to mobilize all the resources, to desalt sea water, to farm the deserts and oceans, will require a fantastic amount of investment capital far beyond the resources of the over-populated countries.

Any statement of the food producing capacity of a nation must take into

account the competition for land for other purposes. Hayden Olds (whose paper is not included)¹ presented figures showing the acreage taken out of agricultural production and used for airports, golf courses, cemeteries, farm ponds, new industrial plants, roads, and recreation. From his, and other data, the situation may be summarized as follows. About 4 percent, or 17 million acres, of the best farmland in the nation has been taken out of food production and used for other purposes during the period 1940-1954. The rate of loss of agricultural land is rapidly increasing and land covered with concrete or urban development isn't likely to come back into agricultural production. The need for land for our expanding industry may be illustrated by the fact that in Ohio since 1953 new industrial plants have been established at the rate of slightly more than one each week, or 57 per year. Every highway, every mile of highway with a right-of-way of 200 feet, takes 26 acres, not counting cloverleaves or intersections and peripheral developments.

Another point might be emphasized. The need for recreational facilities will increase even more rapidly than the rate of population growth because the more crowded we become, and the more our daily life resembles the "poultry broiler factories," the greater the need for parks, playgrounds, and other recreational facilities.

One wonders whether those who have calculated our capacity to produce enough food for ten or twenty billion or a hundred billion ever consider the other demands for space.

Professor Garrett, in dealing with the question "Can technology supply our material needs?" cites theoretical levels which are so high that no one believes they can be reached. Calculations based on theoretical capacity to produce do not take into consideration economic, political, or social problems and, moreover, do not take into account what might be called "test years." Certainly a drought, or floods, can upset all calculations for short periods and man must eat three times a day, every day, and he can't eat averages. The ecologist knows that it is the extremes, not the means, that limit organisms and this applies to human ecology as well.

Professor Miller, in discussing the effect of population growth on people, raises many important ecological questions and wonders whether *Homo sapiens* can survive unless he uses his intelligence to deal with the population problem. This would appear to mean unless he decides to limit the numbers and to limit the rate of increase now and by methods which will work. It is by the use of intelligence that man introduced death control and unless he introduces birth control, the problem of survival will eventually defeat him.

One could ask how large a world population can be supported when there are about a hundred separate and independent governments. How close to the theoretical maximum capacity to produce food and energy and material can we come unless we have one world government with a dictator powerful enough to shift people so as to get the most efficient use of land, water, mineral resources and capital, without regard for human rights, wants or traditions?

We might also ask how we can expect people, who because of ignorance, traditions, and lack of capital have not been able to deal intelligently and effectively with their present population problem, to display suddenly the scientific knowledge and technical skills necessary to wring the maximum productivity from our present crop lands, to provide the water for irrigating the deserts, to farm the oceans, and to organize the economy so it will operate at maximum efficiency when confronted with their problem magnified four to tenfold.

A great many articles, many television and radio programs have dealt with the population problems since these papers were presented but, because of their

¹Haydon Olds, Chief of the Division of Wildlife, Ohio Dept. of National Resources, presented aerial views by color slides giving evidence of the pressure of urban developments upon space for agriculture and recreation.

fundamental nature, these are in a sense timeless and will repay careful reading.

One last comment may be permitted. In one sense the most important statement to appear during the last year is the one issued by the Roman Catholic hierarchy and called "Explosion and Backfire."

This statement, although hardly convincing to the Malthusians, has brought the issue of population control into the open. While the problem has been discussed freely and frankly in many other countries and by some in this country, the very mention of "birth control" in any audience has usually caused an uneasy stirring and a tendency to change the subject. Convictions or actions based on religious dogma are considered in a sense "untouchable" and not proper topics for discussion. While the statement does not admit of a population explosion, it certainly caused an explosion in the press, on radio and television. Whether it will backfire only time will tell. At any rate, it did clear the air and it is now much easier to discuss freely this highly emotionally-charged problem.
