

POPULATION THE ULTIMATE POLLUTANT

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It is not only nature lovers and ecologists who are today concerned about what pollutants are doing to plants, animals, man and the landscape. Many people are aware of some, at least, of the many effects of pollution on ecosystems of both land and water. Some examples which have been spectacularly publicized have helped to create the new awareness. Items which illustrate this point include:

- The serious eutrophication of Lake Erie caused by the dumping of chemicals, huge amounts of sewage and industrial wastes, as well as soil erosion. Pollution-sparked algal blooms have seriously affected fish life and water quality.
- Mercury contamination of fish in Lake St. Clair, Lake Winnipeg, and Howe Sound, as well as of game birds in Alberta.
- Knowledge that in California the redwoods are dying as a result of man's chemical pollution of the atmosphere.
- The anticipated extinction of some species of birds, including eagles in the United States, due to effects of unanticipated residues from some pesticides.
- The necessity to move oysters out of the St. Lawrence River to unpolluted waters for several weeks before it is safe to harvest them for human food.
- Gully erosion in the Arctic affecting caribou migration and feeding caused by permafrost melting initiated by vehicular traffic which disturbed the fragile tundra vegetation.

Although the rising concern about pollution, the environment and ecosystems is heartening, it is disappointing that so few, even among highly educated, intelligent people, recognize the central position of the population problem in these matters. In fact, it is astonishing that the concern about environmental quality and preservation

of plant and animal species as well as of ecosystems has not generated concern and action on the population problem. I must, therefore, devote most of this article to a discussion of some aspects of the exceedingly complex and difficult question of reasonably controlling human numbers in order to preserve the environment and save mankind.

The basic problem is the fact that the obvious has not been generally recognized: it is as axiomatic that increase in population and in per capita income result in increased pollution and other adverse effects on the environment as it is axiomatic that increases in population result in reductions of individual freedoms. Last winter a University of Alberta student, commenting in a special "pollution" issue of the student newspaper, wrote and said in effect: "It is time that we recognize that people are pollution."

Public unawareness and apathy about world (and Canadian) population problems are difficult to comprehend. The general refusal to accept the facts, or to act on them, is related to traditional beliefs which most people are unwilling to examine objectively. Unless it is defused, and very soon, the population bomb will devastate the environment to an unimagined extent—but inaction continues because of public avoidance of discussion and modification of some outmoded or discredited beliefs or stances. Three pertinent items of this type are:

- The tribal attitude that increase in population (i.e. that more people — in Canada or on earth) is necessarily good, desirable and generally beneficial.
- The dishonest public pretence that people intend and desire to have the numbers of children they are, in fact, having.
- The idea that parenthood is an inherent right of every individual,

and that it may be exercised without obligations, limitations, responsibilities or restraints.

Advances in modern medicine and public attitudes such as the foregoing combine to constitute a generally unrecognized danger. On a world basis, death control is probably the most extensively and effectively applied aspect of modern technology. The result has been a dramatic increase in the rate of population growth because birth control, in general, is not extensively and successfully practised. Too few know the numerical results and the awful portents of such a situation.

The rate of world population increase is 10 times as fast as it was at the time of Columbus, and the rate of increase is still rising. In Columbus' day a year's population increase was about one million; this year's population increase will be over 70 million.

Today, India's rate of population increase is about double the rate of increase at the time of independence, 23 years ago. (In 1947 India's population increased by about four million; the 1970 increase will be nearly 14 million.)

The death rate in Ceylon, once considered a disease-ridden tropical country, is now as low as the death rate in Britain.

World population increase of the next four years will exceed the present population of all North America, from the Panama Canal to the North Pole.

Barring major catastrophes (war, famine or disease), an approximate doubling of world population by the year 2000 is virtually certain. The effects of such a development on planet earth merit study by all who are interested in preservation of ecosystems, plant and animal species, as well as in the conditions and quality of human life and living. To feed the increased population expected will drastically change the world. Merely to maintain current dietary levels, which on the average are unsatisfactory, will necessitate a 50-100 per cent increase in food production acreage

during the next 30 years. Most of the good land is already in use. New land for food production will come from clearing jungles, draining swamps, irrigating deserts and cultivating ever steeper slopes. Such "developments" will exterminate some plant and animal species, destroy some ecosystems, cause a more than proportional increase in soil erosion, and displace much wildlife.

The ultimate results of such actions cannot be foreseen as there is no historical experience with manipulation of similarly huge areas in such a short period of time. Rapid agricultural development in the Prairie Provinces resulted in tremendous wind erosion problems during the 1920's and 1930's. Following World War II, a large virgin area in Tanzania was cleared and cultivated for production of groundnuts. That project was not only an economic disaster because of crop failures, but it also caused massive water erosion. Who can foretell the possible ecological effects of the greatly increased soil erosion which will be inevitable during the next 30 years? Will aquatic life be affected by turbidity of waters? Will the organic matter and nutrients in such eroded soil material spark extensive and frequent algal blooms? How serious might the effects of such blooms be? Will accelerated run-off upset ground water supplies upon which people have become dependent? Or will nuclear power become so low-cost that the anticipated erosion will be prevented by unimagined mechanization of soil conservation?

In any case, the face of the earth will surely be changed by the effects of increased population. More mines, highways, factories, traffic interchanges, rail lines, and housing will further mar and scar the landscape. There will be more urban cement jungles too. Human and animal wastes, chemicals from factories and fires and transportation and agriculture, refuse and debris of all types, will pervade and contaminate more and more of the land, water, and air. Trees in large forested areas of Europe are now

dying or are severely affected by atmospheric pollution. Can such pollution be reduced while population increases? Will pollution control be so costly that levels of living will decline? What will happen in the underdeveloped countries where the burden of dependents seriously hampers efforts to improve conditions? Urban ghettos are bad environments, and they are growing very fast. Will it be possible to reverse this trend when the people concerned are breeding so rapidly.

Increased population densities, whether of people or crops or animals, constitute conditions which favour development and rapid spread of diseases and insects. Extensive use of chemicals for control of such pests is probable, and some pollution problems will almost surely result. An unattractive alternative to such controls of food crop pests is an increase of malnutrition and of the poverty which accompanies it; these conditions are normally accompanied by degradation of both people and the environment in which they live.

There is another aspect of greater population density which is of increasing concern to me. Animal studies have established that under natural conditions, many species of mammals and birds have distinct territorial requirements for normal health and reproduction. Populations of some species are controlled by the territorial needs since only males with a "territory" can acquire females or can mate. Laboratory studies with animals have proven that psychological problems and behaviour aberrations result when populations became dense even if there is considerable space and other conditions are ideal. Man is an animal too. With urbanization and population increasing rapidly, human psychological problems may be aggravated. It is perhaps true that deviant human behaviour receives greater publicity than formerly but human population pressures are at least partly responsible for some of these contemporary problems.

We live in the Space Age, and the human situation on earth may be

likened to conditions in a space ship. Apollo 14 will be designed to carry a crew of three to the moon. That space ship will not be roomy by earth standards, but the crew will be reasonably comfortable. Human ingenuity and careful planning might enable modifications so that a crew of six could be accommodated. Under such circumstances freedoms of movement and action by members of the crew would be more restricted. By drastic modifications, much greater congestion, and with clearly an inferior environment within the space ship, it might be possible to crowd in a crew of 12 without enlargement of the ship. Under such circumstances, the journey to the moon would be something of an endurance test for the crew. How much discomfort can one endure? But it would be quite impossible to jam a crew of 300 into Apollo 14 regardless of how carefully the members were selected for small size and how willing they were to make the journey under spartan conditions. For one thing, recycling of the wastes, control of carbon dioxide, and similar problems would be too complex for the limited space and resources within the space ship.

Here on earth, man's application of science to the problems of food production and pollution control can certainly make it possible to accommodate more people. Perhaps by the year 2000, science will enable the expected seven billion people to enjoy an improved quality of life and living: frankly I doubt that such will actually be the case for the average person if or when there are seven billion people on earth. However, if it were possible for the present rate of population increase to continue to the year 2200, there would then be over 350 billion people on earth — an increase comparable to a crew of 300 in Apollo 14. Clearly, it is impossible for human population to continue increasing at current rates for more than a very few decades.

Justification for the foregoing pessimism can be very nicely illustrated by reference to a "less developed" island nation I have visited. Senior government officials of that country

volunteered the following items of information:

- The current rate of population increase, thanks to modern death control, is over three per cent per year. If continued, population will double in less than 25 years.
- More than half of the population is under 15 years of age.
- Less than one-quarter of the adult population are sufficiently literate to recognize their own name in print.
- Not one member of a recently graduated teacher training class took employment as a teacher.
- Although much very steep land, with slopes of over 25 per cent, is already in use, the area of food production land is now less than one-third of an acre per person.
- The only known resource in addition to agricultural land is a small amount of tropical beach attractive to tourists.

As yet, the government of this country has not undertaken to encourage or assist its citizens to limit their reproduction. Population increase threatens that "island space ship." Without population control the environment and conditions of life there will almost surely deteriorate because consequential emigration is not likely to be possible. Moreover, even if emigration were possible it would not solve the basic problem of an excessive and debilitating rate of reproduction.

Although the rate of population increase in less developed countries is about two and a half per cent per year compared to a rate of less than one per cent per year in the industrialized countries, great caution should be exercised by the more favoured nations in advocating birth control for the poor countries. We need to put our own houses in order first. For example, in Canada, those classified as poor by the Economic Council are reproducing about twice as fast as other Canadians and there is no government policy in this country of either assisting or of encouraging Canada's poor to decrease their rate of reproduction. Therefore, if Canada were to advise other countries to encourage their citizens to

reduce their rate of reproduction, this country would be open to charges of racism or indirect genocide.

The embarrassing fact is that a majority of people in less developed countries have governments that officially promote population control and endeavour to lower the birth rate. Because of the lack of such things as knowledgeable personnel, incentive programs and effective mass communication the population control programs of those countries are not very effective. Meanwhile, I do not know of one industrialized country, including Sweden and Japan, where official government policy encourages the citizens to limit their reproduction. Literally the "developed" countries are 20 years behind India, commonly regarded as a backward country, in the matter of population policy.

The world population explosion is a result of advancement in medical science in the industrialized countries. It was in these countries that the death rate first declined. As a consequence, viewed over the last two or three hundred years, population in the industrialized countries like Canada has increased much more rapidly than population in the poor countries. Citizens and governments of the less developed countries are aware of this fact and understandably suspicious of other nations which in effect say, "You people should have fewer children, but similar restrictions should not be placed on us."

Former U.S. Secretary of Labor, Willard Wirtz, who has become one of those greatly concerned about the rapid rate of population increase, has clearly explained why the industrialized countries need to take action at home. He has stated: "We must recognize our own situation before we can claim good international credentials. The idea that large families are all right for the affluent is a most convenient piece of nonsense. The affluent pollute the environment much more than those in underdeveloped countries, the average American 25 times more so than the average person in India, for example."

By that standard, Canada's part in pollution of the atmosphere, depletion of world resources, and devastation of the earth is comparable to about that of half a billion people in less developed countries. Therefore, many people in the poor countries consider it arrogant and improper for industrialized countries like Canada to suggest that poor countries should adopt population limitation programs when there are no similar programs in the industrialized countries advocating such policies. The poor countries regard Canada as an exceedingly richly endowed country and are increasingly resentful of our immigration policies which exclude their surplus population.

In the fall of 1969, a visiting speaker at the University of Alberta expressed the opinion that the four major contemporary problems facing mankind are: establishing and maintaining peace, the depletion of resources, pollution of the environment, and the population problem. I contend that the first three are merely different aspects of the population problem. If the Arabs and Israelis had more than enough land and water to meet their individual needs, the warring would not go on. If all the desired resources had been available within Germany and Japan, World War II would not have occurred. It is the increase in the population of Europe over the past 30 years together with a disproportionate increase in industries which have produced air pollution that is now killing millions of coniferous trees in Europe. People, too many people, are now the major problem.

It is because of the gravity of interactions and complications such as the foregoing ones that U. Thant has expressed the opinion that mankind must find a solution to the population problem during the 1970's if human society, as we know it, is to survive. I am not willing to be so specific regarding the time mankind has left to develop and successfully commence the implementation of a world program of population control; but I concur fully with the need for urgent action.

For too long we have listened to the unrealistic and ostrich-like contention

that, technically, it is possible to sustain and feed much larger numbers of men. The earth and its resources are finite, and so too is the earth's capacity to sustain any type of life, including human life.

There is also a basic philosophical question to be considered, which we have unwisely evaded. What is man's goal on earth? Is it the maximum possible mass of humanity, regardless of the quality of life and conditions of living, regardless of the devastation created by his numbers and his effluents—or an intelligently and wisely limited population, living under conditions where there is still reasonable opportunity for privacy and individuality, on an earth where man lives in reasonable balance with the plants, animals and resources which determine the quality of his environment and of his living. Man has a choice!

Another philosophical question, seldom raised or contemplated, is whether mankind is justified in exterminating (whether by intent, accident or indirect result) much of the life on earth for the sole purpose of supporting a larger human population? Today, the redwoods, eagles, and kit foxes are all threatened with extinction. What will be eliminated next by man's ruthless multiplication?

Those who enjoy and understand nature know that any species has the inherent capacity through natural reproduction to overpopulate its environment. Since uncontrolled multiplication of any species has unpleasant consequences, there are natural controls. Man, through modern death control, has interfered with nature's harsh, but effective, methods of human population control, which, incidentally, used at least to maintain, if not improve, the quality of the human stock.

But if mankind wishes to exercise death control, it will be necessary to limit population through birth control. And so the question is: does mankind have the courage, wisdom and ingenuity to limit effectively, fairly and wisely, human reproduction? The future of mankind depends on the answer to that question.