Book Reviews

Disastrous Numbers

Population, Resources, Environment. Issues in Human Ecology. PAUL R. EHRLICH and ANNE H. EHRLICH. Freeman, San Francisco, 1970. xii, 388 pp., illus. $8.95. Biology Series.

Population, Resources, Environment opens and closes with short chapters expressing alarm—to characterize the authors' language conservatively—about present trends and future prospects in the world. It begins:

> The explosive growth of the human population is the most significant terrestrial event of the past million millennia. Three and one-half billion people now inhabit the Earth, and every year this number increases by 70 million. Armed with weapons as diverse as thermonuclear bombs and DDT, this mass of humanity now threatens to destroy most of the life on the planet. Mankind itself may stand on the brink of extinction; in its death throes it could take with it most of the other passengers of Spaceship Earth. No geological event in a billion years—not the emergence of mighty mountain ranges, nor the submergence of entire subcontinents, nor the occurrence of periodic glacial ages—has posed a threat to terrestrial life comparable to that of human overpopulation.

It ends with a six-statement summary scarcely more optimistic than the introductory sentences just quoted, followed by six recommendations for a drastic reordering of the society of the United States, and indeed of the world. The recommendations include the immediate assumption of governmental responsibility to halt the growth of the American population, followed by the government's undertaking the regulation of the birth rate so that the population is reduced to an optimum size and maintained there. Another recommendation is that "a massive campaign must be launched to restore a quality environment in North America, and to *de-develop the United States*" (italics in the original).

In between these two doses of strong medicine, the Ehrlichs have presented a mass of material on the history of world population growth, a little formal demography (including the role of the age structure in influencing growth), a discussion of the distribution of the population by place (including urbanization), and population projections for the world, for regions, and, in an appendix, for most countries of the world. They discuss the limits of space, of heat dissipation, of energy resources, mineral resources, and water. A discussion of the availability of food and the extent of nutritional deficiency occupies some 14 pages. A separate chapter is devoted to the possibility of expanding food production, and two to environmental deterioration and endangered ecosystems. A short discussion of the optimum population is followed by a description of methods of birth control and of family planning programs and population control. Two chapters on the social, political, and economic setting for policies affecting population and the environment within the United States and internationally precede the conclusions.

I am far from confident in trying to prepare a review that gives an accurate picture of the nature of this book. It is quite different from the books I am accustomed to read, and certainly to review. It reminds me, in spirit, of Henry George's *Progress and Poverty* (a book in which George suggested that inequity and lack of progress both arise from unjustified gains obtained through land speculation, and proposed a single tax on land as something of a panacea) or of Marx's *Das Kapital*, although I hastily add that I am not crediting the Ehrlichs with the originality, profundity, scholarship, and insight of Marx. What *Population, Resources, Environment* has in common with *Progress and Poverty* or *Das Kapital* is that it is essentially a political tract. The opening paragraph in effect states the conclusion of the book, and the text seems intended to a large extent to buttress the conclusion stated at the outset. The book is free of footnotes, a freedom that in other instances is a blessed relief from annoying pedantry but that in this instance causes equally annoying uncertainty about the validity of statements or arguments that the reader does not know firsthand.

An example of an undocumented statement is the assertion, repeated at least three times, that today there are 10 to 20 million deaths annually caused by starvation. In the most extended discussion of this estimate (a paragraph on page 72) there is a sentence: "Of the 60 million deaths that occur each year, between 10 and 20 million are estimated to be the result of starvation or malnutrition." It is then stated:

> In most countries the cause of death is usually officially attributed to some infectious or parasitic disease, which in most cases only dealt the final blow . . . . *For our purposes, any death that would not have occurred if the individual had been properly nourished may be considered as due to starvation, regardless of the ultimate agent* [italics in the original].

By this definition, the number of deaths (whatever it may be) due to starvation would be drastically reduced by improvements in environmental sanitation, even if diets should meanwhile deteriorate.

The greatest difficulty the reviewer has in appraising the book arises not from its use of isolated undocumented assertions, but from the fact that its principal theme identifying "overpopulation" as the major source of malnutrition, starvation, disease, pollution, and apparently of the disappearance of the peregrine falcon and the sparrow hawk also rests on assertion rather than step-by-step reasoning. It seems to me that malnutrition usually accompanies poverty and ignorance; moreover, poverty and ignorance exist, and have long existed, in many societies, whatever the size of the population. Malnutrition is much more prevalent today in Brazil or Colombia than in Hong Kong. I suppose one could argue that *any* area where there is poverty and ignorance is overpopulated, but this form of circular reasoning is scarcely helpful in achieving a better understanding or in formulating a sensible policy. A similar point could be made (perhaps with less force) about environmental deterioration and endangered ecosystems. A small population heedlessly using residual insecticides could cause an ecological disaster, if what we are told about DDT is true. On the other side, the recent dramatic improvement in the air in London (50 percent more sun-

shine was reported for the past winter compared to the average of a decade ago) as a result of restrictions on the use of "dirty" fuels shows that pollution produced by a very large population can be reduced by feasible measures. When there are dramatic instances of polluted air and water, or when wildfowl produce eggs with inadequate shells as a result of the ingestion of DDT, it does not automatically follow that the world is overpopulated. I have pointed out before that pollution of air and water is a serious problem in parts of Australia.

The authors seem to make no attempt to strike a balance in the evidence they examine. An illuminating instance is their discussion of the so-called "Green Revolution" on pages 96–101. This set of innovations (involving the use of new high-yield varieties of grain, combined with multiple cropping, increased use of fertilizer, and irrigation) is not, I am glad to say, treated with the scorn that has characterized some of its discussion by ecologists. Many of the encouraging developments (though by no means all) are described, but almost every favorable statement is immediately followed by an expression of doubt. For example:

> Probably the most widely recommended means of increasing agricultural yields is through more intensive use of fertilizers. Their production is straightforward, and a good deal is known about their effective application. But the environmental consequences of heavy fertilizer use are ill-understood and dangerous (Chapter 7). Even if we could ignore such problems, we find staggering difficulties barring the implementation of fertilizer technology on the scale required.

The section ends as follows:

> Even the most enthusiastic boosters of the Green Revolution admit that it cannot possibly keep food production abreast of population growth for more than two decades or so. Since a birth control solution to the population explosion will inevitably take longer than that, the prospects for avoiding massive increases in the death rate from starvation are dim indeed.

To the contrary, I have heard Roger Revelle (who is not the most enthusiastic booster) assert that it would not be difficult, with the new strains of rice and wheat, for Indian farmers in the areas where the land and water conditions are suitable to produce enough grain at the end of the century to support the population that India would have even with no reduction in human fertility at substantially higher levels of nutrition than today. (Of course I do not intend by citing this example to imply that India or other less developed countries can afford a long continuation of rapid population growth.)

In the reviewer's opinion this book would be better balanced and more persuasive if the authors had not chosen to ignore the very substantial body of work by social scientists on the problems they address. It is remarkable that a long book on the effects of overpopulation full of colorful historical allusions should contain not a single reference to T. R. Malthus, whose *Essay on Population* not only attracted the attention of the intellectual world in the early 19th century to the problem of excessive numbers, but had an effect (acknowledged by Darwin and Wallace) on the development of the theory of evolution. There is no recognition in a full chapter devoted to "optimum population and human biology" of the dozens of books and articles written on optimum population from the middle of the 19th century until the 1950's. Rather, the authors state: "The idea of controlling the size of the human population is really a new one."

The failure to cite others' work is not very important, but the failure to recognize the pertinence of the analysis used by social scientists is. An example is the neglect of the effect of cost and price on decisions. The Ehrlichs think in terms of fixed coefficients. Thus ". . . to raise all of the 3.6 billion people of the world of 1970 to the American standard of living would require the extraction of almost 30 billion tons of iron . . . ." But what the world would choose if incomes everywhere were greatly increased is not necessarily—in fact certainly would not be—the American bill of goods. The list of things we consume is partly influenced by relative prices, including how cheap raw materials are (because, it must be noted, they are still so abundant). It costs little extra in labor, and, since the steel involved is not expensive, it costs little more altogether to produce a big, heavy car than to produce a small, light one. If incomes increased dramatically in all the world (and no rate of increase in per capita income yet experienced would bring the income of all parts of the world to the current level in the United States by the end of the century), the dominant mode of transportation might well not be automobiles (a major user of steel), and if the cost of metal rose automobiles would contain much less of it. A book of this sort written in 1900 might have dismissed as impossible a U.S. population in 1970 of more than 200 million with a per capita income (estimated at constant prices) several times greater than in 1900, on the grounds that pasturage could not be found for enough horses.

The economist is trained to think in terms of substitutions that occur in response to changes in relative prices, and there is ample experience showing that the economy does respond to relative price changes by shifting from one product or material to another. A realization of this fact puts resource exhaustion in a different light. Social scientists are accustomed to thinking of alternatives that are marginally different, and one alternative is typically better in some ways and worse in others. In their proposals the Ehrlichs, hyper-aware of balances and interconnections in ecosystems, seem only occasionally aware of balances and interconnections in social systems. Their recommendations, applied literally, would cause massive unemployment and other forms of social disruption just as serious as the problems they discuss.

Doubtless social scientists (among others) have failed to appreciate the ecological implications of social change, and we are indebted to the Ehrlichs for forcefully bringing these problems to the attention of the world. But in acknowledging with gratitude their role in attracting our attention to the problems, we are not obliged to accept their explanation of how the problems arose, or their prescription for how they should be solved.

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Pipes and Tablets

The Davenport Conspiracy. MARSHALL MCKUSICK. University of Iowa Press, Iowa City, 1970. xii, 144 pp., illus. Cloth, $5; paper, $3.

In this provocatively titled work, the author has probed one of the unswept corners of Midwestern archeology and come up with an absorbing tale of 19th-