

BOOKS AND REVIEWS

The effect on man of deterioration of the environment, *WHO Chronicle, Geneva, December 1974.*

The health and wellbeing of a population depend both on its degree of socio-economic development and on the complex of physical, chemical, biological and social factors that make up its environment.

It has become clear in recent years that environmental degradation, if allowed to proceed unchecked, could result in serious and even irreversible damage to life on this planet. Poor sanitary conditions and the accompanying communicable diseases are the most important causes of morbidity and mortality in the developing countries, where the majority of the world's population live.

These problems have been largely eliminated in the economically more advanced countries, where other environmental hazards have developed that affect health in a more insidious and complex way than do communicable diseases. These hazards, which are beginning to take their toll in developing countries too, include the physical and chemical factors and psychosocial influences which, together with microbiological agents, make up that part of the ecosystem most directly affecting man's health.

It is of crucial importance to define and specify the adverse effects of the environment. Unfortunately, a precise definition of many of these effects is not yet possible, owing partly to the complexity of the interactions between environmental factors and health and partly to lack of knowledge about many of the factors involved and about the part played by economic, political, and cultural components.

Moreover, man is himself a highly complex organism and tends, when faced with fluctuations in the external environment, to maintain the balance of his internal environment within narrow limits. His homeostatic regulatory functions are closely integrated, and linked with the metabolic processes and the defence and clearance mechanisms that enable him to cope to some extent with adverse changes in his surroundings. Thus, when faced with any challenge from the external environment, man's reaction is rarely direct and simple, and this is one of the main reasons why it is so difficult to obtain precise knowledge of the effects of the environment on health. Two extremely important characteristics are involved, namely adaptability and variability. Adaptability is a property of living things that enables them to attain a new state of equilibrium in a new situation; in man, it is dependent on the very wide variability of his biological, physiological, and mental characteristics. Such variability is encountered in the individual as well as within the different human groupings and makes it extremely difficult to elaborate universally applicable standards in the sphere of environment and health.

Finally, in man psychosocial and cultural factors play a preponderant role.

Assessments of the adverse effects of environmental deterioration will differ according to whether one considers the individual or the population and according to the categories of population concerned. The task of defining health indicators finer than mortality, morbidity, or fertility has only just begun to be tackled. It is probably within the especially vulnerable groups (such as children, elderly persons, and the functionally or mentally handicapped) that sensitive indicators will have to be sought.

A dual methodological approach is needed consisting of the epidemiological method, whereby observable facts are studied in human populations under normal conditions of exposure, and the toxicological method, which involves studies and experiments on man and on animals (with all the uncertainties of extrapolation that this implies) and in which the conditions of exposure are controlled. These two approaches are complementary, but when they lead to divergent conclusions the epidemiological findings must be given the greater weight. . .

... Whereas in the industrialized countries the factors having a direct or indirect effect on health are mainly those introduced by development, in the developing countries the leading role in this respect is played by factors in the natural environment. Among these factors, water is of particular importance. Much of the world's population lacks not only water supplies that are adequate in quality and quantity but also sufficiently hygienic means of waste disposal.

The endemic diseases of the past still persist and are, in fact, sometimes spread by large irrigation schemes. It is estimated that schistosomiasis affects about 200 million individuals and that, in some areas, the prevalence exceeds 50%. There are also tens of thousands of cases of ankylostomiasis, strongyloidiasis, and filarial diseases. As for malaria, despite considerable efforts over the years, hundreds of millions of people are still at high risk of the disease and, in one country where eradication had apparently been achieved, there have been some 2 million new cases since 1970.

Stock-breeding and agriculture are also affected by the unfavourable ecological conditions, and a vicious circle is started. Economic growth is hampered when large sectors of the population suffer from malnutrition and disease, while industrialization introduces problems of urbanization and population density that are unfavourable to social development.

In the most industrialized as in the least favoured countries, environment and population are closely linked and interact—sometimes positively, sometimes negatively. The problems created can clearly be solved only through a global approach.

It is to be hoped that scientific progress will make it possible to reduce morbidity and prolong life. However, efforts to improve health must, in future, involve greater efforts to protect the essential biological ecosystems and prevent further degradation of the environment. Greater attention must also be paid to psychosocial factors, so that human life is not only prolonged and disease controlled but life is also happier and more harmonious.