

in the fumes from chemical plants; such exposure is rendered even more objectionable by the inclemency of the Atlantic climate. However, long experience with pollution and with bad weather has resulted in physiological reactions and living habits that have adaptive value. This is proved by the fact that northern Europeans accept almost cheerfully their dismal atmospheric environment even though it appears almost unbearable to outsiders who experience it for the first time.

Adaptive responses to environmental pollution are not peculiar to northern Europeans. They occur all over the world in the heavily industrialized areas whose inhabitants function effectively despite the almost constant presence of irritating substances in the air they breathe. It would seem therefore that human beings can readily make an adequate adjustment to massive air pollution.

Unfortunately, acceptance of air pollution results eventually in various forms of physiological suffering and economic loss. Even among persons who seem almost unaware of the smogs surrounding them the respiratory tract continuously registers the insult of the various air pollutants. After periods of time that differ from one case to another, the cumulative effects of irritation commonly generate chronic bronchitis and other forms of pulmonary disease. Because this does not happen until several years after initial exposure, it is difficult to relate the pathological condition to the primary physiological cause.

Chronic pulmonary disease now constitutes the greatest single medical problem in northern Europe, as well as the most costly; it is increasing in prevalence at an alarming rate also in North America, and it will probably spread to all areas undergoing industrialization. There is good evidence, furthermore, that air pollution increases the incidence of various types of cancer as well as the numbers of fatalities among persons suffering from vascular diseases. But here again, the long and indefinite span of time between cause and effect makes it difficult to establish convincingly the etiological relationships.

The delayed effects of air pollutants constitute models for the kind of medical problems likely to arise in the future from other forms of environmental pollution. Allowing for differences in detail, the course of events can be predicted in its general trends.

Wherever socially and economically convenient, chemical pollution of air, water, and food will be sufficiently controlled to prevent the kind of toxic effects that are immediately disabling and otherwise obvious. Human beings will then tolerate without complaints concentrations of environmental pollutants (whatever their nature and origin) that they do not regard as a serious nuisance and that do not interrupt social and economic life. But it is probable that continued exposure to low levels of toxic agents will eventually result in a great variety of delayed pathological manifestations creating much physiological misery and increasing the medical load. The point of importance here is that the worst pathological effects of environmental pollutants will not be detected at the time of exposure; indeed they may not become evident until several decades later. In other words, society will become adjusted to levels of pollution sufficiently low not to have an immediate nuisance value, but this apparent adaptation will eventually cause much pathological damage in the adult population and create large medical and social burdens.