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THE CHEMICAL COUNTRYSIDE

A view of Rachel Carson's *Silent Spring*

(Houghton Mifflin, 1962. \$5.00)

THE TECHNOLOGICAL society in which Americans live has provided a level of health, ease, and comfort unparalleled in history. We have set the pattern and the goals toward which the rest of the world strives. Loud voices proclaim the value of our achievements and promise an ever-changing, ever-better future. True, there have always been doubters and there have even been those who would reverse our social directions. Yet, on balance, we have come to accept technological innovation as an inherent feature of our culture and to dismiss—sometimes with contempt and ridicule—the arguments of the doubters.

But a second category of doubt has lately appeared; this doubt is neither imagined nor easily dismissed. We have cause to suspect that the products of our technology may be unwisely applied, and in the long run harm us more than help us. Environmental pollution is in my mind today's most serious such problem. This article concerns only one pollutant—pesticides—and is prompted by a current best-seller that challenges their present manner of use. The book is Rachel Carson's *Silent Spring*, a Book-of-the-Month Club selection for October; it is sure to provoke both thought and argument.



Before going on to the book, some orientation is necessary. What are environmental pollutants; why do they concern us all? By pollutant we mean a contaminating substance, one which is usually man-made and which is normally neither wanted nor controllable. Less commonly, pollutants are intentionally applied—usually with

single purposes in mind. Both warfare and agriculture give examples of this kind of pollution. There are two major classes of man-made pollutants—radioactive and chemical. The significance of uncontrolled radiation is widely and hotly debated. I shall leave it at that. The arguments about the second kind of environmental contaminant—chemicals—are much the same but are less well known and less resolvable into single issues. Chemical pollutants are of many kinds: effluents from home and industry, such as detergents; refinery gases; acids from pulp manufacture; discharges from automobiles; oil discharges from ships; and pesticides, among others.

Pesticides—now largely synthetic chemicals—are designed to kill or inhibit the plants and animals that interfere with our health, comfort, or production of foods and fibers. Some 200 chemicals are commonly used in agriculture; these are commercially presented in thousands of formulations under as many trade names. These chemicals are categorized according to their intended targets as insecticides, rodenticides, fungicides, and herbicides. Most can be considered “biocides”—they kill living things. The same or similar chemicals are also used in public health, forestry, fish and game management, right-of-way maintenance, property protection, and recreation. The purposes of pesticidal use are clear and widely accepted. But, if these purposes are acceptable, then why should anyone argue against their use?

Here are a few reasons:

1. Most pesticides are non-selective; they kill forms of life other than their targets.
2. Their manner of use, though often increasing the selectivity, is in most cases not precise enough, being restricted neither as to pest species nor area applied.
3. Insufficient attention has been given to other means of crop protection. Most other methods of pest control are culturally or biologically based and result in greater diversity and stability in the biota. Pesticides reduce faunal diversity—natural checks on

control—and ensure biotic instability. 4. Many kinds of pesticides—notably the chlorinated hydrocarbon group to which DDT belongs—are chemically incredibly stable; their survival in soil, water, and living tissue is assured.

5. Insidious pathways of biological transfer of toxic chemicals are now well known. These channels of potential harm, include delayed toxicity; secondary poisoning; transfer, storage, and concentration along plant and animal food chains; and, potentially at least, mutagenic and carcinogenic effects. Yet many chemically-oriented persons continue to deny the importance of these biological consequences of pesticide use.



6. Their use is entirely too single-minded in relation to the manifold effects they produce. It is not enough to restrict our concern to their value in crop and personal protection.

7. The technically supported viewpoints of the conservationist, the resource analyst, the biologist, and the sociologist are too frequently overlooked in pest control recommendations and in governmental programming.

8. Equally lacking is overt concern for esthetic and moral values that inevitably figure in the applications of technology to the satisfaction of human needs and desires.

I could categorize other reasons for complaint; and those listed are not of equal weight. No one denies the value of pesticides in safeguarding ourselves and our food supply. All the points listed above have been debated in the limited circles of technologists, regulatory officials, agriculturalists, industrial representatives, and governmental policymakers. However, the era of closed debate has ended. Miss Carson's book has made the debate public property.

Rachel Carson's talents as a writer do not require my endorsement. Her best-known book, *The Sea Around Us*, has been a continuing best-seller and now appears in translation in 30 languages. She has other books and

