BOOK REVIEWS

Thermal Pollution Analysis

This book is a revised collection of the technical papers presented at the "Thermal Pollution Analysis Conference" in May 1974. The two primary aims of the conference were to provide a status report on the development of predictive analysis for temperature patterns in waterways with heated discharges, and to enable the principal workers in the field and the current and potential users of the results to interact closely.

Thermal pollution is defined as the unnatural heating of waterways by industrial discharges, mainly those from the condenser cooling water of electrical generating plants. The 17 papers in this book include material ranging from current practices in the industry to a large scale computer simulation of the heat dispersion process.

The papers address the problem of heat dissipation by direct discharge of thermally enriched water into waterways and develop methods for assessing temperature distribution in the water and minimizing the impact on environment.

The first paper reports current practices in the electrical industry and serves as background information to the problem area. The next two papers present idealized and one-dimensional analysis of entire waterway sections. The following six papers treat the injection and mixing process in the waterways. One paper reports on a large scale computer simulation of a once-through condenser cooling system discharge to a coastal water region. This paper is followed by a simulation of a heated jet discharge into a moving waterway.

Three papers describing actual field measurements follow. The final two papers describe a laboratory study of jet injection and a study of overall system optimization. The papers include discussions of heat transfer characteristics, fluid mechanics, spray cooling mechanics, jet dispersion, and an analysis of the thermal impact on the host system. The information should prove useful to anyone involved in design of system and the development of impact statements. This book is a valuable source of information when one considers the magnitude and scope of the heated water problem.

The papers are analytical in nature and make great use of mathematical equations and simulation techniques. The book seems most suited for those who have knowledge of the problem of thermal discharges and its effects. A good background in mathematics is needed to follow the analytical procedures, but it is possible to interpret results without it. The presentations are complete and the authors point out problems in their solution due to assumptions for which there is a lack of data. Readers are referred to a bibliography with each paper so that the subject matter can be explored in depth.-ARNOLD M. FLIKKE, Department of Agricultural Engineering, University of Minnesota, St. Paul, MN 55108.

Planning for an Urban World, The Design of Resource-conserving Cities
By Richard L. Meier. Published by MIT Press, Cambridge, MA 02139. 1975. $27.50.

This is a mind-stretching book in which Richard Meier describes the alternatives that are available to the metropolis of the future as our supply of natural resources becomes more limited. It is a scientist's book which takes up the problems of achieving a balanced urban ecosystem.

Professor Meier is a man of broad interests and great imagination. He is a planner's planner as he takes us on a comprehensive journey into the unknown future, beyond the horizon established for those of us with more limited skills and background.

The book weaves together an array of economic, social, biological, and technological factors to describe what is happening and what is likely to happen as mankind clusters together in great interrelated urban concentrations throughout the world. There is extensive use of footnotes which refer to a great diversity of publications from academic, government, and private industry sources.

The book is optimistic in believing that the human animal has the ability to cope with problems of scarcity. It is optimistic in believing that the future urban world will produce better conditions for the realization of human potential. It is also coldly analytical in describing the social and economic pressures that will be brought to bear on society as it lives under the discipline of a "steady state urban system." The author provides us with 12 scenarios of past, present, and future reactions to urban development problems, ranging from a description of what has happened in the past, and various projections of our current trend, to a mind-boggling description of the consequences if a new ice age begins. Many of these scenarios are as imaginative as a Rod Serling or Jules Verne script yet they are all based on the solid scientific data with which Professor Meier is so conversant.

The book is long (498 pages) and slow reading if one wants to properly digest all of the mathematical and technical information contained in it. But it is worth the effort if you want to be on the cutting edge of the thinking about our future urban world.-WARREN ZITZMANN, Community Planner, Soil Conservation Service, USDA, Washington, DC 20250.

Chlorinated Insecticides Vol. II: Biological and Environmental Aspects

This book (two volumes) is probably the most comprehensive work yet published on the chemistry and biology of chlorinated insecticides. Volume I on Technological Aspects deals with the history and development, synthesis and chemistry, principles of analysis, formulations, and applications of such compounds as DDT, mirex, aldrin, and dieldrin, with emphasis on the environmental impact. Volume II on Biological and Environmental Aspects considers the interaction of these chlorinated insecticides with living systems and the environment.

An outstanding chapter in Volume II is one on "Insect Resistance to Chlorinated Insecticides," and covers such topics as measurement of resistance, inheritance and biochemical genetics of resistance, development of resistance in the field, and the stability of resistance to chlorinated insecticides as they relate to insects which attack both crops and people throughout the world.

Another major chapter of Volume II, "Action of Chlorinated Insecticides," deals with environmental behavior and metabolism with respect to insects, soil microorganisms, plants, vertebrates, enzymatic detoxication, and the nature of decomposition or transformation products. In this chapter the author also discusses the toxicity of these broad spectrum insecticides on insects, vertebrates, and nontarget organisms; their mode and mechanism of action, and structure-activity relationships.

It is somewhat ironic that these volumes should appear at a time when the use of certain chlorinated insecticides in many countries is being curtailed because of environmental concerns. Nevertheless, our knowledge of chlorinated insecticides will undoubtedly provide invaluable information to chemists and biologists in the development of integrated pest control systems. Moreover, it is possible that new types of chlorinated insecticides may yet be devised which are structurally related to the earlier compounds, but less persistent, and which would combine the essential features of low cost and minimum environmental impact.

Volume II is well written and documented with over 700 references. Both volumes provide valuable reference material for graduate students and advanced researchers in the biological and agricultural sciences who are concerned with the chemistry, toxicology, resistance genetics, metabolism, mode of action, and applications of the chlorinated insecticides.

Research and university libraries should acquire these volumes for use by all who are interested.-J. F. PARR, USDA, Agricultural Research Service, Beltsville, Md.