

Poor introduction to insect control

Biochemical Insect Control: Its Impact on Economy, Environment and Natural Selection. By M. Sayeed Quraishi. Pp. 280. (Wiley Interscience: New York, Sydney and London, 1977.) £14.40; \$26.10.

THE subject matter of this book is not immediately obvious from the title. In fact the book is mostly devoted to control of insect pests by insecticides, although short sections dealing with alternative approaches, such as the use of chemosterilants and compounds with hormonal activity, are included. All these methods have biochemical aspects but these are not generally emphasised in this text. Furthermore, there is only brief mention of economic and environmental considerations, and reference to the impact of 'biochemical' insect control on natural selection in the title seems to be justified only by a very short section dealing with resistance to insecticides. This confusion over the title is symptomatic of a general fault throughout the book.

From the wide coverage attempted in this short book, it seems to be intended as an introduction to insect control. However, the account is often confusing and generally poorly organised, tending to preclude such use. In addition, there are many errors that are not only far too numerous for a scientific work, but would also set a very bad example for students entering this field.

Arrangement of material in the book does not seem to have been carefully thought out. This has led, in many cases, to unnecessary repetition or to the omission of essential information and explanations. The first section is titled "Chemicals for Insect Control". Except for an inappropriately placed chapter purportedly dealing with pharmacodynamics of chlorinated hydrocarbons and their present status, this section comprises subsections made up of chapters each concerned with a group of chemicals according to type or origin. Many of these chapters contain detailed discussion of mode of action, activation and degradation. However, later in the book there are chapters—for example, those in a subsection titled "Insect-Insecticide Interactions"—that deal specifically with these subjects. Another example of poor planning is the chapter on "Attractants, Repellants and Antifeedants". This is placed in the subsection "Synthetic Insect Control Agents" and yet contains discussion of chemicals such as azadirachtin that are derived only from plants. Insect pheromones are also

discussed in this chapter, although in a later subsection on "Insect Control Agents of Insect and Microbial Origin" there is a chapter devoted specifically to pheromones and related compounds.

Many of the errors occur in the chemical structures and reaction schemes depicted in the book. Some probably arise because of the generally poor and inconsistent way in which structures are presented, but others are more fundamental and are often accompanied by errors in nomenclature or by incorrect statements in the text. For example, in the opening part of the chapter on lindane, where nomenclature is discussed, the chemical structure of hexachlorobenzene appears with the name benzene hexachloride. The author reiterates this mistake in the text and adds to it by joining the words benzene and hexachloride. Another example may be

taken from the chapter on organophosphorus insecticides, in which, although the author makes two attempts to explain the nomenclature of sulphur containing organophosphorus compounds, the structures of the two forms of demeton, incorrectly named mercaptophos, are presented with the terms thio and thiono wrongly assigned. Several related mistakes then follow.

On many occasions in the book there appear statements that are misleading or obscure. Also, the selection of material often seems to be arbitrary and there is perhaps too much reliance on early literature. In the light of these impressions and the points exemplified earlier I cannot recommend this book.

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Biochemical taxonomy

Biochemical Phylogeny of the Protists. By M. A. Ragan and D. J. Chapman. Pp. 317. (Academic: New York, San Francisco and London, 1978.) \$29.50; £20.95.

IN 1866 Haeckel drew the first phylogenetic tree with three main branches: Plantae, Animalia and Protista. The last purported to show the taxonomic relationships between a diverse group of simple life forms which included the bacteria, fungi, protozoa, sponges and some algae. It subsequently became necessary to divide this group and retain the title of 'protista' for eukaryotic forms only; the prokaryotes, bacteria and blue-green algae, have been separated off as the 'monera' or 'lower protista'. Support for this, and other modifications to earlier phylogenetic trees, has come increasingly from chemical studies in addition to the morphological studies (that is, classical taxonomy). The aim of the present work has been to redraw Haeckel's original scheme using biochemical data, thus significantly extending the chemical approach to this subject.

Evolution has become a favourite topic amongst biochemists, as molecular studies have increasingly revealed the structure of homologous proteins from different organisms, for example, cytochrome *c*. The authors of this book, however, have not confined themselves to an examination of proteins alone; they also include a chapter on nucleic acids, another on metabolic pathways, four on metabolites, and one which is a miscellany covering diverse topics

such as sulphate reduction and mineral nutrition. Apart from possible contributions from the field of immunology, no area seems to have been left unexplored; and in parts the text inevitably becomes a catalogue listing similarities amongst organisms, albeit a useful reference for biochemical research.

The resulting phylogenetic tree bears a considerable resemblance to some other modern 'classical' trees. This is somewhat surprising as only 1 or 2% of the species within this group has been examined biochemically, even for widely used characters like pigmentation; and fewer still have been studied as representative species for taxonomic purposes. The results suggest, however, that the biochemical approach to taxonomy is at least as good as any other at present and that it promises well for the future because of its more fundamental nature.

The most readable part of the text (not withstanding such modern idiom as "upcoming pages") includes the initial chapters on phylogeny and evolutionary theory and the concluding chapters comparing phylogenies and summarising the role that biochemistry can play in this field. In addition to references, the systematic classifications and taxonomic index of relevant organisms, a glossary for the non-specialist, explaining such terms as 'semantide' and 'cladist', would have been welcome. Also welcome would have been some detail on the mechanics of tree construction, particularly from biochemical data; was, for example, a computer used?

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