Book review

Pedro Barbosa & Deborah K. Letourneau (eds): **Novel Aspects of Insect-Plant Interactions.** 1988. New York: John Wiley & Sons. ISBN: 0-471-83276-6. 363 pp, US $ 47.50

The aspect of insect-plant interactions that Barbosa and Letourneau consider novel are all, in some way, chemically mediated and so this is a book which is likely to find a willing readership among chemical ecologists. This is an edited volume of nine chapters, organized into four sections which in turn cover (1) three trophic level interactions, (2) microbially mediated insect-plant interactions, (3) plant allelochemical effects on three trophic level interactions and (4) some aspects of allelochemical utilization and metabolism by insects. Each chapter is a well written review rather than a presentation of new data. The four sections are well focussed and make the point that there is, in reality, no such thing as a simple two tier insect-plant interaction because of the ecologically critical effects of microbes, predators and parasitoids. In parallel to this, the point is also made that natural products can still function as allelochemicals in these interactions, even where third party organisms make insect-plant interactions complex and indirect.

These ideas are, perhaps, part of the *status quo* rather than "novel" for the devotees of this field and in this respect the book shows its 1988 publication date. With that said, this is a very even and organized volume and it will still read very well as a text or introduction for those new to the field. In particular, the presence of a short introductory essay by Letourneau at the beginning of each of the four sections helps integrate the chapters into a coherent whole.

Whitman's opening chapter supplies a classification of allelochemicals as they function in a three trophic level system, these being divided as allomones, synomones, kairomones and finally antimones, which depress the survivorship of both the emitter and receiver organism. Nordlund *et al.* then conclude the first section with a review of allelochemically mediated interactions between plants and entomophagous insects. This theme is taken up again in by Williams *et al.* who consider cotton plants and their interaction with the parasitoid *Camptolectis sonorensis.* In contrast, Barbosa takes a broader and theoretical perspective. He provides an intriguing and valuable analysis of how polyphagy or stenophagy by herbivores may determine the allelochemical milieu in which variously generalist and specialist parasitoids have to survive. Rather less is known about the general impact of microbes and chapters by Berenbaum and by Dickie survey both the state of the art and the potential for future research. In the final section of the book, two particularly topical and important systems are reviewed, these being chemical defense in the Coleoptera (Pasteels *et al.*) and mimicry in the Lepidoptera (Bowers). Brattsten concludes the volume by presenting the hypothesis that allelochemically induced insect detoxification systems may play a role in the development of insecticide resistance.

A taste of the underlying philosophy of many of these chapters is given by Whitman who boldly states that: "Paralleling the celebrated food web that links the various trophic levels of all communities is an allelochemicals web". Here is the classic viewpoint of chemical ecology, that trophic level interactions may be deciphered once the nature of the allelochemical signal is determined. While this outlook may be vindicated by the application of semiochemicals in agricultural systems, there is little in this volume that will convert the skeptical ecosystem or community ecologist who may have to weigh the relative importance of chemically and non-chemically mediated interactions in the field. There is little critical argument here that the former are generally important relative to the latter in natural systems. What this volume does present is excellent mechanistic whole organism and population level biology about specific interactions, observed in controlled conditions, with two or three interacting species considered at a time. As such, this volume will be particularly attractive to those in entomology departments and agriculture schools.

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Erratum

Glendinning *et al.* (1990) Responses of three mouse species to deterrent chemicals in the monarch butterfly. I. Taste and toxicity tests using artificial diets laced with digitoxin or monocrotaline Chemoecology 1:114–123.

The legends of Figs 4 and 5 were inadvertently switched.