Literature

Hodgson, E. & Kuhr, R. J. (eds.) 1990: Safer insecticides. Development and use. 593 pp. — Marcel Dekker, New York, Basel. ISBN 0-8247-7884-7. Price USD 135 in USA and Canada, USD 162 elsewhere.

This is a timely volume that should be of interest to applied entomologists and those working in basic research. The 15 chapters, by 32 authors, discuss both new chemicals and new modes of action, and more refined use of existing insecticides, and the book contains a commendable number of references. In introducing the volume, Hodgson and Kuhr suggest that although both acute and chronic toxicity determine a compound's safety, attention should be paid especially to chronic toxicity. Compounds producing *in vivo* metabolites that bind to cellular macromolecules will eventually be banned, and money spent in "defending" their continued use should be directed, instead, to the development of safer, new chemicals.

Xenobiotic metabolism is examined in a clear and concise chapter by Dauterman and Hodgson, and a treatment of quantitative structure-activity relationships of insecticides (Nishimura et al.) is thorough but is directed mainly to specialists in that field. Chapters 4 through 11 consider a variety of potential and established groups of insecticides. Endocrine-based insecticides (Sparks) have been studied for a relatively long time in an attempt to achieve selective modes of action. The structural similarity of insect neuropeptides and ecdysteroids to vertebrate hormones is, however, a serious impediment to progress in this area. Juvenile hormones are an exception, and thus aspects of JH metabolism seem to offer greater possibilities for interference.

A balanced presentation of nervous-system-based insecticides (Eldefrawi and Eldefrawi) begins with a structural and functional comparison of insect and vertebrate nervous systems, followed by a discussion of critical proteins (receptors, ion channels) as possible targets of selective interference. This is a very lucid treatment of an important subject. Differences in metabolic pathways offer possibilities for the development of selective insecticides, a well-known example being inhibitors of chitin synthesis. Relatively little progress, however, has been made in other fields (Mayer and Gupton). An interesting approach to insect control is offered by inducers of plant resistance to insects (Fisher et al.). Compounds of possible use in this area include the plant-growth regulators, hormones, and herbicides known to exhibit such proporties. Other inducers of plant "immunity" may be pathogens in an attenuated form, i.e. the state occurring after herbivory. This approach may offer unexpected possibilities for insect control.

Many of the presently used nervous-system insecticides are activated *in vivo*. This pathway may be used to introduce further selectivity in new insecticides (Prestwich). Targets for such proinsecticides which are suggested in this volume include insect growth and development, reproduction, chemoreception, sterol metabolism, lipid metabolism, and detoxication reactions. Examples of proinsecticides mentioned include long-lasting juvenoids, light-activated compounds and analogues of precocenes, as well as antifeedants and antipheromones.

An important although brief chapter on plant natural products (Bell et al.) stresses the significance of these compounds as insect antifeedants. Many natural plant compounds are known locally for their medicinal and insecticidal properties and await discovery by western researchers. Plants presently used as insecticide sources may contain undiscovered molecules of value. The Neem tree of India contains several antifeedants and growth regulators, and has been known locally for its

medicinal and insecticidal properties. A chapter on viruses and bacteria (Kawanishi and Held) points out that progress in this area is restricted by a lack of knowledge of microbial ecology and pathogenesis.

Among the most interesting chapters in this book is a long and thorough treatise on spider toxins as potential novel insecticides (Quicke and Usherwood), which points out that animal toxins, with the exception of Neristoxin, have not as yet been employed as pesticides. This chapter lists spider taxonomy and toxin distribution with examples that have both theoretic and general interest. The toxin of *Loxosceles reclusa*, a well-known inhabitant of zoology laboratories even in the northern latitudes, include neurotoxins, cytolytic factors, and complement inhibitors. The authors present data from their laboratory on the actions of low-molecular-weight toxins on insect nerve and muscle preparations. Spider toxins, however, probably require extensive structural modification in order to function as insecticides in field conditions.

An important chapter by Hall describes improvements in application techonology as a major contributor to successful crop protection, IPM programs, and resistance management. Such improvements include techniques for obtaining "biologically optimum spray droplet size", and electrically charged sprays designed to minimize environmental damage. Reduced use of existing insecticides is further discussed by Agnello and Bradley. The book ends with a chapter on safety considerations in the manufacture of agrochemicals in the U.S. and developing countries (Kohn and Raab) and one on the viewpoint of industry (Engel et al.). The volume as a whole is highly recommended.

Seppo Turunen

Steinmann, H. 1989: World catalogue of Dermaptera. - (Series Entomologica. Vol. 43. Ed. K. A. Spencer). Kluwer Academic Publishers. Dordrecht - Boston - London. 934 pp. ISBN 0-7923-0096-3. Price DFL 500, USD 265, GBP 164.

The insect order Dermaptera comprises about 2000 species among the world fauna, most of the species occuring in tropical regions. In the Finnish fauna only two species are known, so the use of this catalogue will be limited in museums in this country.

The author is a world specialist on the group: a fact which guarantees this to be accomplished work. He has recently also finished a world revision of Dermaptera.

The catalogue is organized in systematic order on the suprageneric level and in alphabetical order on the generic and infrageneric level. A new suprageneric classification of Dermaptera is established, and all new synonymies and homonymies are listed at the beginning of the catalogue.

For each species the relevant literature is mentioned, including information about types, type locality and where the type is deposited (if known). The very important information concerning where to find keys and illustrations for determination of the species is also indicated. Lastly the general distribution is summarized in larger geographical units (countries or regions).

The literature list consists of nearly 900 references and the index covers all generic and infrageneric taxa (about 4300).

An important and welcome feature is the listing of authors and years for the suprageneric taxa, but in this connection two small inconsistencies should be mentioned. First the author for the subfamily Forficulinae should be the same as for the family Forficulidae, Stephens 1829 and

not Verhoeff 1902 (principle of coordination). Secondly the subfamily Labiinae Burr 1909 and the family Labiidae Burr 1909 should be replaced by Isolabellinae Verhoeff 1902 and Isolabellidae Verhoeff 1902 according to strict keeping to the code (the type-genus for Isolabellinae, Isolabella, is included in the subfamily Labiinae). However, this may also be a case for the International Commission on Zoological Nomenclature to preserve the names Labiidae and Labiinae. The catalogue is comprehensive enough for even such details quite easily to be resolved.

My general impression of this catalogue is, that it is a perfect tool for museum work.

Larry Huldén

Gilbert, L. I. & Miller, T. A. (eds.) 1988: Immunological Techniques in Insect Biology. — 284 pp. 71 figs. 15 tabs. Springer Verlag, New-York, Berlin, Heidelberg, London, Paris, Tokyo, Hong Kong. ISBN 3-540-96630-7. Price DEM 110.

Springer Verlag published in late 1988 a new book on immunological techniques specially designed for researchers in the field of insect biology. The book is the 12th in a series on experimental entomology. The purpose of the Springer series is to report new developments in methodology, to identify research groups who have dealt with and solved particular entomological problems, and to describe experiments which can be used in biology laboratory courses. The series covers topics such as techniques in insect neurophysiology, neuroanatomy, pheromone research, insect-plant interactions, etc. The new volume includes contributions by J. Ballarino, Ad M. T. Beenakkers, L. I. Gilbert, W. G. Goodman, N. A. Granger, B. W. Hermann, R. Keller, J. G. Kunkel, M. Ma, R. C. H. M. Oudejans, H. Schooneveld, T. K. F. Schulz, K.-P. Sieber, J. A. Veenstra, H. Voshol, J. T. Warren, and S.-J. Wu.

The utilization of immunochemical analysis for a wide variety of anatomical, physiological, biochemical and molecular biological research projects has increased logarithmically in recent years, and ELISA-readers have become almost as commonplace in the laboratory as spectrophotometers. In the case of insect biology, radioimmunoassays for insect hormones have revolutionized the field of insect endocrinology, and immunocytochemistry has accomplished the same for insect morphology and physiology. This present volume of the series, dealing with immunological techniques is intended for insect biologists, ranging from graduate students to senior investigators, who wish to utilize immunoassays in studies ranging from systematics to molecular biology. It is what the editors call a "how to ..." book and indeed, using insects as the model system, it covers most of the immunochemical techniques available.

The eight chapters are organized in such a way that each chapter stands by itself, thus enabling easy access to the description of the different techniques and sparing many potential users from having to read or even browse through the whole book. The first chapter is a general introduction to the field and has the benefit of being, so to say, closer to the laboratory than to the library. It describes how to store antibodies, and shows you the values of monospecific versus complex polyclonals, of titer calculations and of microcomplement fixation, and gives you a choice of references if you need basic information. The charm of the introductory chapter is that you sense after thirty-five pages that it has saved you from making several crucial errors due to an underestimation of the power of immunochemical techniques.

The other chapters cover: 2) Elisa and monoclonal antibodies, 3) time-resolved fluorescence immunoassay, 4) immuno-cytochemistry, 5) immunoassay of pesticides, and radioimmunoassay of 6) ecdysteroids, 7) juvenile hormone

and 8) peptides. To allow the chapters to function as such, there is partial overlap between the different contributions, but on the other hand it avoids excessive cross-referencing.

Characteristic of all the contributions is that they convey much information one would normally gain during a corridor discussion in a lab rather than from any research publication, where on the technical side, one often tends to be mystified by too short descriptions. One is told in detail how to immunize a rabbit, for example, as well as how to radioiodinate the antigen, and all this against a background of insect biology. Some of the chapters describe the method through a case study, which also gives the reader an idea of the time needed to be reserved for an equivalent experiment.

The layout is clear, and the figures and tables in black and white most often enhance the text by giving an idea of what how the measurements should look to be reliable. An extensive list of references at the end of each chapter opens the field to further bibliographic studies. The methods being presented are well established and no longer liable to rapid changes due to the general advancement of science, so the value of the material should endure for several years. The price makes this book affordable to anyone, avoiding the problem of handbooks always being somewhere else than in the library.

At less than 300 pages, this book is likely to be a valuable companion for many scientists, not only entomologists.

Christophe Roos