namely R. Brouillard, should contribute the first chapter in this book on their chemistry. The problem of copigmentation in flowers is taken-up again in the second chapter by Y. Osawa, who usefully surveys recent experiments in this field. The more practical aspects of controlling the stability of anthocyanins in fruits and vegetables is considered by Markakis in a later chapter, where he describes the effects of temperature, light, pH, metals, oxygen and sulphur dioxide on anthocyanin food colours.

An excellent survey of the natural distribution of anthocyanins in food plants is then presented by C. F. Timberlake and P. Bridle. The anthocyanins of grapes and wine, not surprisingly, receive separate treatment and there is an authoritative chapter by the doyen in this field, P. Ribéreau-Gayon. The successful analysis of anthocyanins in food plants requires considerable care and attention to detail because of their instability and their readiness to complex with other plant materials. It is valuable to have an up-to-date and masterly summary of analytical procedures provided in this volume by F. J. Francis. The remaining two chapters on anthocyanin biosynthesis (H. Grisebach) and on proanthocyanidins (K. Weinges and F. W. Nader), while useful, seem to be somewhat marginal to the main theme of the book.

In summary, this is a book principally aimed at food scientists but which will be of interest to a wider audience, since it generally reviews much recent progress in anthocyanin research. It is extensively illustrated with formulae, tables and diagrams and will be an invaluable reference to anyone working in the laboratory with these pigments.

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The Chemistry of Pesticides: Their Metabolism, Mode of Action and Uses in Crop Protection: by KENNETH A. HASSALL. MacMillan Press, London, 1982. 372 pp. Hardback £30; paperback £15.

The science of pesticides is wide ranging across the disciplines of chemistry, biochemistry, biology, soil science and . . . (I leave the reader to fill in his own particular subject). This indicates that traditional college courses are not likely to deal with pesticides in anything but a perfunctory manner. The other side of this coin is that the courses specifically teaching about pesticides are of interest to a wide range of people from a very diverse spread of background—and there is a dearth of good textbooks covering the basic information.

Ken Hassall's text sets out to remedy this situation and I believe he has succeeded better than most who have attempted to meet this information gap, particularly in the amount of information he is able to impart in such a reasonable and readable compass. This stems from his long experience in such teaching in England and Africa. The book will also serve as a reference volume for people with an expert knowledge of one aspect of pesticides, but who need background in another area.

An expert, examining a painting on such a wide canvas, is bound to find deficiencies. "Naturally many of these generalizations are, at best, rather facile oversimplifications." (p. 250). To take the reader deeper there are both specific references for each chapter, and a bibliography of useful sources of information. From time to time I came across interesting facts that were not annotated, and in a few places there was more detail than I would have expected, or a rather peripheral paper was referenced.

After a general introduction and background chapters on formulation and metabolism, insecticides are given pride of place even though herbicides are commercially more important. Possibly we understand more about insecticides! The chapters are here based upon chemical class (e.g. organophosphorus insecticides), whereas fungicides are divided according to their systemicity in plants, and herbicides by whether foliage or soil applied. Each major class of well established pesticide is discussed with information on physical properties, toxicity, metabolism and mode of action.

This is a fast moving subject and I would have valued more information on the recent chemicals that are revolutionizing pesticide science at present (such as synthetic pyrethroids, the azole fungicides that are ergosterol biosynthesis inhibitors, and the newer diphenylether herbicides) together with a short chapter on the new ideas that are in vogue (e.g. insect hormones, pheromones, and naturally occurring protectant chemicals, such as phytoalexins).

This is not a chemistry book, despite its title, but it is a welcome general source of background in pesticide science well worth reading.

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