

Book Reviews

Natural Product Chemistry: A Mechanistic, Biosynthetic and Ecological Approach. By Kurt B. G. Torssell. Swedish Pharmaceutical Press, Stockholm, Sweden. 1997. 480 pp. 16 × 24 cm. SEK 320. ISBN: 91-8627-463-5.

The first book on natural products that I bought was W. I. Taylor's slim volume on *Indole Alkaloids*. It was the time between my Bachelors degree and starting research. The person I was going to work for, the late George F. Smith, was a prominent member of the indole alkaloid chemistry community, and he advised me that I had better learn something about the area I was about to enter. I distinctly remember being totally overwhelmed by the diversity of the structures and wondering how on earth I could ever begin to pull this information together. That was 30 years ago, and many natural products have flowed over the silica gel since then. Yet the feeling remains, this marvelous bewilderment of the chemical diversity of natural products.

Over the years, the progress in natural products chemistry has been stunning in the areas of isolation, structure elucidation, synthesis, biosynthesis, and biological evaluation. In addition, the ecological niche of select natural products has become apparent. This volume is an attempt to address certain aspects of these areas, and for a variety of cogent reasons eliminates others (isolation, structure elucidation, and biological evaluation). It is the second edition of a book, first published in 1983, and has been revised and upgraded with a new thematic focus placed on the ecological aspects of natural products.

Following an introductory chapter on the background biochemistry, Chapter 2 deals with the added material on chemical ecology. This is a gamble, because at this point the reader has little or no idea about the various classes of natural products. In my view it doesn't pay off. The chapter covers topics such as adaptation to the environment, the chemistry of pollination, and plant-animal, animal-animal, plant-plant, and plant-microbe relationships and has many structures. I think that it would have been much better to have had this chapter at the end of the book, placing in context the diversity of natural products and coupling it with a much broader discussion of the role of natural products in society on a daily basis (medicines, foods, fragrances, cosmetics, etc.). The remaining chapters correspond to those of the first edition, with many added references up to mid-1995.

A good feature of the first edition was the inclusion of problems at the end of each chapter (answers at the end of the book), and this feature is continued in the present edition. Regrettably though, many of the problems are carried over from the first edition; indeed, only 10 of the 47 problems from the "old" chapters are new.

There are other issues that I have with this edition, some more significant than others. The first is that there are many spelling errors (one on the cover!) and the punctuation is in need of improvement; the number of commas missing is phenomenal, for example. Secondly, there are numerous mis-statements or questionable statements, e.g., "If the label can be excised from the molecule...the radiotracer technique is the method of choice" (in biosynthesis). "The environment has changed considerably over the geological time scale while secondary metabolism in part has remained more or less stationary", "Only about 10% of the earth's plants have been properly identified", "Three groups of compounds are responsible for the flower pigments" (betalains?), the implications that bees see in color (p 52) and that fish can smell (p 70), and finally "the general nutritional value of most plants varies comparatively little". These comments are all from Chapter 2. This new chapter also has 20 "a" references that have not been renumbered and integrated into the text.

Some other peeves: The Diels-Alder and the Mannich reactions are not discussed as fundamental reactions in natural product chemistry (Chapter 1), and the names of plant families are italicized throughout. Some errors in fact have been carried over from the first edition, e.g., the statement (p 237) that pyrrolinrin is polyacetate-derived; it is tryptophan-derived. In the chapter on alkaloids there is the statement, "curiously enough, alkaloids are sparsely represented in the marine environment", the implication that vincoside is a natural product is maintained, and the stereochemical relationships of ipecoside and emetine are not addressed in light of current thinking. Finally, and admittedly reflecting my heritage, I have to mention "The British are the largest consumers of tea per head. Coffee became a popular beverage rather late and was once treated with suspicion" (p 480). The fact is that when tea was commercially introduced into English society in 1657, (all-male) coffee houses abounded in London; and the first tea house was opened (to men *and* women) in 1717.

In spite of these comments, this is fundamentally a worthwhile book. There will never be a comprehensive natural product chemistry book that embraces the biochemistry, chemistry and biology of natural products, and this certainly fills a niche. For the beginning student of the biosynthesis of natural products this is a good, broad introduction and will undoubtedly be used widely.

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