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BOOK REVIEWS

Biosynthese niedermolekularer Naturstoffe. HORST ROBERT SCHÜTTE, VEB Gustav Fisher Verlag, Villengang 2, 6900 Jena, DDR, 1982. 176 pp., 17 x 24 cm. 36 DM. (approx. \$20).

This book is another volume in the series "Bausteine der modernen Physiologie." It is a survey of natural products—although not complete—and the pathways leading to these compounds and is based on a lecture and seminar series the author has given at his home institution. The introductory chapter describes, in two pages, coenzymes and high energy compounds; enzymes and gene expression (two pages); distinction between primary and secondary metabolism and ecological importance of secondary natural products (two pages); and biosynthetic methods, which proposes to use mass spectrometers to analyze incorporation of stable isotopes but does not even mention nmr as a potentially better tool to accomplish this.

The second chapter covers the biosynthesis of amino acids, including the shikimic acid pathway. Following this are two short chapters on nicotinic acid formation and porphyrin biosynthesis. Chapter 5 discusses pyrimidine, purine, and related compounds (in seven and one-half pages). Polyacetate formation and the isoprenoid pathway are covered together in one chapter and, together with chapter 7 on phenylpropanoid metabolism, make up the bulk of the book. The next three short chapters deal with amino acids that are generally not found in proteins; a four-page summary of nonribosomal peptide synthesis, including penicillin and cephalosporin synthesis; and the biosynthesis of cyanoglycosides. The last chapter deals with the biosynthesis of most of the known alkaloids.

In general, the discussions of the biosynthetic pathways are treated with few details. No mechanisms are listed. In addition, some of the pathways, as, for example, indole alkaloid, quinolizidine alkaloid, and ergot alkaloid formation, are not up to date. The references are compiled at the end of the book and are not referenced in the text, but rather are listed by title; they are mostly review articles. A most annoying aspect is the scarcity of references listed. For example, the 27-page chapter on alkaloids lists 15 references, the latest one from early 1981. Many topics are not referenced at all. Information concerning regulation of the pathways is not included.

This paperback book, written in German, can be recommended as a general reference for looking up a particular pathway. However, because of the lack of sufficient references, it would be difficult to follow up a particular topic in the literature. Similarly, the author proposes that the book is of particular value for advanced students in biology, biochemistry, chemistry, pharmacy, medicine, and agriculture. This, however, is not the case in view of the fact that little, if any, mechanisms are listed and no experimental proofs or details of metabolic pathways are discussed.

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Medicinal Plants of North Africa. L. BOULOS, Reference Publications, Inc., 218 Clair River Drive, Algonac, MI 48001, 1983. 286 pp., 15.5 x 23.5 cm. \$39.95.

The author has had invaluable field experience in North Africa, and he succeeded in his primary goal of providing a useful compilation of medicinal plant usage by inhabitants of the area. Entries for 369 species are arranged alphabetically by taxonomic families. The entries include routine synonymy and recorded medicinal uses. A triple indexing system (medicinal use, common name, and botanical name) effectively enhances access to information in the volume.

Considerable variation is found in the details and discussions of uses of the various plants. The more detailed discussions (e.g., *Iris germanica*, *Iris pseudacorus*, and *Ajuga iva*) will have greater utility for most users than the more common, cryptic tabulations of medical conditions for which the respective plants have been used.

Attempted correlations of known phytochemical constituents with recorded medicinal uses are uncommon. Omission of readily available information on known active constituents (e.g., tropane alkaloids in several solanaceous species, cardiotonic glycosides in *Nerium oleander* and *Urginea maritima*, phenanthrene alkaloids in *Papaver somniferum*, etc.) deprives the volume of significant perspective and impairs achievement of the author's secondary objective, which was to guide in a meaningful way further chemical investigations of these plants. Exceptions to the absence of correlations between chemical constituents and pharmacologic action include *Androcymbium gramineum*, *Colchicum autumnale*, *Conium maculatum*, and *Pituranthos tortuosus*. Attributing the diuretic action of the last species to mannitol is questionable; mannitol is not absorbed upon oral ingestion and is an osmotic diuretic only upon parenteral administration.

The book is attractively presented and includes 103 line drawings. The drawings undoubtedly contributed to the rather high cost of the volume, and some individuals may question their cost-benefit ratio. However, the publication's value as a compilation of medicinal plant usage in North Africa justifies its inclusion in the libraries of most academic institutions.

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Plants Used Against Cancer. A Survey. JONATHAN L. HARTWELL, Quarterman Publications, Inc. 5 South Union Street, Lawrence, MA 01843, 1982. vii + 710 pp., 16 x 24 cm. \$75.

This book is a facsimile compilation of eleven papers published by the author in *Lloydia* from 1967 to 1971. The original text has been reproduced chronologically with the original pagination plus additional consecutive page numbering. A foreword to the book has been written by Dr. James Duke, USDA, Beltsville, MD.

Plants Used Against Cancer was compiled over a number of years by Dr. Hartwell during his tenure as Chief of the Natural Products Section of the National Cancer Institute. More than 1000 references are cited and more than 3000 species of plants are tabulated, each having been used for the treatment of cancer at some time in history. "Cancer" must necessarily be broadly interpreted to include application to swellings, tumors, indurations, hard swellings, warts, corns, and many other poorly-defined conditions that may or may not have been malignant in origin. For each plant name, given as a Latin binomial, the following information is provided: (a) common name(s), (b) plant part, (c) type of preparation, (d) disease or condition, (e) reference number, and (f) miscellaneous comments.

The higher plants are listed first (Angiosperms and Gymnosperms collectively), followed by the mosses, liverworts, algae, lichens, and fungi.

For those who are not subscribers to *Lloydia*, in which the original papers were published, and who have an interest in ethnobotany, cancer, and the pharmacology of natural products, this book is an absolute must. Even *Lloydia* subscribers will find this treatise a more easily used compilation of data.

It should be pointed out that, after Dr. Hartwell's retirement from his post at the National Cancer Institute in 1975, this list of "plants used against cancer" was not systematically studied to determine experimentally whether a correlation of folkloric (ethnomedical) claims for anticancer effects exists based on *in vivo* assays. Hopefully, this will be effected with support from one or more philanthropic foundations or by one or more international agencies interested in improving primary health care.

The book is recommended to all libraries, to scholars interested in cancer treatment, to scientists having a desire to explore plants as sources of novel and useful antitumor agents, and to medical historians.

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Biosynthesis of Isoprenoid Compounds, volume 2. Edited by J.W. PORTER and S.L. SPURGEON. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158, 1983. viii+552 pp., 16.5 x 24 cm. \$120.

This monograph completes the two-volume work on "The Biosynthesis of Isoprenoid Compounds." The present volume is composed of eleven chapters concerned with the biosynthesis and function of higher isoprenoids as well as specific important isoprenoid metabolites. The titles and authors of the chapters are as follows: "Biosynthesis of Carotenoids," by S.L. Spurgeon and J.W. Porter; "Photoregulation of Carotenoid Biosynthesis," by W. Rau; "Isoprenoid Biosynthesis in Archaeobacteria," by J.D. Bu'Lock, M. de Rosa, and A. Gambacorta; "Biosynthesis of Ubiquinone and Related Compounds," by J.F. Pennock and D.R. Threlfall; "Biosynthesis of Dolichols and Related Compounds," by F.W. Hemming; "Biosynthesis of Rubber," by C.R. Benedict; "Formation and Function of Vitamin A," by J.A. Olson; "Biosynthesis of Abscisic Acid and Related Compounds," by B.V. Milborrow; "Trisporic Acids," by J.D. Bu'Lock; "Ecdysteroids," by H.H. Rees; "Biosynthesis of Juvenile Hormones in Insects," by J.H. Law. The preceding volume covered the initial stages of the isoprenoid pathway and the biosynthesis of lower terpenes and sterols. Notable omissions are reviews on biosynthesis of steroid hormones and bile acids. Although the editors have justified this in the preface on the grounds that these topics are extensively reviewed elsewhere, the biosynthesis of these important isoprenoid metabolites is quite relevant and their omission leaves a distinct gap.

This volume is rather more specialized than its predecessor, and more emphasis is placed on biochemical and biological aspects such as regulation, distribution, function, genetics, etc. The authors of each chapter are well-chosen experts in their respective fields. The chapters on the novel membrane isoprenoids of the primitive archaeobacteria by Bu'Lock, de Rosa, and Gambacorta, and juvenile hormones in insects by Law were especially interesting. The comprehensive reviews on the biosynthesis of carotenoids by Spurgeon and Porter (122 pp., 502 ref.) and the polyprenylquinones by Pennock and Threlfall (113 pp., 371 ref.) should prove very useful to specialists and non-specialists alike. The extensive use of structures, schemes, diagrams, and tables along with topic outlines and frequent sectional headings is commendable. Although the quality of the chemical structures is generally quite good, some are rather faint and/or small (e.g., Figs. 1.23, 1.31, 10.1, and 10.4). A few errors in the structures were found (prephenate and arogenate, Fig. 4.4, p. 202; structure 23, p. 23). It is not clear why the price of this volume should be twice that of volume 1 (\$120 vs. \$59.50), since the two are almost exactly the same length. Although the high price will no doubt limit acquisition of volume two to specialists and research libraries, the two-volume set is sure to become standard reference on isoprenoid biosynthesis.

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The Alkaloids, vol. XXII. Edited by A. BROSSI. Academic Press, Inc., 111 Fifth Avenue, New York, NY 10003, 1983. xviii+342 pp., 15.5 x 23.5 cm. \$50.

This volume in the continuing treatise is another credit to the tradition of excellence that was established in 1950 under the editorial guide of R.H.F. Manske and H.L. Holmes and is published by the same press.

The five chapters that make up this latest addition to the series are a mixture embodying the customary presentation of alkaloids by classes that have not been reviewed for some time and new material. In the first category are two chapters: "Ipecac Alkaloids and β -Carboline Congeners," by T. Fujii and M. Ohba (last reviewed by Brossi, Teitel, and Parry in 1973, vol. XIII) and "The Imidazole Alkaloids," by L. Maat and H.C. Beyerman (last reviewed by Battersby and Openshaw in 1953, vol. III).

The second group includes a chapter entitled "Putrescine, Spermidine, Spermine, and Related Polyamine Alkaloids," by A. Guggisberg and M. Hesse; an exposition on "Elucidation of Structural Formula, Configuration, and Conformation of Alkaloids by X-Ray Diffraction," by I. Karle; and, finally, a discourse by I. Ninomiya and T. Naito on "Application of Enamide Cyclizations in Alkaloid Synthesis."

This volume is remarkably free of typographical errors, filled with current information (some references into 1983), well produced (some, if not all, drawings from camera-ready copy), and clearly designed to add to the permanent record. However, the writing is somewhat uneven, the English occasionally awkward, and editorial intrusion, even when it might have been warranted, kept to a minimum.

A library servicing the chemical community cannot fail to continue the series with this volume, and individuals whose areas of interest or expertise lie within the specific topics covered will want their own copies. Additionally, the chapters by Karle (on X-ray diffraction) and Ninomiya and Naito (on enamide cyclizations) should probably be on the recommended reading list for both students and professionals interested in synthetic and analytical methods.

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Plantas Mediciniais, Seu Uso Tradicional em Moçambique, Tomus 1. P. C. M. JANSEN and O. MENDEZ. República Popular de Moçambique, Ministério de Saúde, Gabinete de Estudos de Medicina Tradicional, 1983. Paperback, 216 pp., 15 x 21.4 cm.

This book (in Portuguese) is the first of many volumes on the medicinal plants of Mozambique being planned for publication. It presents the results of ethnobotanical studies based, in large part, on field work. The book has a strong taxonomic emphasis, and its bulk consists of Latin binomials, common names, taxonomic descriptions, plates (line drawings), distribution maps, ecological observations, lists of plant specimens collected and examined, data on medicinal uses, and lists of references. A map of Mozambique and an introduction (pp. 5-8) are provided, followed by a page of explanation on the meaning of abbreviations used and codes of herbarium institutions cited. The following indices are given: Index to Scientific Names, to Common Names, and to Medicinal Uses.

The plan of presentation for each species is in the following format: accepted Latin binomial (with author citation and place of publication); synonymous Latin binomials (if available); common names; taxonomic description; ecological observations; specimens collected and examined (with an indication of the institutions where they are deposited); notes on medicinal uses (based on field interviews, herbarium field notes, and literature); and bibliography. This format is consistently used throughout the book. The species are arranged in an alphabetical order within the corresponding family, and the families are arranged alphabetically. This particular volume treats families Acanthaceae through Annonaceae.

From the format of presentation, the book is clearly addressed to scientists with a botanical background, primarily economic botanists. However, natural product chemists in search of biologically active compounds will greatly benefit from the book. The ethnomedical data will provide the necessary leads. The accurate taxonomic identification, illustrations, botanical nomenclature, descriptions, and detailed geographic distribution of each species will assure the collection of the correct species for investigation, and its recollection in bulk quantities for isolation and structure elucidation work. The botanical data have been randomly checked by the present reviewer, who found them to be highly accurate. The same may be said of page numbers in the indices. Because this is not a taxonomic treatise, the taxonomic nomenclature has been based on established taxonomic works (floras, monographs), listed at the end of every species presentation. This is part of the strength of the book. The other strength lies in the fact that the greater part of the ethnomedical data represents a primary source of information.

In general, the book is attractively presented. One disturbing omission is the lack of a Table of Contents or a list of species treated as entries. Twenty-nine species (in six families) are treated in this volume, but to arrive at these figures it was necessary to count through the book, page by page. On the other hand, the inclusion of every specimen collected and examined does not appear to contribute significantly to the book, except to the bulk. The inclusion of only those relevant ones (cited in common names, in ecological observations, and in medicinal uses sections) would be more appropriate. These and other minor deficiencies of the book—such as the use of regular roman type for synonymous Latin binomials and italics for family and specific names treated as entries in the Index to Scientific Names, omission of year in some literature citations, lack of proper indentation to separate data in the medicinal uses section, and lack of numbering of the entry-species—however, should not seriously hamper anyone in using this book.

In summary, the book presents us with an ethnobotanical contribution on the medicinal uses of plants from southeast Africa and is a welcome supplement to the widely used *Medicinal and Poisonous Plants of Southern and Eastern Africa* (Watt, J.M. and M.G. Breyer-Brandwijk, 1962).

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