

Book Reviews*

Book Review of *Bitter Nemesis. The Intimate History of Strychnine*

Bitter Nemesis. The Intimate History of Strychnine. By John Buckingham. CRC Press/Taylor & Francis Group, Boca Raton, FL. 2007. 15 × 23.5 cm. xix + 298 pp. \$41.95. ISBN 978-1-42005-315-9.

If you are interested in the history of alkaloids and other natural products, the use of plants as medicines and/or poisons, the challenges and struggle to identify the structures of alkaloids in the 19th and early 20th centuries, or the earliest developmental stages of forensic science, then you will enjoy this unique, rather thorough history of strychnine.

The introduction and 18 cleverly named chapters take the reader through the tangled and confused history of nux vomica, the powdered seeds of *Strychnos nux-vomica*, which contains strychnine, brucine, and other substances. Efforts to use this preparation as a medication are described, along with the more sinister efforts to use this poison to commit murder. Ultimately, attempts to prosecute individuals accused of using nux vomica as an instrument of murder led to development of analytical methods for strychnine and the earliest stages of forensic science. The author then summarizes the roles played by numerous prominent chemists in the history of strychnine, among them Pelletier, Caventou, AW Hofmann, Liebig, Perkin, Robinson, Prelog, and Woodward, a veritable Who's Who spanning nearly a century and a half of natural products organic chemistry.

While the book seems to wander back and forth between the public history and use of strychnine and the scientific work to isolate, identify, and characterize the activity of the alkaloid, it is nonetheless an interesting and educational glimpse into one of the many hallmark natural products that played pivotal roles in the development and evolution of organic chemistry.

NP100163R

10.1021/np100163r American Chemical Society and American Society of Pharmacognosy

Book Review of *Plantas Medicinales Iberoamericanas*

Plantas Medicinales Iberoamericanas. Edited by Mahabir P. Gupta (Universidad de Panama). Organización del Convenio Andrés Bello, Colombia. 2008. xiii + 1003 pp. 7 × 10 in. \$80.00. ISBN 978-958-698-209-2.

The CYTED, an acronym for its Spanish name, is an international association of Ibero-American countries to promote and develop science and technology. This book, largely in Spanish and partially in Portuguese, is one of the written results of this fruitful interaction, along with two previous publications about isolation and structure elucidation of bioactive natural products.

The book presents information on more than 200 native species from the CYTED-participant countries in a concise manner. The title invites the reader to find information about medicinal plants; however, several of those lack reports of their therapeutic use. The described species were selected from 18 different countries, and many of them are not very familiar for their popular use. The compendium of data that can be found includes pictures of a large

percentage of the mentioned plants, synonyms of the species name as well as some of the common names used, exhaustive botanical descriptions, geographical distribution, ethnomedicinal uses, and, for those plants for which data are available, an abstract of the pharmacological activity, toxicity, and phytochemical studies published. References to the cited literature can be found immediately after each species description. This well-structured book provides easy access to the information. It is organized in alphabetical order and divided by plant family, and possesses several indices based on different categories for rapid searching of information such as scientific name, common name, and synonyms.

The style of the Spanish observed throughout the text is as diverse as the flora described in it. In places, the book contains slang or dialect, literal English translations, and repeated data on the same page; however, the immense amount of information offered in this single document allows one to overlook the not always exhaustive editing.

Readers can obtain a broad, useful description of the potential, still only partially explored, that Ibero-America possesses in its folk medicinal flora. The impressive number of species with claimed curative properties and no further studies invites pharmacologists and pharmacognosists to dive in.

Tamara L Meragelman

*Bionovo
Emeryville, California*

NP100164J

10.1021/np100164j American Chemical Society and American Society of Pharmacognosy

Book Review of *Chemistry in the Garden*

Chemistry in the Garden. By J. R. Hanson (University of Sussex). Royal Society of Chemistry Cambridge, UK. 2006. x + 148 pp. 16 × 24 cm. £14.95. ISBN 0-85404-897-9.

The audience for this book is the scientist who is also an amateur gardener. Contained within its pages, to the delight of an organic chemist, are chemical structures associated with many of the compounds responsible for plant growth, survival, and beauty. The information focuses on familiar and common plants; so, it is interesting as well as practical. A glossary is provided for those once familiar terms that have escaped the memory.

The book is divided into eight chapters, with each chapter subdivided into easy-to-read segments. Chapter 1 provides a general introduction to natural products and their pervasive influence in gardening. Chapters 2 and 3 are scientifically the most intensive, describing the biosynthetic pathways of common classes of secondary metabolites (i.e., terpenoids and alkaloids) and the biochemical connection between compound and function. The relationship between inorganic and organic chemistry is highlighted in Chapter 4 with the discussion of soil, an important but sometimes overlooked topic in the study of garden plants.

Chapters 5–8 contain material that is probably more familiar to gardening chemists. The external appeal of several garden plants is discussed in Chapter 5 with an analysis of the compounds responsible for the coloring and scent of flowers. Chapters 6 and 7 present information about the medicinal and nutritional properties of common garden plants, fruits, and vegetables and the specific compounds responsible for those properties. The examples and stories mentioned will be familiar to the medicinal/natural products chemist; so, an expansion of these chapters, providing information

* Unsigned book reviews are by the Book Review Editor.

on recent discoveries, would make these chapters more enlightening. The final chapter, which could be the topic of an entire text, provides an overview of how the microbial, fungal, and insect communities are intimately involved in the garden plant community. The better we understand the chemical relationships between these communities, the more adept we will be at controlling issues in an “organic” or “green” manner. The text ends by reminding its readers that the environmental changes our world is currently experiencing will influence not only the growth of our plants but also their chemical composition.

Chemistry in the Garden is a satisfying read for any scientists interested in cultivating their yards. One minor concern is that fascinating, though somewhat random, tidbits of information concerning history, plants, and chemicals are sprinkled throughout each chapter, but, because of the indiscriminate nature of the information, a referencing system would make it easier for the reader to find additional resources.

Susan M. Ensel
Hood College
Frederick, Maryland
NP1001658

10.1021/np1001658 American Chemical Society and American Society of Pharmacognosy

Book Review of Molecules and Medicine

Molecules and Medicine. Edited by E. J. Corey, B. Czako, and L. Kurti (Harvard University). John Wiley and Sons, Hoboken, NJ. 2007. xii + 234 pp. 7 × 10 in. \$50.00. ISBN 978-0-470-227497-7 (paperback).

This is a delightful book that seamlessly blends chemistry, medicine, drug discovery, and biology into a recipe that will be savored by a broad readership. Its exquisite figures, often arranged into informative panels, and its structures and excellent references found at the end of each part support a brief, but concise monograph approach to its contents. The text overall is organized into six parts: 1. Introduction; 2. Inflammatory, Cardiovascular and Metabolic Disorders that Include Receptors and Signaling; 3. Reproductive Medicine, Osteoporosis, Glaucoma and Anti-ulcer Agents; 4. Autoimmune Disease and Organ Transplant, and Infectious Diseases; 5. Malignant Disease; and 6. Drugs Acting on the Nervous System (Pain, Analgesia, Hypnotics, Neurodegenerative and Psychiatric Diseases). Each starts with a topic overview that brings even the lay reader up to an understanding of the extraordinary advances that are covered. These parts are further supported by an excellent glossary and comprehensive index. The agents (100 plus) within these parts, all small molecules, have their year of discovery, year of introduction, drug category, main uses, brand names, and related compounds noted in 1 or 2 pages of content. This is not a research text. Do not look for lists of side effects, or symptoms for the disease states cited; rather enjoy the benefits each agent’s monograph provides from the interdisciplinary overlap of the above-mentioned sciences.

This book should be in every community, high school, and university library and is recommended for all chemists, students of these disciplines, and anyone else with a moderate degree of scientific literacy and interest in the history of drugs and medicine. In the preface the authors state, “An effort has been made to integrate chemistry, biology, drug discovery and medicine in a way that is clear and self-explanatory.” They have achieved this at the highest order and should be commended for it. This book should serve as an inspiration to student readers to enter the ever-progressing field of molecular medicine. Having grown up in my career with many of these molecules and hearing them linked to

symposium lectures at ASP meetings, I cannot help but be proud of our Society and its influence on a broad array of medicinal molecules.

The reviewer of this book and *Molecules that Changed the World* has chosen to make similar recommendations of their use, because they are not competitive but rather excitingly complementary. There is virtually no overlap of content. Both books should be available in all libraries from the community to local high schools, to our universities and the personal libraries of natural products and medicinal chemists and pharmacognosists.

Robert J. Krueger
Ferris State University
Big Rapids, Michigan
NP100166U

10.1021/np100166u American Chemical Society and American Society of Pharmacognosy

Book Review of Molecules that Changed the World

Molecules that Changed the World. Edited by K. C. Nicolau and T. Montanon (Scripps Research Institute and the University of Crete, respectively). Wiley-VCH, Weinheim. 2008. xx + 336 pp. 23 × 30 cm. \$55.00. ISBN 978-3-527-30983-2.

The foreword to this superb text, by Nobel Laureate E. J. Corey, states in part, “This book is an enthusiastic celebration of many organic molecules, especially those of natural origin, intricate structure and biological relevance.” And indeed it is. This work combines historical perspectives, excellent illustrations, and photographs of numerous scientists whose work is discussed in a treatise that will make chemists proud of their profession. As a member of the American Society of Pharmacognosy, I was particularly proud of the inclusion of a virtual “who’s who” of ASP members, many of whom have been presidents of the Society. The text is organized in 34 chapters, most of which discuss a single molecule, supported by an extensive subject index and a “Register of Persons” that allows one to locate a specific scientist. The “Introduction” starts with the Big Bang and brings the reader quickly to a base knowledge for Chapter 2 “Urea and Acetic Acid, 1828 and 1845”. This chapter introduces 11 of the great 19th century chemists and their work in only 5 pages. But since the entire work is lavishly illustrated, the accompanying pictures in this chapter and the rest contribute their supportive 10,000 words each, magnificently! From this beginning the remaining chapters delightfully describe, to name a few, the synthesis of glucose (3), quinine (9), strychnine (12), penicillin (13), ginkgolide B (21), taxol (25), epothilones (29), and resiniferatoxin (30), and end with numerous small molecule drugs (33) and a sampling of biologics (34). The key references that are noted in each chapter include many that the general public would find accessible and enjoyable. Each molecule has been selected because its chemistry, biology, and medicinal importance changed our world.

Anyone who reads this text will value the rich heritage it describes and look with anticipation at what the future of our 21st century, described by Nicolaou as the “century of chemistry and biology”, will provide. Nobel Laureate Noyori perhaps has summarized this text best in his foreword by stating, “Their book is destined to play a major role in exciting, motivating, and educating the next generation of chemists and life scientists from all over the world ...!” The authors, finally, have enlisted the support of many corporations and institutions in developing the text, ensuring that it is affordable to all libraries from community to high school to university and anyone who could add it to their collection.

The reviewer of this book and *Molecules and Medicine* has chosen to make similar recommendations of their use, because they are not competitive but rather excitingly complementary. There is virtually no overlap of content. Both books should be available in all libraries from the community to local high schools, to our universities and the personal libraries of natural products and medicinal chemists and pharmacognosists.

Robert J. Krueger
Ferris State University
Big Rapids, Michigan

NP100167S

10.1021/np100167s American Chemical Society and American Society of Pharmacognosy

terms, which are difficult to understand by those who are not scientists. However, this was the only shortcoming of this very useful book. Considering its price, it is an excellent deal for students, researchers, and nonspecialists to get information about the true importance of biodiversity.

Roberto G. S. Berlinck

Universidade de São Paulo
São Carlos, Brazil

NP100168P

10.1021/np100168p American Chemical Society and American Society of Pharmacognosy

Book Review of Sustaining Life—How Human Health Depends on Biodiversity

Sustaining Life—How Human Health Depends on Biodiversity. Edited by Eric Chivian and Aaron Bernstein (Center for Health and the Global Environment, Harvard Medical School). Oxford University Press, Oxford. 2008. xxiv + 542 pp. 22.5 × 28.2 cm. \$34.95. ISBN 978-0-19-517509-7.

Currently, the impact of biodiversity loss cannot be underestimated. Whole macrohabitats are being literally destroyed directly or indirectly as a consequence of human activities. This book is of prime importance to the awareness and understanding of factors affecting species extinction and biodiversity mitigation. All chapters were written by recognized specialists, including researchers involved with natural products sciences. Moreover, a list of well-known contributors and reviewers to all chapters is provided at the end of the book, which reinforces the expertise on which the book is based.

The book is beautifully illustrated and includes 10 chapters and three appendixes. It is very well organized, starting with useful definitions (Chapter 1) and then going into the saddest chapter, “How is biodiversity threatened by human activity?” (Chapter 2). It is very hard to read, due to the large amount of information on how humans are promoting development at the expense of Nature’s destruction. The following four chapters are lighter and include plenty of examples of how Nature has benefitted humans over the centuries, offering ecosystem services (Chapter 3), medicines (Chapter 4), tools for biomedical research (Chapter 5), and several animal and plant species with potentially active or useful compounds. For example, denning bears are considered metabolic marvels, in the sense that, during denning, these animals greatly reduce their metabolic turnover, without loss of bone mass or developing renal diseases or diabetes. Such a physiological behavior is particularly unique and the subject of much research, in an effort to understand how bears acquired such capabilities.

Chapters 7 to 9 discuss the emergence of infectious diseases due to ecosystem disturbance and biodiversity loss, the relationship between biodiversity and food production, and the importance and concerns in the production of genetically modified food. Very important, the last chapter has a strong educational bias to show how humans can effectively do things better than they have been doing. The book is very pleasant and easy to read. It abounds in very nice examples, photographs, illustrations, and explanation boxes, for those who want to understand further particular topics discussed in the text. Furthermore, the book is thoroughly referenced (over 1400 references), reporting facts largely from the primary literature. The index at the end is extremely useful. However, if the intention of the book was to provide information to a nonspecialist, a major problem is the use of very specific scientific

Book Review of The Chemistry of Fragrances. From Perfumer to Consumer

The Chemistry of Fragrances. From Perfumer to Consumer. Edited by C. S. Sell (Quest International). Royal Society of Chemistry, Cambridge. 2006. xvii + 329 pp. 6 × 9¼ in. £29.95. ISBN 978-0-85404-824-3.

The editor and contributing authors state in the Preface, “Our primary aim in this book is to show the use of chemistry in an exciting and rewarding environment.” They have accomplished this quite nicely. In 16 chapters, supported by several color plates, numerous reaction sequences and biosynthetic pathways, a comprehensive index, general bibliography, and a long list of useful industry addresses, editor Sell and his nine colleagues use chemistry as the foundation to describe the development of a new fragrance (“Eve”) from concept through marketing.

Initial chapters introduce the reader to the history of fragrances and aroma chemistry; to natural perfumery materials, which includes an isolation techniques overview; to an excellent treatise on modern perfumes’ ingredients; and to a brief explanation of the business structure of a model international fragrance company. Chapter 6 begins the story of “Eve” by describing its “perfume brief”. It is followed by chapters detailing a fragrance’s creation, sensory analysis, application/formulations, safety and toxicology, and volatility/substantivity. Supporting this are chapters on analytical techniques and chemoreception. An excellent chapter discusses the application of computer-aided design to model ligand–olfactory receptor interactions, structure activity (QSAR) and conformational analyses, and pattern recognition. The text ends by acquainting the reader with fragrance suppliers and procurement and the submission of the “Eve” final brief.

The chemistry throughout is accurate, entertaining, and informative. Buchi’s synthesis of jasmine, the Carroll reaction for linalool, the Symrise and Takasugo routes to 1-menthol, the Prins reaction for preparation of a variety of aliphatic ingredients, and the elegant metathesis of Animusk are but a few key reactions described.

This text should be of interest to organic and natural product chemists, graduate students in those disciplines, and industrial chemists in fragrance, pharmaceuticals, and cosmetics manufacturing. In this age of providing real-life applications in education, this text could easily serve as the basis for an advanced undergraduate elective or a specialty graduate course. While the book is a bit pricey, the editor and authors are to be applauded for producing a

well-organized, informative, and superbly readable text that is virtually error free.

Robert J. Krueger
Ferris State University
Big Rapids, Michigan

NP100169E

10.1021/np100169e American Chemical Society and American Society of Pharmacognosy

Book Review of The Science of Chocolate

The Science of Chocolate. By Stephen T. Beckett (Nestle Product Technology Centre). Royal Society of Chemistry, Cambridge. 2008. xii + 240 pp. 6 × 9 in. £24.95. ISBN 78-0-85404-970-7.

This book is not so much about the science underlying chocolate and its use, but rather the science and engineering of making food products from raw cocoa beans. Still, the book is an interesting read for natural products researchers who want to learn some of the aspects of commercializing a natural product.

The history and components of chocolate are covered in the first two of twelve chapters. Subsequent chapters cover the processing of cocoa beans, preparation of liquid chocolate and controlling its flow properties, crystallizing fat in chocolate, manufacturing a variety of chocolate products, analytical techniques, packaging, shelf life, and the regulations governing chocolate. The book wraps up with a chapter on nutrition and health and another containing 18 experiments one can do with chocolate and chocolate products. Most of these are directed more toward nutrition or food science courses than mainstream chemistry courses.

The book is well written and provides a fascinating glimpse of the history and development of the chocolate industry.

NP100172S

10.1021/np100172s American Chemical Society and American Society of Pharmacognosy

Book Review of Professional Excellence. Beyond Technical Competence

Professional Excellence. Beyond Technical Competence. By Alan Rossiter (Rossiter & Associates, Bellaire, Texas). John Wiley & Sons, Inc., Hoboken, NJ. 2008 5½ × 8½ in. xv + 110 pp. \$39.95. ISBN978-0-470-37737-6.

This is a brief, but insightful and thought-provoking book, easy to read, and laced with inspirational quotations from an incredible range of sources. The author explores basic questions about work and the work environment, balancing work and personal life, and the importance of ethics, communication, and teamwork as aspects of technical or professional skill and development. There is even a chapter on investing in one's professional and social community.

Each chapter has a discussion of underlying principles and theory, supported by relevant anecdotes from the author's experience, and ends by posing a series of questions for consideration and discussion. Thus, the author does not lay out a step-by-step plan to achieve excellence, but rather seeks to lead the reader to ponder relevant issues and current thinking, then design his/her own path to excellence.

I wish I had read this book 20–25 years ago, but there is plenty of value in the book and much to learn on this topic for any age group.

NP100173P

10.1021/np100173p American Chemical Society and American Society of Pharmacognosy

Book Review of Tyler's Herbs of Choice: The Therapeutic Use of Phytomedicinals, 3rd ed.

Tyler's Herbs of Choice: The Therapeutic Use of Phytomedicinals, 3rd ed. By Dennis V. C. Awang. CRC Press/Taylor & Francis, Boca Raton, FL. 2009. xxvi + 269 pp. 16 × 24 cm. \$89.95. ISBN 978-0-78902-809-9.

The third edition of *Tyler's Herbs of Choice: The Therapeutic Use of Phytomedicinals*, by Dennis Awang, retains the same organization by therapeutic chapters and most of the original text and herbal selections as written by Professor Varro Tyler in 1994. Professor Tyler's lifetime of professional pharmacognosy experience in Germany and the United States provided a unique perspective on the rational use of herbs. It is a view well worth reading.

Changes in the third edition include an updated and expanded regulatory chapter by Paula Brown and Michael Chan. The regulatory chapter still includes some history, but now includes a good overview of the current regulation of botanical supplements in the United States and herbal natural health products in Canada. Due to increased popularity, the third edition has added a few new plants, including bacopa (*Bacopa monniera* (L.) Penn), gotu kola (*Centella asiatica* (L.) Urban), and andrographis (*Andrographis paniculata* (Burm. f.) Nees). Also, herb–drug interactions for the main plants, including St. John's wort (*Hypericum perforatum* L.), have been added.

The new edition does include literature updates for the main herbs, but overall the updates are not complete for many of the herbs. Overall, the combination of original selections by Professor Tyler, the addition of several popular herbs, and the clear overview of the North American regulation of herbs makes the volume a valuable reference on the therapeutic use of herbs.

Edward M. Croom, Jr.
University of Mississippi
Oxford, Mississippi

NP100176C

10.1021/np100176c