Books

Basic Principles of Organic Chemistry

by John D. Roberts and Marjorie C. Caserio.

W. A. Benjamin, Inc. $13.90

Reviewed by George S. Hammond, professor of chemistry

This basic textbook of organic chemistry has been developed with loving care by two authors who are highly respected as researchers in and teachers of organic chemistry. (Dr. Roberts is professor of organic chemistry and chairman of the division of chemistry and chemical engineering at Caltech; Dr. Caserio is a senior research fellow in chemistry.) The product is a book that is certain to have a major impact on teaching in the field. Despite the existence of an unusually large number of competitive texts, I predict that *Basic Principles of Organic Chemistry* will achieve popularity with both students and teachers; moreover, many of the innovations are certain to be copied by future authors.

Perusal of the Table of Contents furnishes only an inkling of the novelty of the book. Chapter 2, "Spectroscopy of Organic Molecules," is a surprise; and Chapters 5 and 9, which deal with modern structural theory, are not yet commonplace in organic texts. Otherwise the presentation of subjects seems fairly conventional. However, the reader will be surprised, and probably pleased, with the extent to which the methods and concepts of physical chemistry are blended with classical organic chemistry. Major emphasis is placed on spectroscopy in every chapter. Students who use this text will find it hard to believe that Kékulé did not own and operate a nuclear magnetic resonance spectrometer! Thermodynamic concepts are woven smoothly into discussions of both structure and reactions, and reaction mechanisms are presented as a natural consequence of man's concern as to "How does it happen?"

A dedicated critic can always find grounds for questioning even plenary scripture, but he will be forced to admit that the text by Roberts and Caserio provides superb treatment of structural chemistry and is far above average in its treatment of chemical reactivity; the iconoclast will, however, maintain that students will obtain no real concept of the intricacy of synthetic chemistry. Many reactions are discussed, but little emphasis is placed upon the problems involved in weaving them together to form coherent synthetic sequences, and little attention is given to the special problems presented by polyfunctional compounds. This is a real problem in presentation of the "principles of organic chemistry" and I, for one, feel that no author has yet solved it.

The format of the book is very attractive in view of the fact that an economical method of production has been used. Many figures and formulas have been reproduced directly from what must have been marvelous typescript. The product is clear and tidy but may jar the sensitive soul because of the obvious discontinuity between the format of text and figures. The authors have apparently chosen to sacrifice conventional, type-set production in favor of a couple of hundred more pages of text. The authors recognize the fact that there is more material in the book than can be covered by students in most beginning courses. Consequently, sections bear titles and numbers to facilitate selective omission of material by hard-pressed instructors. An especially attractive feature is the large number of exercises, found both at the ends of the chapters and interspersed at strategic points in the body of the text.

Students who are introduced to organic chemistry by this text will be impressed with the quality of scholarship in the field and the versatility of tools available to its practitioners.

The Biosynthesis of Steroids, Terpenes, and Acetogenins

by J. H. Richards and J. B. Hendrickson

W. A. Benjamin, Inc. $18.50

Reviewed by Morris Brown, Arthur A. Noyes research instructor.

This book is authored by two Caltech people – John Richards, associate professor of chemistry; and James Hendrickson '50 (currently associate professor of chemistry, Brandeis University). Both men have been active in the area of biogenesis and their book is certainly the best on the subject to date.

Following an introductory chapter, Chapter 2 deals with general principles of biogenetic theory, Chapter 3 with the acetate hypothesis, Chapter 4 with a statistical survey of natural compounds presumed to be acetogenins, and Chapter 5 with experimental verification of the acetate hypothesis. These chapters are mainly the work of Dr. Hendrickson. They are all clearly written and certainly make very informative and stimulating reading. Chapter 4 seems to emphasize numbers and percentages far too heavily and the usefulness of Tables 4-3 and 4-6 is surely obscure.

Chapters 6 through 13 deal with various classes of terpenes and steroids and their formation from isoprenoid precursors. These chapters are mainly the responsibility of Dr. Richards. The liberal use of well drawn structural formulas throughout these pages makes some fairly complicated transformations easy to understand. These chapters are also clearly written and give more than adequate coverage to the area.

The authors are to be complimented for producing such a fine work. Unfortunately, the price will preclude its purchase by many.

College Chemistry

by Linus Pauling

W. H. Freeman and Co. $8.25

This is the third edition of the basic textbook by Linus Pauling, now serving as research associate in chemistry at Caltech. It has been completely revised, has additional material, and introduces a number of new topics.

Terpenoids are a group of largest natural products with important biological functions, and their efficient biosynthesis is of particular importance to both academia and industry. As the building blocks for terpenoid biosynthesis, a suitable supply of isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) is extremely crucial for efficient terpenoid biosynthesis.Â Abstract. Terpenoids are a group of largest natural products with important biological functions, and their efficient biosynthesis is of particular importance to both academia and industry. As the building blocks for terpenoid biosynthesis, a suitable supply of isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) is extremely crucial for efficient terpenoid biosynthesis. Search Engine. Biosynthesis of steroid hormones. Published on 09/03/2015 by admin. Filed under Obstetrics & Gynecology.Â Steroid hormones are lipid molecules synthesized within the ovary, testis, placenta and adrenal cortex. Striking parallels exist in the organization of the biosynthetic pathways and the hormonal control of steroid production in each of these steroidogenic tissues. This chapter will outline the general principles of steroid hormone formation as regulated by trophic hormones, before considering detailed aspects of ovarian and adrenal biochemistry in health and disease. The biosynthetic promiscuity, the hallmark of terpene biosynthesis, sets terpenes apart from other natural product classes and is a product of their distinctive biosynthetic logic. Biosynthetic core enzymes of well-characterized classes of natural products, such as modular thiotemplate assembly lines (NRPSs, PKSs), are usually highly specific and produce only a few closely related natural product analogs.Â In contrast, the underlying mechanistic logic of terpene biosynthesis is based on repetitive electrophilic and nucleophilic functionalities in each oligomeric substrate, similar to nonmodular type II PKSs, coupled with conformational flexibility for enzyme-mediated