Book Reviews

Chemists at War. Accounts of Chemical Research in the United States During World War II. By William A. Remers. Clarice Publications, Tucson, AZ. 2000. 216 pp. 13.5 × 16 cm. ISBN 0-9677940-0-5. $14.95 (paperback).

The stated purpose of this book is to tell the stories of chemists (and chemical engineers) at war, how they became organized into effective project teams, and how they contributed to the solution of urgent problems in national defense. The author is a member of the faculty of the College of Pharmacy at the University of Arizona. He writes in an informal and conversational style. Each of the nine topic chapters includes specific references to pertinent publications of the past 55 years and includes the historical background of the topic described. Research and development did not stop on VJ Day; coverage of each topic continues throughout the postwar years to recent times.

The book includes 12 pages of structural formulas and a generous 15-page index of subjects and names. None of the 50−100 typos that adorn the text presents serious problems to the reader.

Chapter 1 (10 pages) describes how the Roosevelt administration, before and during the war, was convinced to provide organizations for the excellent cadre of academic and industrial scientists already present in the United States. These organizations included the National Defense Research Committee, the Committee on Medical Research, and the Organization for Scientific Research and Development. The membership of these committees is given in an appendix.

Subsequent chapters tell the stories of penicillin (22 pages), cortisone (12 pages), antimalarial drugs (17 pages), chemical warfare agents (15 pages), synthetic rubber (26 pages), explosives and incendiaries (18 pages), and nuclear weapons (33 pages). Other areas of war research that did not reach fruition are mentioned, such as Melvin Calvin's development of a chemical method for the production of oxygen. Because significant research was not underway during World War II, no mention is made of programs involving newer high explosives, antiradiation drugs, and incapacitating agents, which were directed to the happily unrealized dangers of the Cold War.

Another omission concerns the unusual procedure that allowed chemists and chemical engineers holding reserve officer's commissions in the Chemical Warfare Service to resign those commissions if they were involved in significant war work. This procedure was vigorously supported by Charlie Parsons, the ACS executive secretary, who was probably responsible for its adoption by the armed forces. One such reserve officer was E. B. Hershberg, whose many contributions to the incendiaries program at Harvard University and to the postwar development of steroid drugs are described.

A final chapter, Delayed Reactions, presents the author's views on how postwar years have seen the development of what has been called "the golden age of the American pharmaceutical industry". He believes that the exciting fields of molecular biology and cosmology cannot be understood without a knowledge of chemistry. The author shares with many of us a distaste for the shoddy research that underlies some government regulations. I thank Prof. Remers for writing this book. Perhaps he may consider writing another volume describing the unhappy transmogrification of chemistry during the post-Rachael Carson years.

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Nucleic Acids: Structures, Properties, and Functions. By Victor A. Bloomfield, Donald M. Crothers, and Ignacio Tinoco, Jr., with contributions from John E. Hearst, David E. Wemmer, Peter A. Kollman, and Douglas H. Turner. University Science Books, Sausalito, CA. 2000. ix + 794 pp. 17 × 25 cm. ISBN 0-935702-49-0. $85.00.

This book is the successor to the 1974 text *Physical Chemistry of Nucleic Acids* by the same authors. This is a completely revised book that presents a comprehensive account of the structures and physical chemical properties of nucleic acids, with an emphasis on implications for biological function. The intended audience includes molecular biologists, physical chemists, and biochemists. To reach such a diverse audience, the authors have organized the book such that each chapter begins with a highlight of the biological significance of the topic covered, followed by a presentation of the basic physical ideas and major results. Quantitative details are developed in special sections and in the appendices which follow certain chapters.

The book includes an introduction which gives an outline of the book chapters and useful guides to the periodical literature and electronic databases of nucleic acids. The following seven chapters focus on properties of nucleic acids as determined at the atomic and molecular structure levels. These chapters cover the physical and chemical properties of the monomeric building blocks, chemical and enzymatic reactivity of nucleic acids, diffraction, NMR, and theoretical methods for characterization of nucleic acid structure at atomic resolution, and conformational changes such as helix−coil transitions. Two additional chapters deal with the macromolecular size and shape of nucleic acids with detailed discussions of gel-electrophoretic, density gradient centrifugation, and other techniques. The final section of the book consists of four chapters dealing with the noncovalent interactions of nucleic acids with water and ions, drugs, and proteins and with the formation of higher-order nucleic acid structures.

While the coverage of topics in nucleic acid chemistry is almost comprehensive, certain subjects of recent interest, such as triplex and tetraplex nucleic acids,

receive only scant discussion. Throughout the book, the examples cited are illustrative rather than comprehensive. Chapters contain extensive references to the literature; however, these appear to be current only to ca. 1996, with many references to the original literature from the 1970s and 1980s. The book includes an extensive and easy-to-use index and 25 color plates, most of which illustrate protein−DNA complexes.

Overall, this is an excellent book that should find use in graduate level biophysical chemistry and physical biochemistry courses and as a reference for physical chemists, physical biochemists, and molecular biologists. It would be a welcome addition to industrial and academic libraries.

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