

Chapter 16 is a review of "The Proteins of Blood Coagulation" by E. W. Davie and O. D. Ratnoff. Our knowledge of the complex process of blood coagulation has grown rapidly and is well reviewed by these authors. They discuss fibrin formation in mammalian blood and describe in considerable detail the properties of 13 clotting factors. Current ideas on mechanism of blood coagulation are reviewed, and the role of intrinsic and extrinsic clotting systems is summarized. The known inhibitors of blood coagulation and the properties and function of plasmin and plasminogen are discussed.

The last chapter, Chapter 17, deals with "Interaction of Proteins with Radiation" and was written by G. Weber and F. W. J. Teale. This chapter is a physical-chemical examination of the interaction of protein molecules with radiation that does not result in irreversible change. The authors discuss the infrared absorption spectra of proteins and the ultraviolet absorption spectroscopy of proteins largely from a theoretical point of view. A section on emission spectroscopy is included that deals with fluorescence of amino acids, proteins, and protein conjugates. Finally, the scattering and retardation of both light and X-rays by protein solutions and the optical rotary dispersion and birefringence of protein solutions are discussed.

Volume III maintains the high standards set by the preceding two volumes of this authoritative four-volume treatise. The topics considered in this volume are more restricted than those in the preceding two volumes, and the authors have been able to develop critically their topics in greater detail and to include much more than a mere review of published data. Each chapter has a long list of references to original papers. This volume will be of particular value to those research workers and advanced students of biochemistry, biology, physical chemistry, biophysics, and related fields who want to keep well informed on current progress in protein chemistry and particularly in the proteins of blood or viruses.

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**Order-Disorder Phenomena.** By H. S. GREEN and C. A. HURST, Department of Mathematical Physics, The University of Adelaide, Adelaide, South Australia. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1964. x + 363 pp. 15.5 × 23.5 cm. \$15.00.

Within the past several years theoretical research into the mathematical structure and physical implications of models exhibiting critical phenomena has attained a fashionable vigor. Motivation for this increased activity has been twofold: Onsager's brilliant solution of the two-dimensional Ising model a generation ago still retains an awesome beauty in spite of its complicated sophistication, and the surprisingly unorthodox singular behavior of thermodynamic functions at critical points (revealed in part by Onsager, and more recently and completely by the Domb school in England) for both two- and three-dimensional models constitutes a frustrating and exciting challenge to the intuition.

The monograph under review was, according to the preface, solicited by Professor I. Prigogine as Volume 5 in his Monographs in Statistical Physics series, mainly on account of the impressive body of elegant mathematical results that have been accumulated in solving order-disorder problems. In acceding to that request, the authors have succeeded in conforming to the high standards of previous volumes in the series.

The book's major emphasis rests upon the authors' own research into the method of evaluating order-disorder partition functions by means of Pfaffians (triangular arrays of numbers). The method is spelled out in great detail, not only for the standard rectangular, triangular, and hexagonal lattices, but also for lattices with (generally) highly decorated bonds and sites. Although it is probably fair to say that the Pfaffian method in the last analysis cannot cope with any models that are beyond the capability of alternate approaches (the original Onsager method in any of its various guises, or the Kac-Ward combinatorial technique), it does, nevertheless, provide a nicely systematic scheme for handling especially the soluble models with high degrees of decoration complexity. In addition it becomes rather clear in the Pfaffian method which mathematical features prevent solution of the physically interesting models with non-nearest-neighbor potentials, external fields, or dimensionality greater than two.

As an aid to the reader there is a mathematical appendix containing information that is relevant and useful in the preceding text, on determinants, matrices, Pfaffians, and hyperbolic trigonometry.

The unsuspecting potential buyer deserves warning on at least two accounts. The rapid pace of advances in the theory of phase change, compared with the traditional torpor of book publishing schedules, has antiquated some of the procedures contained in this work; in particular, the difficult and lengthy long-range order calculation is superseded by the simpler approach of Schulz, Mattis, and Lieb. In addition, the reigning philosophy clearly is mathematical, rather than physical or chemical. Although there are short sections in the beginning on applications to magnetism, alloys, and liquids, the novice would do well to initiate his training in order-disorder phenomena with some other source, such as Hill's "Statistical Mechanics" (1956). For the serious student of phase-transition theory, who must be willing to follow each of the separate analytic approaches to his field to its furthest limits, this book, however, represents an indispensable contribution.

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**The Solvent Extraction of Metal Chelates.** By Jiří STARY, D.Sc., Department of Nuclear Chemistry, Faculty of Technical and Nuclear Physics, College of Technology, Prague. Edited, with a foreword by H. IRVING, Professor of Inorganic and Structural Chemistry, University of Leeds. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 1964. xiv + 240 pp. 15.5 × 23.5 cm. \$8.50.

The "Solvent Extraction" of the title is the currently popular designation of liquid-liquid extraction in which the two phases are aqueous solution and organic solvent.

One-fourth (50 pages) of this monograph is devoted to general aspects of chelate extraction: composition and stability of metal chelates, theory of their extraction, and analytical applications (separations, substoichiometric determinations, extractive titrations). The section that follows deals with individual chelating reagents finding use in analytical extractions. Good use is made of tables to summarize the optimum conditions for extraction. Lastly, one or two concise procedures, considered to be the most selective of those available, are given for each of almost 50 elements. It will be realized that some of these chelate extractions are inferior to extractions of ion-association compounds (which do not fall within the scope of the book). A collection of almost 1100 references is included.

Dr. Stary has been successful in compressing much information into a small volume and providing a book which can be recommended for reference when questions concerning chelate extractions arise.

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**The Acyclic Aliphatic Tertiary Amines.** By LEONARD SPALTER, Head, Organic Chemistry Section, Aerospace Research Laboratories, Wright-Patterson Air Force Base, Ohio, and JOSEPH A. PAPPALARDO, Associate Professor of Chemistry, University of Dayton, Dayton, Ohio. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 1965. xiii + 512 pp. 16 × 24 cm. \$18.00.

In this book the authors have given a remarkably thorough coverage of the acyclic aliphatic tertiary amines, containing carbon, hydrogen, and nitrogen only. The literature survey includes the amines of this type reported in the original literature and indexed in *Chemical Abstracts* through June of 1961. Monoamines and polyamines are included with saturated and/or unsaturated hydrocarbon groups from  $C_3H_9N$  to  $C_{87}H_{177}N$  for monoamines and from  $C_3H_4N_2$  to  $C_{21}H_{50}N_6$  for polyamines, representing more than 700 compounds.

The following statement given in the preface should be emphasized: "Although *Chemical Abstracts* and Beilstein's 'Handbuch der organischen Chemie' provided excellent initial guidance, it