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familiar structure of thermodynamics, working into the Gibbs distribution. The emphasis is on the micro-canonical ensemble, rather than on grand canonical ensembles, so that on the average the book will appeal more to physicists than to chemists at this point.

The standard problems of gases are treated systematically, and the quantum distributions of Fermi and Bose are introduced early in the text, with a smooth transition to the modern problems of condensed systems, including superfluids.

Of more interest to chemists is the coverage of phase equilibrium, solutions, and chemical reactions, all of which fields are given careful treatments.

Fluctuation-dissipation theory is treated at some length, with applications to both thermodynamic and nonthermodynamic fluctuations.

One of the characteristics of Soviet texts in quantum mechanics is repeated here, in the concluding chapters, in the application of the concepts and consequences of group theory in discussing the symmetry of macroscopic bodies and the theory of second-order phase transitions. While this material is on a rather high level for the ordinary graduate course in statistics, it forms a most valuable addition to the text.

The book closes with a chapter on surface physics, taking up such problems as adsorption, liquid film, and creation of nuclei.

On its over-all merits (including the excellence of the translation) then, this reviewer is enthusiastic about the text, and recommends its widespread use.

Advances in Chemical Physics, Vol. 1. Edited by I. Prigogine. 414 pp. Interscience Publishers, Inc., New York, 1958. \$11.50. Reviewed by Henry Wise, *Stanford Research Institute*.

PUBLICATION policies of our journal and textbook editors have given rise to a new mode of review of recent scientific accomplishments. In general, it appears under a heading entitled "Advances". It seems to accommodate those scholarly contributions too large in size for a journal article or too short for a monograph. In price, however, it approaches the textbook category. As pointed out by the editor of *Advances in Chemical Physics*, this publication will be devoted to "basic problems that concern the properties of individual molecules and atoms as well as the behavior of statistical ensembles of molecules and atoms". The wide range of subjects chosen for this volume becomes apparent from the table of contents: Statistical-Mechanical Theory of Transport Processes. X. The Heat of Transport in Binary Liquid Solutions (Bearman, Kirkwood, and Fixman); Theoretical and Experimental Aspects of Isotope Effects in Chemical Kinetics (Bigeleisen and Wolfsberg); Dielectric Properties of Dilute Polymer Solutions (de Brouckère and Mandel); Some Physical Aspects of Gaseous Chemical Kinetics (Careri); Transport Processes in Liquids (Collins and Raffel); The Relation Between Structure and Chemical Reactivity of Aromatic Hydrocarbons

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with Particular Reference to Carcinogenic Properties (Daudel); Molecular Theory of Surface Tension (Hara-sima); Recent Developments in Molecular Orbital Theory (Longuet-Higgins); Intermolecular Forces and Equation of State of Gases (Kihara); On Statistical Mechanics and Electromagnetic Properties of Matter (Mazur); The Application of the Theory of Stochastic Processes to Chemical Kinetics (Montroll and Shuler).

Because of the large scope of subject material presented in this book a brief review of several selected chapters is indicated. Such a selection undoubtedly reflects the interests of this reviewer. The contribution by Bigeleisen and Wolfsberg represents a critical analysis of isotope effects in chemical kinetics. Both the theoretical and experimental aspects of this problem are elucidated in a comprehensive and comprehensible manner. As a result this paper is of value not only to the specialist but also to those workers interested in applying the isotope technique to problems in reaction kinetics and rate theory.

Of particular timeliness is the contribution of Longuet-Higgins on the application of molecular orbital theory to the electronic spectra of unsaturated hydrocarbons. After a brief outline of the general premises of the MO theory the author reviews the modern theoretical developments on the relationship between the electronic states of a composite molecule and its constituent parts. Whereas the paper on isotope effects devotes a considerable amount of space to the presentation of quantitative data, Longuet-Higgins gives an over-all view of the field of MO theory accompanied by a bibliography to satisfy the more serious student.

Daudel discusses the relationship between molecular structure and carcinogenic activity. The application of modern quantum chemistry to complex organic molecules of interest in biology holds promise in explaining some of the pathogenic properties of chemical substances.

It is apparent that because of the book's diversity in subject matter each chapter reflects the individuality of the various authors in their approach to specialized problems. However, the common denominator is to be found in the development and application of the statistical-mechanical method for the description of macroscopic properties of matter. *Advances in Chemical Physics* not only looks back at the progress made but also points the way to future developments.

College Physics. By Franklin Miller, Jr. 608 pp. Harcourt, Brace and Co., New York, 1959. \$7.25. Reviewed by B. H. Dickinson, Michigan State University.

WHEN the author of a textbook in elementary physics announces as his goal the task of preparing "a text having maximum clarity and teachability", he assumes a task which far transcends the mere description of phenomena, listing of principles, concoction of problems, and other details connected with the writing of a standard textbook. If, in addition, he proposes to include "every possible aid to diges-