that the inclusion of these topics would have added to the usefulness of the book, let me hasten to reassure that much material remains for the 14 chapters that make up this work.

Following a survey of photosynthesis by Halldal and by Sybesma, three chapters are devoted to photometabolism and light-affected ion fluxes; of these, Kowallik's deals primarily with carbohydrate breakdown and the enhanced production of protein and RNA upon long-term exposure of unicellular algae to blue light. Another group of four chapters deals with phototaxes and photokineses of microorganisms, light-oriented chloroplast movements (chiefly in *Mougeotia* and *Vaucheria*), and the photoresponses of fungi (comprehensively covered by Carlisle). Single chapters adequately review synchronous cultures (Lorenzen unfortunately ignores the role of biological clocks, which have been shown to participate in the entrainment of cell division); photoperiodic effects (Dring is especially interesting in his discussion of the red alga *Porphyra*, whose responses resemble those of higher plants, though he misleadingly suggests on page 363 that circadian oscillations must be present for photoperiodic responses to occur —even Bünning himself would admit that alternative "hourglass" pathways also exist); and bioluminescence (the in vitro particulate "scintillon" system of *Gonyaulax* is particularly fascinating).

The most provocative, speculative, and stimulating chapter (at least for me), and also the longest, deals with the photobiology of unicellular circadian rhythms, which are mentioned in a number of the other chapters. If one can survive Ehret and Willie's short "prologue," several key points are discussed. The "eukaryotic-circadian principle" asserts that light-entrainable circadian clocks are limited to eukaryotes, presumably because polycistronic replicons (which Ehret and Trucco have previously named "chronons") have evolved which, together with the nuclear membrane, permit 24-hour periodicities to be attained. A corollary of this principle is that any eukaryote cell is capable of circadian outputs in the infradian (generation time $\geq$ 24 hours) but not the ultradian (generation time $<$ 24 hours) growth mode. This assertion is supported by the findings that *Gonyaulax, Euglena,* and *Tetrahymena* all manifest persisting circadian rhythms of cell division (and other rhythms) under constant temperature and illumination following synchronization by light cycles during the infradian growth mode (the "G-E-T effect"). The remainder of this chapter discusses the implications and recent challenges of these rules.

The book is well laid out. Each chapter is furnished with an outline at the beginning and with a fully titled reference list (usually comprehensive and up to date). The 70-odd illustrations distributed unevenly through the book are of good quality. The author, subject, and taxonomic indexes are adequate. Within the limitations of its coverage, this book should prove valuable to photobiologists.

LELAND N. EDMUNDS, JR.
Division of Biological Sciences, State University of New York, Stony Brook

Festschrift in Chemistry

Chemical Dynamics. Papers in Honor of Henry Eyring. JOSEPH O. HIRSCHFELDER and DOUGLAS HENDERSON, Eds. Wiley-Interscience, New York, 1971. xxxiv, 816 pp., illus. $22.50. Advances in Chemical Physics, vol. 21.

This book is a tribute to Henry Eyring from his students and associates on the occasion of his 70th birthday. So reads the preface. What shines from the pages of this volume is the character of Eyring and the quality of his work.

The book defies comprehensive and detailed technical review by any individual of lesser universality of authority than Eyring himself. Its scope is very wide and to attempt such exposition may be neither useful nor desirable. The active interest of few persons will extend to the whole range of material represented. It will suffice to indicate its extent by a few statistics. There are a total of 54 scientific papers together with several biographical items contributed by 83 authors, many of whom are world-renowned scientists. The technical material is subdivided into six parts as follows: Molecular Quantum Mechanics, edited by A. A. Frost, 6 papers; Theory of Reaction Rates, edited by K. J. Laidler, 14 papers; Properties of Molecules, edited by W. Kauzman, 4 papers; Theory of Liquids, edited by D. Henderson, 12 papers; Biological Applications, edited by F. H. Johnson, 9 papers; Engineering Applications, edited by C. J. Christensen, 9 papers. Each individual contribution is of substantial nature, and each part makes an important statement which will amply reward study and attention. Several formal summaries of the range and extent of Eyring's scientific accomplishments are given which document his genius.

This reviewer found the book fascinating—and not merely because of its interest and importance for him as a chemical dynamicist. Rather, the image of Henry Eyring, the man, that emerges from these pages is one that is both striking and convincing. Several formal biographical studies are given, including a charming personal account by his brother, LeRoy. But the picture of Eyring—friend, adviser, leader, mentor, scientist, moralist, and source of inspiration—emerges throughout the pages from many anecdotal reminiscences and tributes of the contributors. Many of these are quite delightful; all are heartfelt.

This book is heartily recommended to all for study or for more casual reading. As is indicated above, the catholicity of its coverage makes it scientifically relevant to a wide audience. But even more, the inspiration of the Eyring epic as revealing man's humanity to man can provide a needed uplift for all in this somber world.

B. S. RABINOVITCH
Department of Chemistry, University of Washington, Seattle

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The Analytical Chemistry of Sulfur and

(Continued on page 868)