cording to tissues and organs, and represents a pioneering effort on the part of the authors." It should be stated that the volume also contains a 45-page chapter by Nathan Sharon, much of it in the form of catalogs on the distribution of amino sugars in microorganisms, plants, and invertebrates. The rest, in a total of 415 pages plus an additional 128 pages of bibliography and index, deals mainly with mammalian organs and tissues.

The book is intended "for the newcomer to the field as well as for the expert." It has all the advantages and all the shortcomings of a book written by several authors, with varying experience and competence, in a field of interest to the most diverse groups, who apply a great variety of techniques to complex chemical and biological problems. The editors have faced a very formidable task in assembling the contributors and editing the contributions, a task met with in any comprehensive treatise written by a large number of authors. In general, the choice of authors has been good. Some of the contributions are outstanding examples of expertness, thoroughness, and critical evaluation: chapter 24 (by Pearce) on skin; chapter 31 (by Schubert and Hamerman) on cartilage, tendon, and intervertebral disc; chapter 33 (by Muir) on blood-vessel walls; chapter 35 (by Hakomori) on blood cells and hemopoietic organs; chapter 36 (by Svennerholm) on nervous tissues; and chapter 37 (by Balazs) on eye and ear. Some of the authors have chosen the easy road and have provided a recital of the published work which is reminiscent of *Annual Reviews*. Thus, the reader is left on his own in evaluating the evidence and the varying degrees of competence on which to base his additional reading.

The index and bibliography will be very helpful, and they appear to contain only a few errors. The gestation time of the chapters varied considerably—at least that is indicated by the literature quotations of the text with cut-off dates of 1962 to 1964, although the majority of the chapters contain appended literature references up to 1964.

In summary, the book has great merits and has the advantage of being unique in this field.

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The Nord School of Lignin Chemistry

Lignin Biochemistry. Walter J. Schubert. Academic Press, New York, 1965. x + 131 pp. Illus. $8.

Lignin is one of the major constituents of the cell wall of woody tissues of higher plants, but despite intensive study by many distinguished organic chemists, its structure has not been fully defined. There is more or less general agreement that some simple phenyl propane compounds may constitute monomeric units, but the nature of the linkages involved in forming higher molecular weight structures is not certain. There have been several "schools" of lignin chemistry in the past 40 years or so; the names of Freudenberg, Klason, Hibbert, Erdtman, Brauns, and Nord come to mind. This monograph is essentially representative of the Nord school, of which the author, Walter J. Schubert, has been a prominent member.

The basic and formidable difficulty faced by all lignin chemists has been that all methods of isolation yield modified preparations, usually in low yield, and that classical degradative procedures result in an array of simple compounds, the relationship of which to native lignin is unclear. Nord introduced the study of "enzymically-liberated" lignin obtained by extraction of fungally decayed wood. Although preparations from different sources are not identical, various criteria indicate similarity in basic structure.

This volume reviews succinctly and persuasively the lignin problem in the context of Nord's biochemical approach. There are four chapters: Chapter 1 presents a general discussion of the chemistry and isolation of lignin; chapter 2 deals with the aromatization process in micro-organisms through the shikimic-acid pathway; chapter 3 interprets this in terms of the phenomenon of lignification in the higher plant—the genesis and conversion of the "lignin building stones"; and chapter 4 discusses the microbial degradation of lignin—the identification of intermediate and final products and the enzymes involved.

This unpretentious but appealing book brings together theories of lignin structure and biogenesis that are plausible and reasonably well supported. It is, however, a criticism of the state of our knowledge that it is still necessary to resort to such unchemical terms as "primary building stones" for the monomeric compounds that in some unexplained way are linked together to form the lignin macromolecule.

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Endocrinology

The Parathyroid Glands: Ultrastructure, Secretion, and Function. Pieter J. Gaillard, Roy V. Talmage, and Ann M. Budy, Eds. University of Chicago Press, Chicago, 1965. xii + 353 pp. Illus. $15.

The Parathyroid Glands: Ultrastructure, Secretion, and Function, edited by Pieter J. Gaillard, Roy V. Talmage, and Ann M. Budy, contains papers presented at the second symposium on the parathyroid glands held in Noordwijk aan Zee, the Netherlands, 25 to 29 August 1964.

The book will be of interest to all students of endocrinology and will serve as a useful reference source for those working in the field. In general, the subject matter is timely and represents a concerted effort on the part of the participants to make public their most recent developments. The indexing, referencing, and editing are excellent, but the book falls short in two areas. The photographic reproductions, although adequate for superficial perusal, are generally poor. And, the text of the discussions has been deleted in favor of brief, rather sterile summaries by the editors.

In his introduction, Franklin McLean briefly discusses notable advances in parathyroid research and gives a perspicuous summary of the contributions of the symposium.

Although the book is divided into seven sections with separate category headings, the subject matter deals with four general areas: the ultrastructure and the histochemistry of the parathyroid glands, the chemistry and regulation of secretion of parathyroid hormone, the hypoclacemic hormone(s), and the mode of action of parathyroid hormone.

There are 23 papers. Some of the

more important contributions to current knowledge include the stimulation by low and the inhibition by high medium calcium of amino acid uptake, nucleic acid and protein synthesis, hormonal secretion, and protein release by rat parathyroid glands in tissue culture; the proposal of a scheme of the covalent sequence and biologically important regions of the parathyroid hormone molecule; the demonstration that osteocytes play a primary role in osteolysis; the inhibition of the effects of parathyroid extract added in vitro to bone cultures by actinomycin D; the discovery that heparin potentiates the resorptive action of agents such as parathyroid extract added in vitro to bone cultures; the demonstration and study of mitochondrial ion transport systems responsive to PTH and vitamin D; and the development of a technique for the isolation of bone cells.

One of the most exciting and dynamic of the four areas of research mentioned, that involving the hypocalcemic hormones, is covered by two papers, but the field has advanced so rapidly that the information is not current. Six papers are devoted to metabolic pathways in bone. Emphasis was placed on the pathways which include the organic acids, especially citric and lactic, and also the possible regulation of their oxidation by the availability of the coenzymes NAD and NADP.

This volume is a record of the major research efforts made in the field of parathyroid research during the past 5 years. The absence of the text of the participant discussors partially destroys the symposium atmosphere of the book.

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Organization Man and Scientist

Organizational Scientists: Their Professional Careers. Barney G. Glaser. Bobbs-Merrill, New York, 1965. xx + 140 pp. Paper, $1.95.

Glaser's study deals with the dual problems of a career as an organization man and a career as a scientist. To what extent can success be achieved in both endeavors? The author's analysis is based on a review of some 1900 questionnaires completed in 1952 by members of the research staffs of two medical research organizations—evidently two institutes operated by the United States Public Health Service.

The problems with which Glaser deals are important because scientific work is increasingly performed within large organizations. Both laboratories studied in this monograph are devoted to basic research so that one would expect, as the author found, a relatively small amount of conflict between the individual's role as scientist and his role as member of an organization because the goals of the organizations and of science are the same. Since the author conducted no original research, his study is necessarily built on the data from the questionnaires completed in 1952. Unfortunately, the questionnaire is not reproduced in the study.

Glaser's findings may not be applicable to scientists employed in other environments where the goals of science and the organization may not coincide, or may even be in conflict—for example, in a laboratory devoted to problems of application. In ten short chapters the author analyzes the effect of organization on the efforts made by scientists to attain professional recognition and success. In one of the institutes studied promotion was based primarily on the recommendation of supervisors; in the other, length of service within grade was also a "strong consideration." The author found that although the promotion rate was the same in both organizations, those scientists who had not achieved high recognition tended to be more satisfied with the "routine" promotion system than the "recommend" promotion system.

A conclusion of interest to administrators of large basic research organizations is that it is more useful to consider the professional employee from the standpoint of the stage he has reached in his career, and the problems that he must solve at that stage of his professional development, rather than to consider him in such simple terms as loyalty or absence of loyalty to the organization.

Two of the concluding chapters analyze the effect of lack of recognition on the career plans of scientists—a majority adapted to their situations without abandoning science as a career—and show that adequate albeit modest recognition has a stabilizing effect on scientific careers.

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Inner Space

Oceanography. Warren E. Yasso. Holt, Rinehart, and Winston, New York, 1965. 176 pp. Illus. Paper, $1.28.

No publisher's catalog is considered complete these days without a title that exploits the current popular interest in the ocean, its resources, and the techniques used in their study. Warren Yasso's contribution to this field is in general a capably written and well-illustrated collection of facts about the ocean, ocean basins, and the practice of oceanography.

Unfortunately a good many material facts are omitted. As the author observes in the preface, waves and tides, currents (apparently he means tidal currents, for there is a chapter on ocean circulation), beaches and coast lines, and estuarine processes are not treated. Neither is there mention of sea ice or of the problems associated with the propagation of sound and light in the sea.

Ocean circulation is discussed without mentioning potential temperature, the Ekman spiral, or geostrophic currents. The chapter on the chemistry of the sea does not mention chlorinity or isotopes; dissolved oxygen is discussed without mentioning photosynthesis. In the chapter on marine biology, phytoplankton is treated without mention of chlorophyll or primary production and zooplankton without mention of larvae, molting, or fecal pellets.

Equally serious are the incorrectly stated facts, which give the appearance of having been derived from cold lecture notes. On page 22 there is a curious passage—" '. . . salinity' is a slightly misleading term, for it includes *all* dissolved substances (carbonates, for example). The 'true salinity,' or concentration of salts alone, is somewhat less." The assertion (p. 28) that the oxygen-minimum layer is usually found within the thermocline is quite incorrect.

In chapters on the earth's structure, the topography of ocean basins, and ocean sediments and turbidity currents, Yasso is on firmer ground. But even here such important concepts as isostasy, or such aids to research as gravimetry and heat flow measurements, are not mentioned. The final chapter is devoted to descriptions of research submersibles.

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