developments in acoustics. The many other developments include the development of semiconductor transducers and their use in measuring strains, accelerations, and displacements; phonon amplification, using paramagnetic crystals or piezoelectric semiconductors; improved, high-frequency, ultrasonic delay lines; and the applications of ultrasonics to cleaning, testing, machining, polymerization, and medical diagnosis. Considering the increasing number of workers in this field, and the vastly increased number of applications in the laboratory and in industry, this is an opportune time for the appearance of a series of books which attempts to summarize the present state of knowledge of physical acoustics. This volume is the first of a six-volume series, edited by W. P. Mason, whose professed aim is to provide a comprehensive introduction for those entering the field and for those interested in using its results. The first volume succeeds admirably in these purposes.

The present volume deals primarily with the tools and techniques of physical acoustics necessary for the measurement of stress waves in fluids and solids. The first two chapters, which are introductory in nature, constitute an excellent if succinct review of the classical theory of propagation of small amplitude waves in fluids and solids (Thurston) and of guided wave propagation in cylinders and plates (Meeker and Meitzler). Special attention is appropriately paid to topics that are important in current research—for example, mode coupling and wave propagation in strained elastic crystals. Recognizing that piezoelectric quartz transducers have been exhaustively discussed in many previous books (for example, both Cady and Mason), Berlincourt, Curran, and Jaffe restrict their discussion of transducers primarily to piezoelectric ceramics, together with a brief analysis of piezomagnetic transducers. This chapter presents a wealth of well-organized data (in tables and charts) on ceramic transducers. In a relatively brief chapter, McSkimin summarizes the extraordinarily varied methods used for measuring mechanical properties (primarily velocity and attenuation of stress waves) of liquids and solids. Accompanied as it is by 212 references, this chapter serves as an excellent guide to the literature. The applications of acoustical and mechanical waves in filters and oscillators are summarized in a chapter by Mason. The final two chapters discuss the uses of elastic waves in dispersive and nondispersive delay lines; both piezoelectric and magnetostrictive guided-wave delay lines are discussed in some detail by May, with a briefer treatment by Mason of the more conventional, multiple-reflection, ultrasonic delay lines.

This book may be recommended to physicists and others concerned with developments in the techniques of physical acoustics, with special emphasis on wave propagation in solids. In view of the number of contributors, there is remarkably little duplication, except in references. With respect to the latter, I appreciate the presentation (by Meeker and Meitzer alone) of general references separately from the literature references. But the omission of references to several standard works in the field should be noted: the book and two review articles of Hearmon (misspelled "Hearman") and the review article by Huntington. The author index is complete (and useful), but the subject index is not entirely adequate—for example, the entry under "velocity" is quite sketchy. The handsome format, excellent and plentiful graphs and illustrations, as well as the presence of cross-references among the chapters, are indicative of careful editing.

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Isotopes in Engineering

Radioactive Isotopes in Instrumentation and Control. N. N. Shumilovskii and L. V. Mel'ttser. Translated from the Russian edition (Moscow, 1959) by R. F. Kelleher. P. J. Blaetus, and G. A. Young, Eds. Pergamon, London; Macmillan, New York, 1964. xiv + 198 pp. Illus. $10.

This English translation of a volume originally issued by the Publishing House of the Academy of Sciences of the U.S.S.R. is a good example of cross-fertilization in the world scientific community and a very adequate addition to the International Series of Monographs on Nuclear Energy. The approach, a thorough treatment on a theoretical basis and one of the most rigorous available on the uses of isotopes in engineering practice, may have as many limitations as advantages for most American industrial practitioners. The mathematical treatment may be somewhat confusing because the symbolism is not that commonly used in American texts. The complexity of the mathematical treatment will probably surprise many workers who have considered applications of radioisotopes, such as gauging, an empirical science.

The introduction, which is intended as a summary and review, presents a minimal discussion of nuclear radiations and detectors and measuring circuits, using block diagrams, and includes a fairly detailed treatment of errors in measurements. The nine chapters cover a variety of applications of radioisotopes in instrumentation and control. The first and second chapters deal with the measurement of thickness and density by absorption and back scattering. Chapters 3, 4, and 5, treat relay devices used for control and the measurement of level and flow of liquids. Chapters 6 and 7 cover the measurement of flow of gases and gas pressure. Analysis and composition control are considered in chapter 8, and in the last chapter the determination of the minimum source activity for the particular dynamic properties of instruments is discussed.

Most of the 76 references cite Russian literature. There is a foreword by Paul C. Aebersold and a short index.

In general, the treatment is clear and concise, and the volume is not seriously impaired by a few small errors, such as the substitution of neutron for neutrino (p. 3) in the explanation of the continuous spectrum in beta decay. The book is recommended to any well-trained engineer seriously interested in applications of radioisotopes to instrumentation and control.

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Botany

Poisonous Plants of the United States and Canada. John M. Kingsbury. Prentice-Hall, Englewood Cliffs, N.J., 1964. xiv + 626 pp. Illus. $13.

Primarily, this book is a reference source for the physician and veterinarian and a textbook for the medical and veterinary student. For persons who wish to investigate poisonous

plants, it will serve to indicate problems and to provide a convenient approach to the widely scattered literature on the subject. Students of physiologically active compounds in plants will find in it much valuable information.

Hawaiian plants are included "as far as practical"—which does not appear to be very much. Otherwise, as far as determinable for the geographic area covered, all plants except bacteria known to have poisoned livestock or humans are treated. Some such plants, which occur on this continent but are not known to have caused poisoning here, are included on the basis of their known toxicity elsewhere. Many cases of plants reputed to be toxic but whose toxicity is undocumented by clear circumstantial or experimental evidence are not discussed.

Since this book is a survey drawn from the literature, doubtlessly many potentially harmful plants were omitted. A useful consequence of its publication may be to encourage the reporting of any well-documented cases unknown to the author or any that may come to light in future.

In the first chapter, which is provided with a separate bibliography, knowledge of poisonous plants in the United States and Canada is reviewed, and original sources of information are identified. Poisonous principles are discussed in the second chapter. The bulk of the book is devoted to individual or related groups of poisonous plants, the discussions of which generally are organized as follows: scientific name; common name(s), if any; description; distribution and habitat; poisonous principle(s); toxicity; symptoms and lesions; and conditions of poisoning. "Descriptions have been written with the intention of enabling a person to decide with certainty whether a suspected plant in hand is or is not the one described," a tall order and one that is not a little presumptious. In many instances illustrations help in this regard, but not nearly all plants are illustrated. Discussions relating to given plants are uneven in terms of content. The unevenness generally reflects the relative state of knowledge in the particular case, not simply a matter of the author's choice.

The text is generously supplied with significant references, which are listed in a bibliography of 1715 titles. Some of the latter are review papers, the bibliographies of which have not been repeated but which are thus made more accessible to the interested reader or potential researcher.

This publication should be of great value to those for whom it was primarily intended. Many others of us who are tagged as "botanist" not infrequently have calls, often made in great haste, for information on poisonous plants such as those dealt with here. We shall be very grateful to be able to have the volume close at hand.

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Biochemistry Textbook

Plant Biochemistry. D. D. Davies, J. Giovanelli, and Tom ap Rees. Davis, Philadelphia, 1964. xii + 454 pp. Illus. $10.

We live in an era of comparative biochemistry, in which the basic metabolic pathways common to all organisms are stressed. We remind our students that glycolysis is pretty much the same in muscle, yeast cell, and leaf, and that the modern orthodoxy regarding DNA, RNA, and proteins pertains to all of God's creatures.

Why, then, a special book on plant biochemistry? Obviously, one might suppose, because there *are*, after all, unique plant processes such as photosynthesis and symbiotic nitrogen fixation, unique plant components such as cellulose, rubber, and alkaloids, and unique problems in chemical physiology posed by such plant structures as stomata, phloem, and endodermis. The unwary reader approaching this book from that point of view is doomed to disappointment. What he will find is a conventional textbook of biochemistry, in which topics like proteins and enzymes, bioenergetics, oxidative phosphorylation, and the metabolism of carbohydrates, organic acids, amino acids, nucleic acids, and lipids are given routine coverage. Most of the information in these chapters is based on data derived from microorganisms and animals, and when plants are dragged into the act, it all seems a little contrived and after-the-fact. The only chapters with a plant flavor are those on photosynthesis, isopentanes, and alkaloids, and I did not find them particularly interesting. I also regret the fact that the authors omitted from consideration such interesting and current topics as ferredoxin, phytochrome, and kinetin, such interesting older stories as the metabolism of selenium and fluorine, and such fascinating problems in chemical physiology as the control of stomatal opening.

What the authors have chosen to do, they have done accurately and well. My major complaint is that they haven't improved significantly on such older books as Fruton and Simmonds for general biochemistry or James Bonner or Trevor Robinson for plant biochemistry.

As one who teaches advanced plant physiology to graduate students, I will certainly recommend that they become familiar with the contents of this book. As an adviser, however, I would recommend that they learn basic biochemistry from a general course. I would hope that the specialized study of plant biochemistry would build on such a general course, and that each plant topic could be explored in greater depth than permitted by this volume. In such a context, this book will find only limited use as a textbook.

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New Books

General

Anaxagoras and the Birth of Physics. Daniel E. Gershenson and Daniel A. Greenberg. Blaisdell (Ginn), New York, 1964. 556 pp. $10.

Anaxagoras and the Birth of Scientific Method. Daniel E. Gershenson and Daniel A. Greenberg. Blaisdell (Ginn), New York, 1964. 79 pp. Paper, $1.45.

Ancient Science and Modern Civilization. George Sarton. Univ. of Nebraska Press, Lincoln, 1964 (reprint of 1954 edition). 115 pp. Paper, $1.

The Atlantic Cable. Bern Dibner. Blaisdell (Ginn), New York, ed. 2, 1964. 190 pp. Illus. Paper, $1.95.

Australian Butterflies. I. F. B. Common. Jacaranda Press, Brisbane, Australia, 1964. 131 pp. Illus. 13s. 6d.

Big Men, Big Jobs. Clyde H. Duncan. College of Agriculture, Univ. of Missouri, Columbia, 1964. 150 pp. Paper, 50¢.

British Instruments Directory and Buyers' Guide, 1964–5. Scientific Manufacturers' Assoc. and United Science Press, London, ed. 4, 1964. 274 pp. Illus. £8 8s.

The Changing Science of Mineralogy. Cornelius S. Hurlbut, Jr., and Henry E. Wenden. Heath, Boston, 1964. 127 pp. Illus. Paper, $1.32.

A Checklist of Linneana, 1735–1835, in the University of Kansas Libraries. Compiled by Terrence Williams. Univ. of Kansas Press, Lawrence, 1964. 81 pp. Paper, $1.50.

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