Book Reviews

Symposium on Atherosclerosis. Publication 338. National Academy of Sciences–National Research Council, Washington, 1954. 249 pp. Illus. $2.

Although this symposium was requested by the Air Force Directorate on Research and Development and was originally designed to emphasize the pragmatic interests of the Air Force, it constitutes in its final form a broad survey of the etiologic factors of atherosclerosis. The contents of the volume are illustrative of the many facets of investigation that have developed since the concept of the essential identity of old age and atherosclerosis has been abandoned.

The first part of the symposium is devoted to examination of the vessel wall and of local factors that determine patchy distribution of atherosclerosis. Consideration is given to changes in composition of elastin, structure of elastic elements in media of arteries, degree of calcium deposit, thickening of intima, and disturbances in medial circulation. There is detailed scrutiny of the consequences of local injury and degeneration in terms of both initial reaction and healing. Attention is drawn to the possible pathogenetic relationship to atherosclerosis of such reparative processes as subendothelial proliferation and the formation in intima of new capillaries that rupture easily with consequent hemorrhage.

There is a short section on the use of newer techniques in the study of blood vessels. This includes discussion of the applicability of electron microscopy, polarization optics, x-ray diffraction analyses, and x-ray absorption spectrography to the examination of large and small vessels.

The role of lipids and lipid metabolism in the pathogenesis of atherosclerosis receives appropriate attention. Although the focus is still centered about the behavior of cholesterol and its esters, the significance of neutral fats and phospholipids is taken into account. There is a fundamental discussion of the entry, transport, and metabolism of fatty acids, phospholipids, and sterols. There is a critical examination of the character and role of lipoproteins in the metabolism of lipids and in the pathogenesis of atherosclerosis. The influence of diets on development and complications of the disease is discussed from the standpoint of excessive caloric intake, relationship of fat intake to total calories, effects of different forms of fat, and variations in cholesterol intake.

As a whole, the symposium furnishes an authoritative text for all who are interested in causative factors of atherosclerosis and its complications.

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The Story of FAO. Gove Hambidge. Van Nostrand, New York–London, 1955. xii + 303 pp. Illus. + plates. $6.50.

Man may not live by bread alone, but food comes pretty close to being first in priority for human beings as well as for God's other creatures. This is especially true for the approximately two-thirds of the world's population that nutritionists declare are undernourished and among whom deficiency diseases are widely prevalent.

Hunger is not new; but FAO and similar programs, both public and private, now under way in scores of underdeveloped nations are expressions of the new conviction that modern science and technology can reduce, or perhaps eliminate, food shortages as causes of human misery.

Today science and scientists are widely accused of making life more complicated and less happy for the individual than in the good old days before science gave man so much knowledge of, and control over, the forces of nature. But no one has raised his voice against the use of science to increase food production where the people are hungry. L. B. Pearson (now Minister of External Affairs of Canada) put it this way in 1945 when he was chairman of the interim commission that set up the Food and Agriculture Organization (FAO): "We know what science could do if harnessed to the chariot of construction. Man's fears have, however, harnessed it also to another chariot—that of atomic obliteration. On that chariot race, with science driven by both contestants, all our hopes and fears and agonies and ecstasies are concentrated."

In *The Story of FAO* Gove Hambidge has again demonstrated his skill in condensing and making understandable to the man on the street the methods and the findings of science and the many ways in which science can be used to advance man's welfare. It was he who was brought into the U.S. Department of Agriculture in 1935 to edit the new type of Yearbook of Agriculture, which won such wide acclaim from scientists as well as laymen.

No other person has anything like the firsthand experience of Hambidge in the events that led up to the creation of FAO and its activities to date. He played a prominent part in the 1943 Hot Springs conference, called by President Roosevelt, that was attended by delegates of 45 nations. It was at this conference that the decision was made to create a United Nations agency to serve agriculture and to improve the nutrition of the world's hungry peoples. Hambidge became the director of information for FAO when it got under way in 1945 and has served the organization in various capacities ever since.

The book, however, is not about Hambidge, for he is innately a modest person. Instead, it is a well-illustrated and interestingly written account of how the three directors-general of FAO in turn have made it the force it has become in nation after nation in fighting rural ignorance, blind tradition in farming practices, inefficient crop and livestock production methods, and the slowness of governments to bring science to the aid of their farmers, their fisheries, their foresters, and those responsible for the nutritional status and economic advancement of the populations they are expected to serve.

The personality of John Boyd Orr, the first director-general of FAO, shines from the printed pages. His great vision and evangelistic zeal gave this new international agency great impetus in the early years and won for it enormous good will from scientists, government officials, and the general public—both in the more industrially advanced nations and in the remote countries where moden science has yet to make much of an impression. Today we know of him as Lord John Boyd Orr, winner of the Nobel peace prize in 1949. But nutrition workers remember him as head of the Rowett Nutrition Research Institute near Aberdeen, Scotland, who, when World War II broke out, gave Great Britain the technical information on which the nation based its highly successful food rationing.

Orr was destined to be disappointed in his hope that an international agency like FAO could be effective in greatly

facilitating the movement of food from surplus-producing nations to the hungry peoples all over the world. Time is demonstrating that the application of science and technology by the underdeveloped nations to increase the production of food and of things they can exchange for food—and not a world food bank administered by an international agency—will be the mechanism by which science and technology can improve human nutrition and raise levels of living.

All royalties on Hambidge's book will go to support the work of FAO.

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Chemical Engineering Cost Estimation. Robert S. Aries and Robert D. Newton. McGraw-Hill, New York, 1955. xiii + 263 pp. $6.

This is a well-organized effort comprising 10 chapters on cost estimation. It includes an analysis of various cost items entering directly into the manufacture of a product as well as a good deal of pertinent discussion of the economics involved in a chemical enterprise. For the practical engineer, who is daily faced with a need to justify engineering recommendations on a dollars-and-cents basis, the book fills a real need. The authors have drawn extensively from the contributions of Harding Bliss, C. H. Chilton, Roger Williams, Jr., and others.

The chief criticisms to be leveled against the book are (i) failure to use a cost index system or (at least) to recognize its value, (ii) failure to indicate in the cost-of-equipment graphs that the curves are either averages or medians of a considerable spread of data, and (iii) overemphasis on equipment costs at the expense of discussion of items such as transportation, installation, and maintenance costs. The book as it stands is far from being comprehensive. But although it is *dated* and *imperfect* with respect to the matters just indicated there is no denying its immediate usefulness.

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Inorganic Reactions and Structure. Edwin S. Gould. Holt, New York, 1955. viii + 470 pp. Illus. $6.50.

This book was written to serve as a textbook for chemistry students at the senior or first-year graduate-student level. It is to be used with those courses in inorganic chemistry that have developed in recognition of the renaissance of inorganic chemistry and the general lack of knowledge of the subject shown by so many chemistry graduates in the past 20 years. The author states that the book will serve the students who have had courses in both qualitative and quantitative analysis, but it is my opinion that some introduction to physical chemistry is also necessary.

The book is made up of alternating chapters of theoretical and descriptive inorganic chemistry. No attempt is made to cover the chemistry of all the elements, but the common elements of each group are adequately treated, and generalizations are made wherever possible. The theoretical treatment is exhaustive in that all the current rationalizations to "explain" structure and reactions in inorganic chemistry are covered and numerous specific applications are cited. The development of the theories is limited, however, and a good set of lectures will have to accompany the book if the students are to have a real understanding of these theories.

This book will provide an excellent orientation and a review of modern inorganic chemistry for the practicing chemist whose academic training ended before such terms as *bond angles, bond length, bond strength, bond order, sigma, pi,* and *delta bonds, Lewis acids*, and so forth, became standard terms in the chemistry courses. Further works will have to be consulted for complete comprehension of all aspects of this new approach, however. There are few references to the original literature, but there are numerous references to treatises and books on special phases of inorganic chemistry.

I was particularly impressed by the exercises at the end of each chapter. They are thought-provoking, stimulating, and an excellent test of one's ability to apply what has been learned. The information within the chapter is not always adequate to supply the answers to the exercises. For example, the text carries that all-too-common phrase "It may be shown that . . ." but without actually showing that "it" is so. One of the exercises at the end of a chapter states "Show that . . . is so." I believe that this is a good exercise. A number of exercises involve oxidation-reduction potentials at other than the standard conditions. Although the standard oxidation-reduction potentials are given in an appendix, the Nernst equation does not appear in the text. It must be presumed that the student will recall the equation from his course in quantitative analysis.

The only serious omission is a chapter on oxidation-reduction. Even though the topic is referred to repeatedly throughout the book and is covered in piecemeal fashion, it is of sufficient importance to justify a separate chapter.

Typographic and factual errors are few. The implication that pentavalent vanadium is readily reduced to the trivalent state by SO_2 in acid solution is erroneous, since the reduction proceeds only to tetravalent vanadium.

Inorganic Reactions and Structure is a worth-while addition to the growing list of modern inorganic books and will be valuable both as a textbook and as a guidebook to bridge the gap between the "old" and the "new" inorganic chemistry. It should serve as a stimulus to many chemistry departments to offer a course wherein such a textbook will be appropriate, because too few such courses are being offered at the present time.

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A Study of the Brain. A companion text to the stereoscopic atlas of neuroanatomy. Hyman S. Rubinstein. Grune and Stratton, New York, 1953. xiii + 209 pp. Illus. + plates. $9.50.

Designed to be used in conjunction with the author's *Stereoscopic Atlas of Neuroanatomy,* yet complete in itself, this textbook is intended to provide students with a functional approach to the organization of the central nervous system by guiding them through a dissection of the human brain. The first chapter provides directions on how to proceed with the dissection; interspersed at appropriate points in its text are suggestions with regard to the portions of subsequent chapters that should be studied in conjunction with a particular stage in dissection or before proceeding farther with it. The subsequent chapters, which represent the material usually covered in textbooks of neuroanatomy, are in turn generously populated with references to the "Atlas of transverse sections" and an appendix that follow the text; the latter includes the key drawings of the aforementioned *Stereoscopic Atlas.*

As an approach to the study of neuroanatomy, the plan on which the textbook is organized has merit; for there is no better way to obtain a three-dimensional view of the organization of the brain than by dissection. Unfortunately, the manner and form in which the ancillary material is treated—the text and illustrations—lack the merit of the plan. For example, the value of the "Atlas of transverse sections" is considerably lessened by the fact that too many structures are identified in many of the illustrations; as a consequence, the labels are too small and too crowded to be easily read, and the direction lines are difficult to follow. Many times the identifying line ends in a region in which the structure mentioned may reside but its presence or the limits of its distribution in the case of a