ranted proliferation of subfamilies. As a result of this monograph it is certain that the Chonetoidea will begin to receive the attention they deserve, and this will doubtless be reflected in a marked increase in number of genera.

In addition to the invaluable taxonomic review, Muir-Wood presents a number of anatomical characters that she found of value in defining the genera and subfamilies. Notable among these features are the following: the angle of emergence of spines, the nature of the external ornamentation, the number and disposition of the septae in the brachial valve, the presence or absence of an alveolus in the brachial valve, the form of the cardinal process and the muscle fields, the external form of the valves.

The derivation of the Chonetoidea from Upper Ordovician plectambonitids and the point that the Productoidea are unrelated are reaffirmed. Enough stratigraphic information is given to increase greatly the value of chonetids for correlation and age determination, although the utility of the group for these purposes is still somewhat limited. However, the impetus that this monograph gives to chonetid studies will probably alter that situation radically within another 10 or 15 years.

Additional monographs of this type would greatly encourage the study of Paleozoic brachiopods.

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Cells and Organisms

Comparative Biochemistry. A comprehensive treatise. vol. 3, pt. A, *Constituents of Life*. Marcel Florkin and Howard S. Mason, Eds. Academic Press, New York, 1962. xix + 959 pp. Illus. $30.

During the last two decades, the biochemical literature has increased to such an extent that it has become impossible for any one individual to read all that is published in the field. As a direct consequence we are witnessing a steadily increasing stream of "annual reviews," "recent advances," and massive encyclopedias such as this one, which is the third in a projected set of six volumes. Not only do they overcrowd the shelves of a private library, but their almost prohibitive price overtaxes the modest budget of both the academician and the research worker.

When Kluyver first introduced the concept of "unity in biochemistry," a general survey of the diverse metabolic processes was considered the most significant primary attack. During the enthusiastic early years the question "What is there?" was overshadowed by the question "How did it get there?" This treatise seeks to combine these two questions and to "compare the chemistry of life with the chemistry of the world [or of the worlds!] in which life occurs, to discover the manifestations of matter and energy which characterize the degrees of life, to seek—at a molecular level—chemical similarities and differences of composition and reactions through the phylogenetic scale, and to compare the physicochemical mechanisms by which energy is transformed in organisms" (from the introductory chapter of volume 1, page 14). This is a tremendous and an ambitious task, especially in view of the many gaps in our general knowledge of the occurrence and biosynthesis of the natural compounds.

Thus, it is not surprising that volume 3 of *Comparative Biochemistry*, which is devoted to the principal classes of constituents of cells and organisms and to their distribution and the comparative enzymology of their biogenesis and metabolism, lacks the continuity of themes that characterizes volumes 1 and 2. The chapters on the distribution of phospholipids (J. C. Dittmer) and on the structure and distribution of terpenoids (W. Sandermann) are handbook-type compilations of data. On the other hand, the chapters on the structure and distribution of sterols (by one of the pioneers of comparative biochemistry, the late Werner Bergmann), on the structure and possible significance as a species character of bile salts (C. A. D. Haslewood); on flavonoid compounds (T. Swain and E. C. Bate-Smith); and on Terpenoid metabolism (W. Sandermann) are real gems of comparative biochemical thinking. The contributions by F. B. Shorland (on fatty acid occurence and distribution), R. M. C. Dawson (on the metabolism of phospholipids), and D. J. Bell (on monosaccharides and oligosaccharides) present a lucid account of the distribution, chemical structure, and metabolism of these compounds. Since no comparative biochemistry of steroid metabolism is possible as yet, the chapter entitled "Lipids: Steroid metabolism" (J. K. Grant) is restricted to higher organisms only. In their contribution, "Saccharides: Alternate routes of metabolism," V. H. Cheldelin and his coworkers discuss mainly the pentose cycle, polyol dehydrogenases, and the methodology used in their investigations. Thorough accounts are given of the comparative biochemistry of polysaccharides (P. Bernfeld); of the structure and distribution of quinones; of melanins (both of the latter by R. H. Thomson); and of the polysaccharidases (P. Bernfeld).

The volumes of this series live up to their subtitle "A comprehensive treatise," and provide an exhaustive survey of this rapidly growing field of endeavor as of the time they went to press. The rapid onset of obsolescence is an inherent danger in such undertakings, and one wonders how soon revision will be required.

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New Books

Mathematics, Physical Sciences and Engineering

Elementary and Advanced Trigonometry. Kenneth S. Miller and John B. Walsh. Harper, New York, 1962. 361 pp. $5.75.

Elements of Probability and Statistics. Frank L. Wolf. McGraw-Hill, New York, 1962. 337 pp. $7.50.

Finite Mathematics with Business Applications. John G. Kemeny, Arthur Schleifer, Jr., J. Laurie Snell, and Gerald L. Thompson. Prentice-Hall, Englewood Cliffs, N.J., 1962. 494 pp. Illus. Trade ed., $10.60; text ed., $7.95.

Fundamentals and Techniques of Mathematics for Scientists. M. M. Nicolson, D. R. Hartree, and Daphne G. Padfield, Eds. Wiley, New York, 1962. 546 pp. Illus. $7.50.

Gas Film Lubrication. W. A. Gross. Wiley, New York, 1962. 427 pp. Illus. $14.

Infinitistic Methods. Proceedings of the symposium on the foundations of mathematics, Warsaw, 2–9 September 1959. Published for the International Mathematical Union and the Mathematical Institute of the Polish Academy of Sciences. Pergamon, New York, 1961. 362 pp. $15.

Inorganic Reactions and Structure. Edwin S. Gould. Holt, Rinehart, and Winston, New York, ed. 2, 1962. 527 pp. Illus. $6.50.

International Tables for X-ray Crystallography. vol. 3, *Physical and Chemical Tables*. Caroline H. MacGillavry and Gerald D. Rieck. Published for the International Union of Crystallography. Kynoch Press, Birmingham, England, 1962. 378 pp. Illus. £5 15s.