Alas, this is the last of three volumes produced under the careful and diligent editing of H. W. Turnbull. He died in May 1961, but a year after the death of another great toiler in the cause of Newton, W. H. Robinson. Unfortunately, though the production is magnificent and the book a worthy part of the canonical literature, this tome shows signs of having been hurried and of being used to some extent as a catchall for miscellaneous material. Although 58 of its 147 items are hitherto unpublished, only 13 new letters by Newton are in the collection, and for the most part these are not particularly significant—the real riches for this period undoubtedly lie in the manuscript materials which are to be published by D. T. Whiteside. Of the six new Newton manuscripts here mixed in with the letters, three should either have been in volume 1, or have been reserved for the addenda, since they relate to the early postplague period of mathematical development. The faults of the volume are however only minor blemishes, and the important thing is that, thanks to these three massive volumes and to the renaissance of Newtonian studies which has accompanied them, a whole new era of accurate historical scholarship is being born.

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## Biological Problems

**A Textbook of Comparative Endocrinology**. A. Gorbman and H. A. Bern. Wiley, New York, 1962. xiv + 468 pp. Illus. $12.50.

**Basic Endocrinology**. For students of biology and medicine. J. H. U. Brown and S. B. Barker. Davis, Philadelphia, 1962. vii + 228 pp. Illus. Paper, $4.50.

*Comparative Endocrinology* is a textbook prepared to serve students of biology as an introduction to the field and intended to encourage them to "recognize the important biologic problems whose solutions may be approached through endocrinologic investigation." The intentions of the authors are amply fulfilled in a book that is a pleasure to read. The work is organized into 16 chapters, nine of them concerned with individual endocrine glands. There are, in addition, an excellent general introduction, chapters on gastrointestinal hormones and on vertebrate and invertebrate neuroendocrinology and neurosecretion, and an intelligent summary-chapter on steroid hormones and steroidogenesis. Finally, in a chapter on endocrine integration, the complex interplay of hormones in a variety of systems and processes (for example, migration, hibernation, osmoregulation) is described, and in the concluding chapter there is a broad and thoughtful discussion of the wider aspects of chemical mediation. Throughout the work, comparative aspects of the subject are emphasized, and the problems are discussed in their widest biological context.

There are numerous well-chosen illustrations, and the diagrams are simple and clear. It is a pleasure also to read a book, intended for students, which takes pains to show how many problems still await solution. I detected very few errors in *Comparative Endocrinology*. Of these, the one most urgently requiring correction is the definition of "R. Q." in the footnote on pages 220 and 221; it is both upside down and backward. The authors also refer to gluconeogenesis from protein *and* fat (pages 232, 317, 324), although it is now fairly clear that in animals net sugar formation from fat does not occur. Inexplicably, in the light of Pickford's work, the authors say (pages 328 and 450) that the mammalian growth hormone does not stimulate growth in fish. Finally, on page 432, the authors refer to "permanent steroid diabetes," but I know of no unequivocal instance of a steroid diabetes persisting after the steroid is withdrawn. These are, however, minor disturbances in a sound work of broad design, which deserves the gratitude and appreciation of any student of biology.

*Basic Endocrinology* is a little book conceived with the good intention of providing a simple, straightforward introduction to endocrinology for students of medicine and biology. It is a sorrow to report that this excellent intention is not realized. The book is poorly organized, badly written, and carelessly edited. The diagrams and illustrations are heterogeneous, sparse, and frequently unenlightening. The treatment, as it must be in a small book, is highly synoptic. But it is not a synopsis of carefully chosen evidence; it is rather a synopsis of interpretation, not always well-ordered, not always correct, and frequently imprecise. Two quotations will illustrate the characteristic wooliness of the text:

"It has so far been impossible to demonstrate any feedback mechanism for growth hormone, although it is well known that appropriate lesions of the hypothalamic region will produce obesity" (page 47).

"Further work has established the site of action of glucagon. The breakdown of glycogen to glucose-6-phosphate occurs in the presence of a phosphorylase which (in turn) received the phosphate from ATP under the action of dephosphophosphorylase which is in turn accelerated by a kinase. The present concept is that glucagon acts on the kinase system to increase the rate of ATP breakdown" (page 185).

It is a pity. There is need for a good text of this kind. Both authors are experienced investigators and teachers, and it is to be hoped that they will undertake an immediate, thoughtful, and thorough revision of this book.

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## Brachiopoda

**On the Morphology and Classification of the Brachiopod Suborder Chonetoidea**. Helen M. Muir-Wood. British Museum (Natural History), London, 1962 (available from British Information Services, New York). viii + 132 pp. Illus. Plates. $22.

Helen Muir-Wood's monographic treatment of the suborder Chonetoidea constitutes a notable contribution to the knowledge of Paleozoic brachiopods which will be welcomed by all students of Paleozoic fossils. Most useful are the comprehensive reviews and emendation of all chonetid genera, subfamilies, and families. This work is, however, far more than a critical review of the literature; it is based on a number of years of painstaking study of the Chonetoidea in both European and North American museums. In all, 31 genera are diagnosed, including seven new ones, as well as eleven subfamilies including nine new ones, and four families including one new family. To the nonspecialist the ratio of subfamilies to genera may appear excessive, but this reflects the lack of attention shown the Chonetoidea by most paleontologists rather than an unwar-

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.