

Book Reviews

An Introduction to Algebraic Topology.

Andrew H. Wallace. Pergamon Press, New York, 1957. vii + 198 pp. Illus. \$6.50.

In this very readable and carefully motivated book on algebraic topology the author has successfully filled a gap in the mathematical literature which has existed for years. He has provided an understandable elementary textbook in algebraic topology, available to the beginning student with no more than the usual basic training in algebra and analysis, and he has done so without reducing the subject to the meaningless game of cutting and pasting and rubber-sheet stretching which usually results from efforts of this kind.

After introducing the usual elementary topological notions in the first three chapters, he starts on the principal guiding theme of the book, a discussion of continuous transformations and homotopy. The fundamental group is discussed first, and then the homology groups are introduced by means of the singular homology theory. The excision theorem is proved, as are also the topological invariance of the homology groups and their invariance under deformations. The final two chapters of the book consist of a treatment of the homology sequence and of methods of calculating homology groups of various spaces by making use of the exactness of the homology sequence. Simplicial complexes are introduced in the last chapter, and the treatment of their homology characteristics is given, not directly in terms of incidence relations but indirectly in terms of exact sequences and singular homology.

The book is liberally supplied with illustrations, which aid in clarifying the intuitive discussion which precedes almost all theorems before their formal proofs are given. Most of the applications to the properties of particular spaces and to investigations of continuous transformations are given in numerous, well-chosen exercises which, as the author states in the preface, form an integral part of the book.

By making fundamental use of the current techniques of algebraic topology the author has brought before the ele-

mentary student and the nonspecialist a well-motivated and coherent treatment of subjects heretofore only available in research papers and in piecemeal form. The book is not one into which one can dip at random with any degree of success, but one which must be read from beginning to end for a true appreciation of its contents. As is inevitable in a work of this type, many interesting topics are mentioned only in passing or not at all, but on the whole the author has succeeded remarkably well in giving a connected, lucid, and elementary account of present-day methods in algebraic topology.

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The Reproductive Development of the Female. With especial reference to the period of adolescent sterility. A study in the comparative physiology of the infecundity of the adolescent organism. M. F. Ashley Montagu. Julian Press, New York, ed. 2, 1957. xviii + 234 pp. Illus. \$5.

Anthropologists and ethnologists have long wondered why in nonliterate societies girls seldom become pregnant during early postpubertal years, despite their promiscuous sexual relations during this period. Among the scientists who "wondered" was the author of this book, who determined to find an explanation for the phenomenon, which he felt was genuine and not a spurious artifact. Observations of Mirskaia and Crew on the mouse (1930) and of Hartman on the rhesus monkey (1931) provided him, he says, with the necessary evidence to warrant further study. The result was the preparation of an extensive essay on the subject: "Adolescent Sterility" [*Quart. Rev. Biol.* (1939)]. This was expanded into a book with the same title in 1946, in which the author brought together much of the world's literature on the subject.

Since, during the last decade, more data have accumulated in this area, the author has now prepared the new edition under the title *The Reproductive Development of the Female*, condensing

the old and adding the new. The ethnological data are presented in the chapter "Adolescent sterility in man," while the material on adolescent sterility in lower animals has been greatly expanded. The "Biology of adolescent sterility" affords a scientific background for the study; it is written in a manner quite satisfactory to the student of the physiology of reproduction. Psychological factors are briefly discussed, and some social implications are pointed out.

The book is written in the author's well-known clear and pleasing style, which makes the reading almost effortless. The basic facts are presented in 55 well-selected tables, and there is a bibliography of over 400 titles, many of which, for the readers' convenience, are given as footnotes in appropriate places.

The author may be said to have completely answered the question he set out to answer: "What, if any, interval of time elapses between the appearance of the first menstruation, the menarche, and the ability to conceive and carry a fetus to term?" While the interval between the menarche and the first conception is subject to very wide variations, it is a matter of some two, three, four or more years. The author is, however, cognizant of the exceptional cases of early motherhood and has, in the bibliography, assembled dozens of references to precocious pregnancies. He has also assembled interesting figures on the age at menarche in different countries, age at first parturition, interval between marriage and first delivery in regions where girls are married soon after the first menstruation, adolescent sterility in the male, and other related topics.

The present study on adolescent sterility has, in my opinion, been so thoroughly executed that another book on this unique subject will not soon be called for.

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Trophoblastic Growths. Aclinal, hormonal and histopathologic study of hydatidiform mole and chorionepithelioma. J. Smalbraak. Elsevier, Amsterdam, 1957. \$12.75.

Biologically, hydatidiform mole and chorionepithelioma are of great interest since the production of chorionic gonadotropin by these tumors makes it possible to follow all their vicissitudes by means of biological assay methods. At the moment this is the only human tumor for which such a test exists. Unfortunately, the value of assays has been obscured by the use of urine rather than blood serum.

Smalbraak devotes many pages to the pitfalls of urinary assay, especially the occurrence of negative tests in spite of the presence of tumor. However, a method of assay in which blood serum in immature (21 to 23-day) female rats is used has been available since 1941 [E. Delfs, *Endocrinology* 23, 196 (1941)]. Delfs has recently published the results of her studies [*Obstetrics and Gynecology*, 9, 1 (1957)], unfortunately, too late to have come to Smalbraak's attention. Since chorionic gonadotrophin levels in blood are much higher than in urine, Delfs' serum assay method produces no false negative results and is the most valuable single criterion for diagnosis and prognosis of hydatidiform mole and chorionepithelioma.

This book is the first modern monographic presentation of the subject. It is written in a clear, easy style, is reasonably exhaustive, and very beautifully illustrated. The case histories of the 74 hydatidiform moles and 17 chorionepitheliomas encountered at the Utrecht University Clinic, presented in every detail, provide a complete and fascinating picture of all the possible biologic variations of these tumors. American students of the subject may be surprised by the relative neglect of Arthur Hertig's early paper on the etiology of hydatidiform mole [A. T. Hertig and H. W. Edmonds, *Arch. Pathol.* 30, 260 (1940)] and the considerable emphasis on his later grading of hydatidiform mole according to relative malignancy [A. T. Hertig and W. H. Sheldon, *Am. J. Obstet. Gynecol.* 53, 1 (1947)], which has not been universally accepted. This, however, can scarcely detract from the extreme value of this book to everyone concerned with the biology of cancer.

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Principles of Stratigraphy. Carl O. Dunbar and John Rodgers. Wiley, New York; Chapman & Hall, London, 1957. 356 pp. Illus. \$10.

This pleasing volume fills a long-felt need in geological literature. While the primary objective in its preparation may have been to provide an adequate textbook for a graduate course in stratigraphy, it will accomplish not only this but will also undoubtedly find a very useful place in the bookshelves of all geologists who are interested in sedimentary rocks.

Part I (95 pages) deals principally with general processes of transportation and deposition of sediments and with the characteristic features of the deposits of various environments: fluvial, desert, lake, glacial, neritic, bathyal, abyssal, cliffed shore, beach, tidal flat, lagoon, estuary, delta, and organic reef.

Part II (60 pages) is concerned with the nature of stratification, unconformities and diastems, and facies changes.

Part III (97 pages) covers the nomenclature of sedimentary rocks in general and the description and genesis of individual lithologic types, classified under the chapter headings of "Rudites," "Terrigenous arenites," "Lutites," "Redbeds," "Carbonate rocks," and "Siliceous non-fragmental rocks."

Finally, part IV (61 pages) discusses stratigraphic classification; the nature of stratigraphic units, with discussion of usage and terminology, and principles of correlation; and broad patterns in the distribution of sedimentary rocks.

The text is illustrated with 123 figures consisting of well-chosen photographs and simple, clear diagrams and sketches. There are 20 pages of bibliography and 15 pages of subject index. The format of the book is excellent, and it is remarkably free from typographical errors.

I found the subject matter extremely interesting and stimulating. The scholarly background and broad experience of the authors is evident throughout in the richness of reference and example. Particularly to be commended is the fact that, in the discussion of sedimentary processes, environments of deposition, lithologic types, and stratigraphic principles, numerous specific illustrative examples are cited from various parts of the stratigraphic column and from various parts of the world.

Stratigraphy is a dynamic subject. We are far from having heard the last word on many of the topics touched upon in this book, and on many there still is spirited controversy. This is recognized by the authors, and, while they state their own views, they have in general taken an open-minded and broadly tolerant attitude toward the opinions of others. Not even the authors always agree, and doubtless most stratigraphers will find occasional passages in the book to which they will object. It seems to me that too much is made of the need for a special agent, "turbidity currents," to explain the common phenomenon of graded bedding. In addition, the definition of a desert as an area with interior drainage does not seem very adequate; the use of chemical methods in distinguishing marine from nonmarine sediments might have been mentioned; in the treatment of "facies changes" too much emphasis is placed on lateral as compared with vertical variations; there is little need for the terms *biotope* and *lithotope*. The statement that mud cracks are one of the best evidences of non-marine deposition also seems questionable; there is insufficient emphasis on the increasing importance of radioactive methods in the dating of sedimentary rocks; and the statement that a certain paper on stratigraphic terminology pub-

lished in 1941 has been the basis for all further thinking on the subject in America will undoubtedly be challenged.

However, while exception may be taken to a few statements and omissions, the book as a whole is outstandingly comprehensive and authoritative, and it should become a standard text and reference work. More than that, the authors are to be congratulated on having produced a work which it is impossible to read without being inspired with renewed enthusiasm for the fascinating field of stratigraphy.

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Language: An Enquiry into Its Meaning and Function. Ruth Nanda Anshen, Ed. Harper, New York, 1957. xviii + 366 pp. Illus. \$6.

In the introduction to this volume, the editor suggests that the problem being discussed is "the mystery, the miracle, and the magic of language." This suggests a kind of mystical approach to linguistic phenomena which, unfortunately, recurs through many of the 19 essays which comprise the book. Surely, we must be at least a little skeptical about any theory of language which asks at the outset that we "concede that . . . language . . . must come from God" and which insists that language "is the proof of the existence of God." As a matter of fact, one criticism of this work is precisely that, in spite of the editor's claim of homogeneity, the book presents no coherent theory about language at all but is merely a collection of uncoordinated and often contradictory essays of varying merit, by contributors with a wide range of interests. Thus, whereas one author tells us that it is futile to search for the origin of language, another devotes his entire study (39 pages) to a not-too-convincing discussion of this very topic.

There is a very real need for a comprehensive treatment of language which will in some way illustrate the relative positions of such disciplines as linguistics, philosophy, logic, psychology, literary criticism, and so forth. Such a study presumably would indicate to what extent the findings of investigators in different fields are complementary and can be reconciled with one another and to what degree there is genuine disagreement. This book does not help satisfy the need. It is unfortunate that the few essays which do contain clear and stimulating ideas are not numerous enough to overcome the impression that the editor has created—namely, that language is a metaphysical phenomena that cannot be understood by the techniques and re-