the differential extinction and reproduction of populations is a process uncongenial to Williams's world view, and he attacks it with the same vigor that characterized his earlier book *Adaptation and Natural Selection* in 1966. But the situation has changed greatly since 1966. At that time there was an urgent need to rebut V. C. Wynne-Edwards's *Animal Dispersion in Relation to Social Behaviour*, a task Williams performed with distinction. In the past several years a real theory of interpopulation selection has begun to be forged, with both enriched premises and rigorous model building. This part of the subject Williams ignores. He is still convinced, on intuitive grounds and in apparent puritanical devotion to the principle of parsimony, that interpopulation selection cannot be important in nature. His guess may or may not prove right—organic evolution is *not* parsimonious. But that is really beside the point. The possibility of evolution by interpopulation selection must be fully explored with an open mind. Insofar as the new theory considers the results of counteraction between group and individual selection, it will produce complex, nonobvious results that constitute testable alternatives to the hypotheses of individual selection. My own intuitive feeling is that interpopulation selection is important in special cases, and that its investigation will make evolutionary biology a much more interesting and challenging discipline in the future. At the very least the subject must be systematically developed. To deny that much would be to misconstrue the true nature of theory and evidence.

These faults are nevertheless secondary to the important accomplishments of a really excellent book. *Sex and Evolution* ranks among the best general works on evolutionary biology in recent years. The author also deserves to be saluted for his sense of the real and important, his crystalline prose, and his frank and modest style. He correctly observes that "the contest of ideas on these fundamental problems has only just begun. History has afforded a rare opportunity to ardent participants and alert spectators in the years ahead." *Sex and Evolution* will serve as the invitation and the guide to this contest.

EDWARD O. WILSON
Museum of Comparative Zoology Laboratories, Harvard University, Cambridge, Massachusetts

Biochemistry of DNA

DNA Synthesis. ARTHUR KORNBERG. Freeman, San Francisco, 1974. x, 400 pp., illus. $18.

DNA Synthesis is a clearly written and interesting presentation of the subject as viewed through the eyes of the durable patriarch in the field. The format of the book makes it easily readable, and it is well illustrated. In addition, it includes numerous tables compiling data that were previously widely scattered. Examples are the tables comparing properties of *Escherichia coli* DNA polymerases I, II, and III and listing mechanisms of degradation by exonucleases and mechanisms of inhibition in replication and transcription. The book is written at such a level that it will be useful for researchers in DNA replication as well as for persons interested in supplementing their general biochemical knowledge of the subject.

The first two chapters of the book deal with the structure and function of DNA and the biosynthesis of DNA precursors. These chapters help make the book complete and perhaps will be useful to the novice, but the elementary presentation of this material seems out of step with the sophisticated presentation in the remaining chapters.

The next two chapters describe many aspects of the *E. coli* DNA polymerase I including isolation, types of reactions catalyzed, proteolytic cleavage, properties of the DNA product, and physiological role. The work embodied in this discussion represents a primary research interest of the Kornberg laboratory during the last ten years; hence most of the account tends to be complete in its detail and the material is logically and clearly presented. However, little emphasis is placed on the substantial contributions of the geneticists. Several years ago a variety of mutants of genes affecting DNA synthesis were characterized. Biochemical and genetic studies with these mutants have provided new insights into this complex process and promise to be even more revealing in the future.

The extensive documentation of the properties of the *E. coli* DNA polymerase is followed by two chapters giving a rather cursory account of bacterial, phage-induced, and eukaryotic cell DNA polymerases. Minimal coverage is given to DNA polymerase II and the alternate forms of polymerase III from *E. coli*, the polymerases from *Bacillus subtilis* and *Micrococcus luteus*, and the polymerases induced by T-even, T-odd, and *B. subtilis* phages. Likewise, eukaryotic cell DNA polymerases are covered only spottily despite the fact that they have been a subject of enormous research interest in the past several years. An example of the sparse coverage is the two-page treatment of terminal nucleotidyl transferase, an enzyme known for more than ten years and widely used in a variety of laboratories in several different contexts.

The chapter on the replication of DNA viruses is one of the most outstanding presentations in the book, in my judgment. It is based on the use of small, well-characterized DNA viruses as tools to study DNA replication events. The structure of the viruses, their mechanisms of infection and replication, and genetic studies are presented. The viruses include M13, ϕX174, T7, T4, λ, certain plasmids, and SV40 and polyoma. The easily readable comparison of the features of these viruses is unique to this book.

A chapter on RNA polymerase is included near the end of the book. The chapter provides a useful overview of the subject for the elementary reader; however, since many excellent and complete reviews on this subject exist, it adds little in the way of usefulness to researchers in the field. The last chapter of the book briefly cites some of the achievements of chemical and enzymatic synthesis of polynucleotides.

ROBERT D. WELLS
Department of Biochemistry, University of Wisconsin, Madison

Molecular Genetics

Gene Expression. BENJAMIN LEWIN. Two volumes. Vol. 1, Bacterial Genomes. xviii, 642 pp., illus. $29.50. Vol. 2, Eucaryotic Chromosomes. xvi, 468 pp., illus. $23.50. Wiley-Interscience, New York, 1974.

Benjamin Lewin has put together for the first time an advanced, comprehensive, and exacting account of our knowledge of gene expression in both prokaryotic and eukaryotic organisms. The presentation is well organized, documentation is extensive, and facts are separated from opinions. Of particular value are the large number of figures depicting current models of various aspects of gene expression. These two volumes should prove extremely useful