causes, and consequences are discussed in the light of the best available data. There is an appendix on zygosity determination. There is a chapter on triplets and quadruplets. The exposition of each topic is admirably clear. Examples are given of how biostatistical techniques can be used to deal with some of the issues. An original analysis of the data on the inheritance of twinning leads to the working hypothesis that dizygotic twins are produced only by women who are homozygous for a common recessive gene.

The medical geneticist's main concern with twins is their use in research. Though the book is primarily concerned with twinning as such, a bonus chapter of 26 pages attempts to evaluate the twin method without minimizing or exaggerating its limitations. The approach is constructive. Examples are given of how correlations between relatives can be used to split up the total variance of continuous characters into various genetic and environmental components. For discontinuous diseases and malformations Bulmer sees the threshold model as a valuable tool of analysis. When applied to monozygotic twins the method ran into difficulties. The author proposes a way out. He also suggests a means of allowing for shared family environmental variance by reducing the level of the threshold.

Though there is an interesting chapter on evolution, some of the rarer or more speculative aspects of the biology of twins are not mentioned, even though they are sometimes raised in discussions of the validity of the twin method. One of these is the existence of monozygotic twins of opposite sex. Presumably they are so uncommon that they can be ignored as a source of bias in population-based twin studies of common disorders. Perhaps brief comment might have been made on the possible connexion between causes of chromosomal non-disjunction and twin births, as suggested by reports of high twinning rates in sibships with Klinefelter's and Turner's syndromes. Some evaluation of the supposed effect of cytoplasmic gene differences in monozygotic twins would also have been welcome. A valuable book.

JAMES SHIELDS

Evolution and the Genetics of Populations. A Treatise in Three Volumes. Volume 2: The Theory of Gene Frequencies. By Sewall Wright. Pp. vii+511; figures+tables. 135s.) Chicago and London: The University of Chicago Press. 1969.

This is the second in a three-volume treatise on population genetics. The present volume is devoted to the theory of the subject, the genetic and biometric foundations having been covered in the first volume, and a discussion of its biological and evolutionary implication being promised for the final volume. After considering the Hardy-Weinberg law and its extension to multiple loci in both diploids and polyploids, the author considers in turn the effects of selection, inbreeding, assortative mating, migration, and random drift on the genetic struc-

ture of populations, and finally discusses the inheritance of quantitative characters.

The book is essentially a review of the pioneering work done by the author over the past 50 years, and one is left with a feeling of awe that one man can have accomplished so much. The condensed style and the heavy reliance on path coefficients (even when they can be replaced by the simpler concept of identity by descent) do not make for easy reading, but the methods used are simple in principle, and the effort sometimes required to understand what the author means is always repaid. There is no doubt that this book will become a standard work of reference for all who are seriously interested in population genetics; the appearance of the final volume, in which Sewall Wright 'will discuss how far theory is borne out by experience and will interpret the evolutionary process in nature', is eagerly awaited.

M. G. BULMER

Cold Spring Harbor Symposia on Quantitative Biology, Vol. XXXIV. 1969. (Pp. xxiv+855; illustrated+tables. \$22.00.) New York: Cold Spring Harbor Laboratory. 1970.

This volume records the proceedings of a symposium on 'The Mechanism of Protein Synthesis' which took place at the Cold Spring Harbor Laboratories in June 1969. The topics discussed covered almost every aspect of protein synthesis, with sections on ribosome structure and cycling, transfer RNA, peptide chain initiation, elongation and termination, translation of messenger RNA, and protein synthesis in mammalian systems.

The enormous amount of information in this book will be of interest mainly to research workers wishing to keep abreast of developments and it represents a good cross-section of the type of research which is currently being done, though the pace is such that, inevitably, a good deal of progress will have been made since the conference was held.

As a collection of papers written by specialists this book is unlikely to be of much use to a non-specialized reader (even the summary requires a fairly extensive knowledge of the jargon of molecular biology before it becomes intelligible), and with over 850 pages it can hardly be described as light bed-time reading, even for an expert. It is an expensive book, and the topicality of its subject matter is probably too ephemeral for it to appeal to the pocket of anyone except perhaps the most dedicated research worker. But as a comprehensive collection of contemporary work this volume is probably unrivalled, and it certainly deserves to find its way into departmental and sectional libraries. The book is well produced and has a good index.

The staff of the Cold Spring Harbor Laboratory are to be congratulated for their efforts, both in organizing the symposium and in arranging for the publication of its proceedings.

J. B. CLEGG