A. W. F. Edwards, *Foundations of Mathematical Genetics*, Cambridge U. P., New York, viii + 119 pp.; illus., index, $13.50.

The title of this book is deceiving. It is not a treatise on the foundations of mathematical genetics at all, but a monograph on the traditional one-locus constant viability model. This very restrictive type of model describes population change in terms of difference equations, and assumes an infinite population size, random mating, no mutation and no migration. Although such models have figured prominently in the literature of population genetics in the past, they are seldom encountered now, being considered by many to be unnecessarily restrictive and too far removed from the real world. However, this is a book for mathematicians, and questions concerning the biological relevance of the models discussed are clearly considered to be irrelevant.

This is a unique book, both in its subject matter and in its treatment and presentation of the material. Aficionados of the field will quickly realize that it is a book for purists. Approximations by differential equations are studiously avoided, and numerical examples as substitutes for theorems are used sparingly. Fisher's influence on Edwards is clear throughout the book. Concepts such as the average excess and average effect of a gene pervade this book and distinguish it from other theoretical texts in the field. These concepts however have their heuristic value in models of quantitative genetics, and it may be argued that they are no longer relevant in population genetics.

Given the "Fisherian" flavor to this book, it is surprising not to find a chapter or at least a section devoted to the fundamental theorem. Edwards himself comments on this by saying, "I am still not satisfied that I am able to provide an account that does the theorem justice." It is a shame that he should be so diffident; a chapter on Fisher's theorem, treated in the same fashion as the other topics, would have been a welcome addition to the book.

One of the most unique and interesting aspects of this book is the author's heavy reliance on geometric representation of the models. Most population geneticists are familiar with the elementary use of homogeneous coordinates to describe gene frequencies at a diallelic locus, but the depiction of selection for two and three allele models in homogeneous coordinates is both elegant and intriguing.

There are a couple of other unusual features of this book that the geneticist may find more troubling, however. The majority of the diallelic models are dealt with in terms of the gene frequency ratio $u = p/q$. Many population geneticists, especially on this side of the Atlantic, encounter this formulation only as a historical oddity mentioned in passing in the occasional population genetics text, or when they delve into Haldane's earlier papers. Edwards's use of u for the diallelic models is surprising, for the theorems could just as well have been developed using the gene frequencies themselves—parameters most population geneticists are more familiar with.

In a similar fashion, the geneticist will also be surprised to find that "linkage disequilibrium" is now called "Robbins coefficient". The term linkage disequilibrium may be confusing at times, but its use (and that of its close relatives such as gametic disequilibrium) are so widespread that the introduction of a new term can do nothing but further confuse an already confused literature.

Population geneticists will value this book for its clear, rigorous treatment of one-locus models of constant viability. However, the style of the book is designed to attract the mathematicians who perhaps wish to cut their teeth on some of the unsolved problems that Edwards mentions from time to time. It is for this clientele that the book and its title will be the most misleading. There is a danger they may be led into some of the more stagnant backwaters of our field, and will remain in complete (blissful?) ignorance of some of the more contemporary issues in theoretical population genetics, such as multi-locus models, demographic effects and frequency dependent selection.

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