

CONTENTS

Preface	<i>page</i> vii
1 The genetic model	
1.1 Mendel's First Law	1
1.2 A simple organism	3
1.3 Random mating and random union of gametes	4
1.4 The Hardy-Weinberg Theorem	6
2 Two alleles at a single locus	
2.1 No selection	8
2.2 Selection with constant viabilities	9
2.3 Properties of the mean viability	12
2.4 Wright's formulation	19
3 Two alleles using homogeneous coordinates	
3.1 Graphical representation	21
3.2 The general diagram	24
3.3 Special cases	27
3.4 Equilibria, stability and convergence	29
3.5 The mean viability	31
4 Many alleles at a single locus	
4.1 No selection	35
4.2 Selection with constant viabilities	35
4.3 Properties of the mean viability	38
4.4 Stability and convergence	42
4.5 Special cases	45
4.6 Kimura's Maximum Principle	46
4.7 Baum and Eagon's Theorem	47
4.8 Historical notes	48
5 The special case of three alleles	
5.1 Graphical representation	50
5.2 The shape of the mean viability surface	50
5.3 Conditions for stable equilibrium	57

CONTENTS

5.4	Examples of possible systems	<i>page</i> 60
5.5	Cartesian equation of the conic	71
5.6	The lines of equal average effect	74
6	An X-linked locus	
6.1	No selection	76
6.2	Selection with two alleles	78
6.3	Selection with many alleles	84
6.4	Historical notes	86
7	Miscellaneous single-locus models	
7.1	Viabilities different in the two sexes	87
7.2	Viabilities different in several niches	89
8	Two diallelic loci	
8.1	No selection	94
8.2	Selection	98
	Epilogue	107
	References	111
	Index	117