

Contents

Introduction	1
Part I Vector Transport Processes	
1 Non-equilibrium Thermodynamics	5
2 The Problem	13
2.1 Conservation Equations	14
2.2 The H Theorem and Local Equilibrium	18
3 Solution of the Boltzmann Equation	25
4 Calculation of the Currents	41
4.1 Diffusion Effects	41
4.2 Flow of Heat	45
5 Solution of the Integral Equations	51
6 The Transport Coefficients	61
7 Discussion of the Results	73
Part II Tensorial Transport Processes	
8 Viscomagnetism	83
8.1 The Integral Equation	83
8.2 The Stress Tensor	93
8.3 The Integral Equation	99
8.4 Comparison with Thermodynamics	102

9 Magnetohydrodynamics	107
Appendix A Calculation of M	125
Appendix B Linearized Boltzmann Collision Kernels	129
Appendix C The Case when $\vec{B} = \vec{0}$	133
Appendix D The Collision Integrals	145
Appendix E Calculation of the Coefficients $a_i^{(0)}$, $a_i^{(1)}$, $d_i^{(0)}$ and $d_i^{(1)}$	153
Appendix F	155
Appendix G	157
Appendix H	159
Appendix I List of Marshall's Equations and Notation	161
I.1 Equations	161
I.2 Notation	162
Index	165