

CONTENTS

PART I

INFORMAL LOGIC 1

1. Logic 3

Arguments 4/ Enthymemes 8/ Deductive and Inductive Arguments 10/ Correct Deductive Arguments 12/ Correct Inductive Arguments 14/ Soundness 18/ Argument Diagrams 18

2. Traditional Informal Fallacies 29

The Material Fallacies of Relevance 31/ The Material Fallacies of Insufficient Evidence 59/ The Fallacies of Ambiguity 69/ Two Additional fallacies 94

3. Words and Meaning 111

Intension and Extension 111/ Paradigm Examples, Semantic Features, and Criteria 115/ Proper Names 121/ Real and Nominal Definitions 126/ Ambiguity and Vagueness 129/ Factual and Verbal Disputes 139/ Emotive Words 151

PART II

FORMAL LOGIC	163
4. Deductive Validity and Logical Form	165
Logical Form 167/ Counterexamples 170/ Sentential and Predicate Logic 173	
5. Truth-Functional Connectives	175
Truth-functional Compounds 175/ “ \sim ” and English “not” 176/ “ \cdot ” and English “and” 177/ “ \vee ” and English “or” 179/ “ \supset ” and English “if, then” 180/ “ \equiv ” and English “if and only if” 184/ The Scope of Sentence Connectives 184/ Determining the Truth Value of Compound Sentences 186	
6. Truth Tables	189
Truth Tables for the Sentence Connectives 189/ Logical Equivalence 191/ Testing Argument Patterns 196/ Testing Arguments 198/ Formal Sentential Fallacies 201/ Truth Table Short-Cut Method 205/ Symbolizing Arguments 208	
7. Elementary Inferences	213
Rules of Inference 214/ Replacement Rules of Inference 220/ Conditional Proof Rule 228/ <i>Reductio ad Absurdum</i> Rule 232/ Consistency of Premises 236	
8. Traditional Syllogistic Logic	241
Categorical Sentences 241/ Disguised Categorical Sentences 246/ Syllogisms 248/ Testing Syllogisms 253/ Immediate Inferences 263/ Syllogistic Chains (Sorites) and Enthymemes 268/ Formal and Informal Fallacies 272/ Boolean Algebra 274	

9. Predicate Logic	278
Singular and General Sentences 279/ Categorical and Other General Sentences 282/ Domains 287/ Truth-Functional Expansions 289/ Valid Argument Patterns 291/ Monadic Predicate Test 295/ Rules for Predicate Logic 301	
 10. Axioms	 319
Truths of Logic 320/ Axioms for Sentential Logic 323/ Some Theorems of PM 328/ Consistency of PM 333/ Independence of the Axioms of PM 335/ Completeness of PM 337	
 PART III	
 THE LOGICAL STRUCTURE OF SCIENCE	 343
 11. Science and Hypotheses	 345
Inductive Logic 345/ Four Episodes from the History of Science 349/ Empirical and Theoretical Hypotheses 358/ Induction and Deduction 361	
 12. Crucial Experiments and Mill's Methods	 373
Crucial Experiments and Empirical Hypotheses 373/ Crucial Experiments and Theoretical Hypotheses 374/ "Death Blows" 376/ Fact of the Cross 378/ Mill's Methods 384	
 13. Patterns of Scientific Explanation	 397
Deductive Explanations 397/ Probabilistic Explanations 402/ Historical Explanations 403/ Functional Explanations 405/ Empathetic Explanations 406/ Genuine and Pseudo- scientific Explanations 417/ Satisfactory and Unsatisfactory Explanations 425	

14. Probability **436**

Four Problems in Probability Theory 436/ The Calculus of
Probability 442

Name Index **447**

Subject Index **453**