CONTENTS

PREFACE VII

PART I: METHODOLOGY: MODELS AND MEASUREMENT 1

1. A Comparison of the Meaning and Uses of Models in Mathematics and the Empirical Sciences (1960) 10
2. Models of Data (1962) 24
3. A Set of Independent Axioms for Extensive Quantities (1951) 36
4. Foundational Aspects of Theories of Measurement (1958) (with Dana Scott) 46
5. Measurement, Empirical Meaningfulness, and Three-Valued Logic (1959) 65

PART II: METHODOLOGY: PROBABILITY AND UTILITY 81

6. The Role of Subjective Probability and Utility in Decision-Making (1956) 87
7. The Philosophical Relevance of Decision Theory (1961) 105
8. An Axiomatization of Utility Based on the Notion of Utility Differences (1955) (with Muriel Winet) 115
9. Behavioristic Foundations of Utility (1961) 130
10. Some Formal Models of Grading Principles (1966) 148
11. Probabilistic Inference and the Concept of Total Evidence (1966) 170

PART III: FOUNDATIONS OF PHYSICS 189

12. Axioms for Relativistic Kinematics with or without Parity (1959) 194
13. Probability Concepts in Quantum Mechanics (1961) 212
14. The Role of Probability in Quantum Mechanics (1963) 227

15. The Probabilistic Argument for a Nonclassical Logic of Quantum Mechanics (1966) 243

PART IV: FOUNDATIONS OF PSYCHOLOGY 253

16. Stimulus-Sampling Theory for a Continuum of Responses (1960) 261
17. On an Example of Unpredictability in Human Behavior (1964) 285
18. Behaviorism (1965) 294
19. On the Behavioral Foundations of Mathematical Concepts (1965) 312
20. Towards a Behavioral Foundation of Mathematical Proofs (1965) 355
21. The Psychological Foundations of Mathematics (1967) 371
22. On the Theory of Cognitive Processes (1966) 394
23. Stimulus-Response Theory of Finite Automata (1969) 411

REFERENCES 445

INDEX OF NAMES 454

INDEX OF SUBJECTS 457