CONTENTS

Introduction 13

CHAPTER ONE

"The Basis of Civilization": The Pythagorean Theorem 21

Interlude: Rules, Proofs, and the Magic of Mathematics 42

CHAPTER TWO

"The Soul of Classical Mechanics": Newton's Second Law of Motion 46

Interlude: The Book of Nature 65

CHAPTER THREE

"The High Point of the Scientific Revolution": Newton's Law of Universal Gravitation 69

Interlude: That Apple 88

CHAPTER FOUR

"The Gold Standard for Mathematical Beauty": Euler's Equation 91

Interlude: Equations as Icons 107

CHAPTER FIVE

The Scientific Equivalent of Shakespeare: The Second Law of Thermodynamics 111

Interlude: The Science of Impossibility 128

CHAPTER SIX

"The Most Significant Event of the 19th Century": Maxwell's Equations 132

Interlude: Overcoming Anosognosia; or Restoring the Vitality of the Humanities 152

CHAPTER SEVEN

Celebrity Equation: $E = mc^2$ 156

Interlude: Crazy Ideas 180

CHAPTER EIGHT

The Golden Egg: Einstein's Equation for General Relativity 185

*Interlude: Science Critics 209**

CHAPTER NINE

"The Basic Equation of Quantum Theory": Schrödinger's Equation 214

Interlude: The Double Consciousness of Scientists 230

CHAPTER TEN

Living with Uncertainty:
The Heisenberg Uncertainty Principle 235

Interlude: The Yogi and the Quantum 261

Conclusion: Bringing the Strange Home 266

Notes 273

Illustration Credits 299

Acknowledgments 301

Index 303