## CONTENTS

	Foreword: Why People Do Not Accept Evolution xi  To the Reader: Is Evolution a Threat to Your Religious Beliefs? xvi  Prologue: Fossils and Evolution xix  Preface to the Second Edition xxi  Acknowledgments xxiii
Par	t I. EVOLUTION AND THE FOSSIL RECORD 1
1	The Nature of Science 2 What Is Science? 3 Science and Belief Systems 6 Belly Buttons and Testability 9 Natural and Supernatural 10 Science, Pseudoscience, and Baloney Detection 13 Follow the Evidence Wherever It May Lead 21
2	Science and Creationism 26  Mything Links 27  The Genesis of Genesis 29  What Is Creationism? 32  Twentieth-Century Creationism 34  "Intelligent Design"—or "Breathtaking Inanity"? 37  The Monkey Business of Creationism 47
3	The Fossil Record 54  Lucky Accidents of Fossilization 55  Faunal Succession or "Flood Geology"? 58  The Surreal World of "Flood Geology" 62  The Grand Canyon Through the Looking Glass 69  Ship of Foolishness? 78  Dates with Rocks 81  Punk Eek, Transitional Forms, and Quote Miners 85
4	The Evolution of Evolution 94  Before Darwin 95  The Evolution of Darwin 97  The Neo-Darwinian Evolutionary Synthesis 100  Challenges to Neo-Darwinism 102  Unfinished Synthesis 102  Lamarck Revisited 103  Neutralism, Junk DNA, and Molecular Clocks 104

	Macroevolution and Evo/Devo 107 The Evidence of Evolution 111 The Family Tree of Life 113 Homology 113 Vestigial Structures and Other Imperfections 116 Embryology 116 Biogeography 119 Evolution Happens All the Time! 121		
	Systematics and Evolution 128 What Is Systematics? 129 What Is Taxonomy? 130 Ladders, Bushes, Mosaics, and "Missing Links" 132 The Cladistic Revolution 136 Ancestor Worship 142 The Molecular Third Dimension 144 The Branching Tree of Life 148		
art II. EVOLUTION? THE FOSSILS SAY YES! 151			
	Life's Origins 152  To the Blazing Hot North Pole 153  Recipe for Primordial Soup 156  Mosh Pits, Fool's Gold, Kitty Litter, Black Smokers, and Mud 159,  Communal Living Builds Complex Cells 164  Probability and the Origin of Life 167		
	Cambrian "Explosion"—Or "Slow Fuse"? 170  The Creationists' Favorite Myth 171  Step 1: Planet of the Scum 171  Step 2: The Garden of Ediacara 173  Step 3: The Little Shellies 175  Step 4: In with a Whimper, Not a Bang 177		
	Spineless Wonders of Evolution 182 Invertebrate Transitions 183 The Incredible World of Microfossils 183 The Story in the Seashells 193 What About Macroevolution? 198		
	Fish Tales 208		

10	Fish Out of Water 226
	The Great Leap Upward 227
	Lobe Fins Lead the Way 228
	Four on the Floor 232
	The "Frogamander" 241
11	
	Innovative Eggs 245
	Evolution of the Great Sea Dragons 251
	Snakes with Legs and Hopping Crocodiles 256
12	Dinosaurs Evolve—and Fly 264
	Dinosaur Transitions 265
	Lifestyles of the Huge and Ancient 266
	Dinosaurs Are Alive! 276
13	Mammalian Explosion 290
	From Amniote to Synapsid to Mammals 291
	Furballs in the Age of Dinosaurs 301
	Radiation in the Aftermath 306
	Lions and Tigers and Bears, Oh My! 312
14	Bossies and Blowholes 322
1 7	Thundering Hooves 323
	Tiny Horses, Hornless Rhinoceroses, and Thunder Beasts 324
	Kingdom of Cloven Hooves 335
	Walking Whales 340
	Dumbo and the Mermaid 347
15	The Ape's Reflection? 354
	The Only Transition That Really Matters 355
	The Truth About Human Fossils 359
	The Third Chimpanzee 370
16	Why Does It Matter? 376
• 0	Deceit in the Name of the Lord 377
	Why Should We Care? 381
	Choices for the Future 395
	Bibliography 399
	Index 413