Excerpts from The Science of Evolution and The Myth of Creationism

THE SCIENCE OF

ENDLUGIO

THE MYTHOF

CREATONISM

KNOWING WHAT'S REAL AND WHY IT MATTERS

ARDEA SKYBREAK

INCLUDES A CRITIQUE OF INTELLIGENT DESIGN





Contents

INTRODUCTION
CHAPTER 1 AN OVERVIEW
What All Evolving Systems Have in Common
Millions and Billions of Years
What the Fossils Tell Us
So What Did Darwin Figure Out?
What Darwin Learned about Selection from Farmers
SUPPLEMENTAL INSERTS FOR CHAPTER 1:
The Earliest Emergence of Life
Not Everyone Wants You to Learn about Evolution
Creation Myths
Dating Techniques
Change Was in the Air
Genetic Drift and Founder Effects
The Continued Existence of Life on this Planet Is Not a Given
CHAPTER 2 THE EVIDENCE OF EVOLUTION IN ACTION IS ALL AROUND US 39 Evolution in Action Today
Rapid Evolutionary Change Observed in a Population of Moths4
Where Would We Be Without Fruit Flies?
One Species Splitting into Two on Opposite Sides of the Grand Canyon 4
A Few Words on Creationists
SUPPLEMENTAL INSERTS FOR CHAPTER 2:
The Moth Flap
Evolution in Action — The Distribution of Sickle Cell Genes in Human Populations
An Interesting Example of Evolution in Action in the Treatment of HIV Infections
CHAPTER 3
REVIEWING A FEW KEY POINTS ABOUT ADAPTATION
CHAPTER 4 HOW EVOLUTION PRODUCES WHOLE NEW SPECIES
How Do We Know Something Really Happened If We Weren't
There to See It?



Speciation and the Diversification of Life Are Rooted in the Same Basic Phenomena, Including Natural Selection
Living Things Can't Help But Evolve
How Do Entirely New Species Come into Being?
SUPPLEMENTAL INSERTS FOR CHAPTER 4:
Were We Bound to Evolve?—The Role of Random and
Non-Random Factors in Evolution
Evolution of Pesticide Resistance in a Population of Insects
CHAPTER 5 MORE ON REPRODUCTIVE ISOLATION, SPECIATION AND THE EMERGENCE OF EVOLUTIONARY NOVELTIES
Mechanisms of Reproductive Isolation83
Especially <i>Small</i> Reproductively Isolated Populations Can Exhibit More Evolutionary "Novelties" and Rapid Evolutionary Change84
Some Reasons Speciation Might Not Occur
What Evolutionary Biologists Argue About and What This Does and Doesn't Mean
A Few Words about the So-called "Gaps" in the Fossil Record
Not All Evolutionary Lines Evolve at the Same Rate
There Are No Guarantees in Evolution
The Effects of Mass Extinctions
Speciation Before Our Eyes?
CHAPTER 6 EVOLUTION IS A PROVEN FACT – THE EVIDENCE IS CONCRETE AND COMES FROM MANY DIFFERENT DIRECTIONS
Indirect Evidence of Evolution
• Embryo development
• Vestigial ("remnant" or "left over") features
Homologous features
• Convergence
• "Sub-optimal design": nature's quirks and imperfections
• Geographic distribution of species around the world
• The fact that the features of living organisms fit into a system of "nested" hierarchical classification
SUPPLEMENTAL INSERT FOR CHAPTER 6:
A Conscious "Intelligent Designer" Wouldn't Design Life The Way It Is
CHAPTER 7 THE EVOLUTION OF HUMAN BEINGS
WHERE DID WE COME FROM?
Human Beings Evolved Out of Pre-existing Non-human Species
Some Basic Facts of Human Evolution
Some dasic facts of fluman Evolution



A Brief Summary	. 131
WHAT IT ACTUALLY MEANS TO "BECOME HUMAN"	. 132
We Are the New Kid on the Block	. 132
The Emergence, and Consolidation, of New Species	. 134
Key Junctures in the Evolution of Human Beings	. 135
THE CLEAR, AND GROWING, EVIDENCE OF EVOLUTION FROM APES TO HUMAN BEINGS	
Why Is Our Hominid Species the Only One Still Standing?	. 145
What Makes Us So Special, If Only to Ourselves?	
THE TWO BIGGEST LEAPS IN HOMINID EVOLUTION	
A Series of Transitions from More Ape-like to More Human Features	
Were the Earliest Hominids "Just Apes"? The Significance of the Evolution of Bipedalism on the Road to Becoming Human	
So, Are We Just an Accident?	
SUMMARY AND OVERVIEW	
A Possible Environmental Connection	
One Species – All Over the World –	. 100
A Species Radically Transforming the World	. 164
SUPPLEMENTAL INSERTS FOR CHAPTER 7:	
Humans and Dinosaurs?! Another Creationist Absurdity	124
Chimp and Human DNA: How Close Are We?	
Was Toumai One of Our Ancestors?	
Meave Leakey's Take on Her Latest Fossil Find.	
Was <i>Homo erectus</i> the First Human Species to Leave Africa?	
We All Came from Africa	
What Does the Science of Evolution Tell Us about	. 104
Human "Races"?	. 166
"Social Darwinism" Is Not Based on Science	
and Has Nothing to Do with Darwinism	. 171
Are Humans Still Evolving?	
CHAPTER 8 ANTI-EVOLUTION CREATIONISM:	
AN ASSAULT ON ALL OF SCIENCE, IN THE NAME OF GOD	. 179
WITHOUT THE SCIENCE OF EVOLUTION THERE WOULD BE NO SCIENCE—IT'S JUST THAT FUNDAMENTAL	. 181
Evolution Science and the SARS Virus	. 182
Evolution Science, Organ Transplants and the "Spare Parts" of the Future.	. 184
What Everyone Should Know about the Creationists	. 185
SNAKE OIL SALESMEN AND CHARLATANS AT COURT	
They Want You!	
"BUT HOW CAN WE EVER BE SURE ANYTHING IS TRUE?":	
SUCH PHILOSOPHICAL RELATIVISM OFFERS CREATIONISTS	
EASY PICKINGS	. 212
The "Theory of Evolution" – What a Scientific Theory Is	. 214
RECOGNIZE, DEMAND AND FIGHT FOR SCIENTIFIC TRUTH	. 219
A GUIDE TO THE CREATIONIST ZOO	



The Yo	oung Earth Creationists (YECs)	. 223
The O	ld Earth Creationists (OECs)	. 226
The Pr	rogressive Creationists (PCs) and Evolutionary Creationists (ECs)	. 227
Theist	ic Evolutionists (TEs)	. 227
The In	stelligent Design Creationists (IDCs)	. 229
REFUTI	NG THE OLD-SCHOOL "SCIENTIFIC CREATIONISTS"	. 230
The Se	econd Law of Thermodynamics	. 234
Anoth God	er Typical Example of Creationist Methods:	. 235
	er Example of Step-Wise Evolution: The Evolution of Elephants	
Mutan	its Are Not Monsters	. 238
	ge of the Earth (and of the Universe) – g Problem for the Creationists	. 240
"Mayb	be God Just Made It <i>Look</i> Old, and Maybe God Also Just le It <i>Look</i> Like Life Has Evolved"	
	l an All-Knowing God Make Sloppy Designs?	
	ONISM'S NEW WRAPPER WON'T FOOL US:	
	IGENT DESIGN THEORY IS STILL JUST RELIGION –	
IT'S STI	LL NOT SCIENCE – AND IT'S STILL WRONG!	
	ski's "Design Filter" Idea	. 251
	and the Idea of "Irreducible Complexity" as "Evidence" of elligent Design"	. 252
The E1 Bioc	ntirely Natural Evolution of Complex Multi-Part hemical Processes	. 269
	TION OF METHODS, A QUESTION OF STRUGGLE	
-	can we get at the actual truth of things?	
More o	on what is wrong, methodologically, with Intelligent Design ationism and the idea of "irreducible complexity" as evidence	, .
	ivine design	. 281
	ONISM AND THE MORALITY POLICE	
	R'S POSTSCRIPT	
		. 292
	SUPPLEMENTAL INSERTS FOR CHAPTER 8:	
	In the Very Beginning and Looking to the Future	. 190
	The Cambrian Explosion, Punctuated Equilibrium and the "God of the Gaps" Argument	
	Misrepresenting Working Scientists—A Favorite Creationist Tactic .	. 200
	Rare Variants of the Almost Entirely Universal Genetic Code Are Evidence of Evolution, Not Design	. 203
	Look Who's In Bed With Whom!	
	"Project Steve": Evolutionists Use Humor to Make a Serious Point.	
	Reality and Distortions of Reality—Objective Truth and Subjective Influences	
	Some Things You Can Do to Learn More about	10
	Creationist Lies and Distortions	. 222
	Evolution is Not "Just a Chance Process"	
	Do Lottery Winners Win By Design?	



Appendix A GLOSSARY
Appendix B SELECTED BIBLIOGRAPHY
Appendix C GEOLOGICAL TIMELINE
Appendix D DEFEND SCIENCE STATEMENT
INDEX
ABOUT THE AUTHOR337

