

# **Earth's Catastrophic Past: *Geology, Creation & the Flood***

by Andrew A. Snelling, Ph.D.

## **Table of Contents**

### **Volume 1. The Genesis Record of Creation and the Flood Defended**

<b>Foreword</b>		ix
<b>Preface</b>		xiii
<b>Introduction</b>		
Why Take Genesis Seriously?		1
Genesis as Reliable History		2
Jesus Regarded Genesis as Real History		6
The Apostle Peter's Prophecy		7
The Reliability of the Whole Bible Depends on Genesis as History		9
The Pivotal Importance of the Flood		10
<b>Section I. The Biblical Record Of The Global Genesis Flood</b>		
Chapter 1	Moses Compiled Genesis	15
Chapter 2	The Duration of the Flood	19
	Forty Days of Rain	19
	150 Days of "Prevailing"	20
	221 Days of "Assuaging" and "Abating"	21
Chapter 3	The Depth of the Flood	27
Chapter 4	Geological Details of the Flood	31
Chapter 5	The Size of the Ark	35
Chapter 6	The Need for the Ark	39
Chapter 7	The Testimony of the Apostle Peter	47
Chapter 8	The Testimony of the Lord Jesus Christ	53
Chapter 9	The Total Destruction of a Widely-Distributed Human Race—All Mankind Perished	57
	All Mankind Perished	57
Chapter 10	The Total Destruction of a Widely-Distributed Human Race—The Human Race Had Spread Around the Earth	63
	Longevity and Population Growth	63
	The Prevalence of Violence	67
	Human Fossil Evidence	70
Chapter 11	Summary and Conclusion	73

**Section II. Non-Geological Arguments Used Against the Global Genesis Flood**

Chapter 12	Introduction	77
Chapter 13	The Genesis Flood Story Derived from the Babylonian Flood Myth	81
Chapter 14	No Global Flood in Recent Geological and Human History	89
Chapter 15	All Mankind Not Descended from Noah's Family	91
	The Sons of Noah	92
	The Table of Nations	93
	The Bible and Racial Distribution	95
Chapter 16	Anthropology and Racial Dispersion	97
	Recent Migration from Asia	97
	Universal Flood Traditions	99
Chapter 17	Universal Terms: Used in a Limited Sense?	107
	Most Universal Terms Are to Be Interpreted Literally	107
	The Context Determines the Meaning	108
Chapter 18	Universal Terms Are Literal in Genesis 6-9 Because of the Physical Phenomena	115
Chapter 19	Summary and Conclusions	121

**Section III. Noah, the Ark, And the Animals**

Chapter 20	Gathering the Animals to the Ark	125
Chapter 21	The Capacity of the Ark	131
Chapter 22	Caring for the Animals in the Ark	145
Chapter 23	The "Natural-Supernatural" Philosophy of Miracles	155
Chapter 24	Post-Flood Animal Distribution—The Australian Marsupials	163
	Three Major Views	163
	Australian Marsupials	165
Chapter 25	Post-Flood Animal Distribution—Rapid Animal Dispersion	171
	Rapid Breeding and Diversification	175
Chapter 26	Summary and Conclusions	181

**Section IV. The Framework for a Biblical Geology**

Chapter 27	Introduction	185
Chapter 28	The Scriptural Divisions of Geologic History	193
	The First Creative Act	193
	The Work of the Six Days of Creation	193
	The Pre-Flood Period	194
	The Flood	195
	The Post-Flood Period	195
	General Comments	195
Chapter 29	The Beginning of Creation	199
Chapter 30	The First Day	205
Chapter 31	The Second Day	211
Chapter 32	The Third Day	213

Chapter 33	The Fourth Day	219
Chapter 34	The Fifth Day	225
Chapter 35	The Sixth Day—Land Animals and Man	229
Chapter 36	The Sixth Day—Adam and Eve	235
Chapter 37	The Seventh Day	241
Chapter 38	The Fall	245
Chapter 39	The Curse	253
Chapter 40	The Pre-Flood World	261
Chapter 41	The Flood	271
Chapter 42	The Post-Flood World	281
Chapter 43	Concluding Comments	291

### **Section V. The Modern Geological Synthesis**

Chapter 44	Introduction	295
Chapter 45	The Geologic Column	299
	Historical Development	300
	Terminology Used	305
Chapter 46	A Classic Example of a Local Geologic Column	309
Chapter 47	Correlation of Strata Between Local Geologic Columns	313
Chapter 48	The Precambrian of the Geologic Column	321
Chapter 49	Implications of the Geologic Column	329
Chapter 50	Patterns and Trends in the Geologic Column—Involving Different Rock Types	335
	Patterns Involving Sedimentary Rocks	336
	Patterns Involving Igneous Rocks	338
	A Pattern Involving Metamorphic Rocks	342
Chapter 51	Patterns and Trends in the Geologic Column—Involving Relative Sea-Level Changes	343
Chapter 52	Patterns and Trends in the Geologic Column—Involving the Fossil Record	347
Chapter 53	Patterns and Trends in the Geologic Column—Involving Metal Ore Deposits	361
Chapter 54	A Brief History of Plate Tectonics	365
Chapter 55	The Development of the Plate Tectonics Theory	373
Chapter 56	Global Plate Tectonics: The Unifying Model	379
Chapter 57	Plate Tectonics: Controlling the Formation of the Rock Record—Divergent Plate Margins and the Ocean Floor	389
Chapter 58	Plate Tectonics: Controlling the Formation of the Rock Record—Plates That Collide: Convergent Margins	397
Chapter 59	Plate Tectonics: Controlling the Formation of the Rock Record—Transform Plate Margins and Plate Interiors	409
	Transform Plate Margins	409
	Plate Interiors	410
Chapter 60	Concluding Comments	417

<b>Selected Bibliography</b>	421
------------------------------	-----

<b>Color Figures</b>	441
----------------------	-----

## **Volume 2. Geological Implications of the Biblical Record for a Biblical Geologic Model for Earth History**

### **Section VI. Geological Implications of the Biblical Geologic Model for Earth History**

Chapter 61	Geological Implications of the Biblical Record	467
	The Uniqueness of the Creation Week	468
	Enormous Geological Work Accomplished During the Creation Week	469
	A Stable Pre-Flood World	470
	Tremendous Erosion from the Rainfall During the Early Stage of the Flood	470
	Clouds Not the Major Source of the Flood Rainfall and Waters	471
	Enlarged Ocean Basins as a Result of the Flood?	473
	Volcanic and Seismic Upheavals During the Flood	474
	Unprecedented Sedimentary Activity Again During the Flood	474
	Ideal Conditions for the Formation of Fossils During the Flood	475
	Uniformitarianism Also Undermined by the Flood	476
Chapter 62	The Renewed Recognition of Catastrophism	477
Chapter 63	Evidences of Catastrophism in the Geologic Column—Rate of Sediment Accumulation and Widespread Rapidly-Deposited Strata	487
	Rate of Sediment Accumulation	487
	Widespread, Rapidly Water-Deposited Strata	490
Chapter 64	The Widespread, Rapidly Water-Deposited, Paleozoic Strata of the Grand Canyon, Arizona—Limestones	493
Chapter 65	The Widespread, Rapidly Water-Deposited, Paleozoic Strata of the Grand Canyon, Arizona—Sandstones	501
Chapter 66	The Widespread, Rapidly Water-Deposited, Paleozoic Strata of the Grand Canyon, Arizona—Shales	511
Chapter 67	Other Examples of Widespread, Rapidly Water-Deposited Strata	519
	The Shinarump Conglomerate, Utah	519
	The Uluru Arkose and Mt. Currie Conglomerate, Central Australia	520
	Kingston Peak Formation, Southeastern California	522
	Hawkesbury Sandstone, Sydney Basin, Australia	524
	Megasequences of North America	528
Chapter 68	Fossilization	531
	Preservation of Unaltered Remains	532
	Preservation by Permineralization	533
	Preservation by Recrystallization	534

	Preservation by Replacement	534
	Preservation of Only the Original Forms in Casts and Molds	534
	Preservation of Carbon Only (Carbonization)	535
	Preservation of the Tracks and Trails	535
Chapter 69	Fossil Graveyards	537
	The Cambrian Burgess Shale, British Columbia, Canada	537
	The Ordovician Soom Shale, South Africa	538
	The Devonian Thunder Bay Limestone, Michigan	539
	The Carboniferous Montceau Shale, Central France	539
	The Carboniferous Francis Creek Shale, Mazon Creek Area, Illinois	540
	The Triassic Mont San Giorgio Basin, Italy-Switzerland	541
	The Triassic Cow Branch Formation, Cascade, Virginia	543
	The Cretaceous Santana Formation, Brazil	544
	The Cretaceous Tepexi Limestone, Mexico	546
	The Cretaceous Djadokhta Formation, Nemget Basin, Ukhaa Tolgod Area, Mongolia	547
Chapter 70	Coal Beds—Fossil Graveyards of Plants Transported and Deposited by Water	549
	Theories of Origin	550
Chapter 71	Coal Beds—Fossil Graveyards of Plants That Grew Floating on Water	557
	Underclays—Fossil Soils?	562
	Upright Fossilized Trees	565
Chapter 72	Further Examples of Fossil Graveyards	569
	Mass Extinctions	574
Chapter 73	The Rate of Fossilization	577
	Petrification by Silicification	577
	Fossilization by Phosphatization	579
	Fossilization by Biofilms	582
	Fossilization by Pyritization	583
	Coalification	584
Chapter 74	Are There Long Ages Between the Strata?	587
Chapter 75	Soft-Sediment Deformation Features	597
Chapter 76	Summary	607

## **Section VII. A Biblical Geologic Model of Earth History**

Chapter 77	The Creation Week	613
	The Creation Week Processes Unique	614
	The Laws of Thermodynamics	615
Chapter 78	The First Two Days	623
	The First Day	623
	The Second Day	627
Chapter 79	The Third Day	631
Chapter 80	The Fourth Day to the End of the Creation Week	639
Chapter 81	Creation of “Appearance of Age”	647
Chapter 82	Cosmological Evolution and the “Big Bang”	653
Chapter 83	The Pre-Flood Era—The “Waters Above the Firmament”	661

	The Fall and the Beginning of the Pre-Flood Era	661
	The “Waters Above the Firmament”	662
Chapter 84	The Pre-Flood Era—Climate Conditions Before the Flood	669
Chapter 85	The Pre-Flood Era—The Biology and Geology	675
	Some Unique Pre-Flood Biological Communities	675
	Geologic Activity in the Pre-Flood World	678
Chapter 86	The Flood—A Global Tectonic Catastrophe	683
	A Global Tectonic Catastrophe	684
Chapter 87	Catastrophic Plate Tectonics—The Driving Force of the Flood	691
Chapter 88	Where is the Pre-Flood/Flood Boundary in the Geologic Record?	707
	A Mechanical-Erosional Discontinuity	707
	A Time or Age Discontinuity	707
	A Tectonic Discontinuity	708
	A Sedimentary Discontinuity	708
	A Paleontological Discontinuity	709
Chapter 89	The Destructive Power of Floods and Ocean Waves	713
Chapter 90	Sedimentation and Fossilization During the Flood	723
Chapter 91	The Order of the Strata Deposited by the Flood	727
	Pre-Flood Biogeography	730
	Early Burial of Marine Creatures	731
	Hydrodynamic Selectivity of Moving Water	733
	Behavior and Higher Mobility of the Vertebrates	734
Chapter 92	The Order of the Flood Strata—Other Considerations in the Strata Sequence	739
	Bioturbation and Mass Extinctions	739
	Formation of Coal Beds	741
Chapter 93	Animal Tracks and Fossils in Mesozoic Strata	745
Chapter 94	The Flood/Post-Flood Boundary in the Geologic Record	751
	Biblical Considerations	752
	Geological Considerations	752
Chapter 95	The Post-Flood World	763
	Post-Flood Geology	763
	Post-Flood Climate	765
Chapter 96	The Post-Flood Ice Age—A Consequence of the Flood	769
	The Ice Age as a Consequence of the Flood	773
Chapter 97	The Post-Flood Ice Age—Geomorphologic Features and Ice-Age Animals	779
Chapter 98	From the Ice Age to the Present World	787
<b>Section VIII. Problems in Biblical Geology Solved —Radioactive Dating and Geochronology</b>		
Chapter 99	The Radioactive Methods for Dating Rocks	797
	The Radioactive Methods for Dating Rocks	798
	The Assumptions of Radioactive Dating	800
Chapter 100	The Pitfalls in the Radioactive Dating Methods—The Potassium-Argon and Argon-Argon Methods	803

	“Excess” or Inherited Argon	803
	Argon Loss	808
Chapter 101	The Pitfalls in the Radioactive Dating Methods—The Rubidium-Strontium Dating Method	811
	Anomalous Rb-Sr Isochrons	811
	Open-System Behavior, Mixing and Resetting	814
Chapter 102	The Pitfalls in the Radioactive Dating Methods—The Samarium-Neodymium Dating Method	819
	Sm-Nd Model Ages	822
Chapter 103	The Pitfalls in the Radioactive Dating Methods—The Uranium-Thorium-Lead Dating Method	825
	Open-System Behavior	825
	Inheritance	828
	Pb-Pb Isotope “Dating,” Inheritance and Mixing	830
Chapter 104	The Pitfalls in the Radioactive Dating Methods—Sundry Methods and Revealing Considerations	835
	The Lutetium-Hafnium and Rhenium-Osmium Radioisotope Dating Methods	835
	How Much Radioactive Decay Has Actually Occurred?	836
	Do Radioisotope “Ages” Match the Claimed Stratigraphic “Ages”?	837
	Do “Ages” Determined by the Different Radioisotope “Dating” Methods Agree?	838
Chapter 105	The Pitfalls in the Radioactive Dating Methods—Variations in Radioactive Decay Rates and “Apparent Age”	845
	A “Grown” Creation with an “Apparent Age”	850
Chapter 106	The Pitfalls in the Radioactive Dating Methods—The Radiocarbon Dating Method	855
<b>Section IX. Contradictions in Geochronology—Support for Biblical Geology</b>		
Chapter 107	Supernovas and Comets	867
	Supernova Remnants	867
	Disintegration of Comets	869
Chapter 108	The Earth’s Magnetic Field	873
Chapter 109	Sea Salt, Erosion, and Sediments	879
	Salt in the Sea	879
	Erosion of Continents	881
	Sea Floor Sediments	883
Chapter 110	Volcanic Activity and Helium	885
	Crustal Growth through Volcanic Activity	885
	Helium in Rocks and in the Atmosphere	887
Chapter 111	Radiohalos, Radiocarbon and Tree Rings	891
	Radiohalos	891
	Radiocarbon and Tree Rings	894
Chapter 112	Human Population Statistics and Lifespans	899

## **Section X. Problems For Biblical Geology Solved —Formations Implying Slow Deposition**

Chapter 113	Deposition and Lithification	909
	Deposition and Lithification	909
Chapter 114	Bioturbation, Hardgrounds, and Trace Fossils	917
Chapter 115	Chalk and Diatomite Beds, and Deep-Sea Sediments	925
Chapter 116	Coral Reefs and Limestone	931
Chapter 117	Evaporites	937
Chapter 118	Varves and Rhythmites	945
Chapter 119	Buried Forests	953
Chapter 120	Coal Beds	959
Chapter 121	Oil Deposits	965
Chapter 122	Limestone Caves and Cave Deposits	977
Chapter 123	Granite Formation, Intrusion, and Cooling	983
	Magma Generation by Partial Melting	984
	Melt Segregation	985
	Magma Ascent	987
	Magma Emplacement	989
	Emplacement Rates	991
	Crystallization and Cooling Rates	992
	Convective Cooling: The Role of Hydrothermal Fluids	993
	Crystallization and Cooling Rates: The Evidence of Polonium Radiohalos	995
Chapter 124	Regional Metamorphism	999
Chapter 125	Ore and Mineral Deposits	1013
Chapter 126	Earlier Ice Ages	1023

## **Concluding Challenges**

The Adequacy of the Biblical Framework of Earth History	1033
An Unfinished Task	1034
Postscript	1037

<b>Selected Bibliography</b>	1045
------------------------------	------

<b>Index</b>	1061
--------------	------

<b>Color Figures</b>	1079
----------------------	------