

## CONTENTS

List of illustrations	xiii
Acknowledgments	xix
A note on footnotes	xxiii
Introduction	1
Time and geohistory · Historical parameters · Historicizing the earth ·	
Text and illustrations · Maps of knowledge	

## PART I    UNDERSTANDING THE EARTH

1    NATURALISTS, PHILOSOPHERS, AND OTHERS	15
1.1    A savant on top of the world	15
First ascents of Mont Blanc · Science on the summit ·	
Return to civilization · Conclusion	
1.2    The Republic of Letters and its supporters	22
Savants, professional and amateur · The Republic of Letters ·	
A variety of supporters · Conclusion	
1.3    Places of natural knowledge	37
Laboratories and museums · Savants in the field ·	
The social life of savants · Scientific publication · Conclusion	
1.4    Maps of natural knowledge	48
The literary and the philosophical · Natural history and natural philosophy ·	
Philosophy and theology · Conclusion	



<b>2</b>	<b>SCIENCES OF THE EARTH</b>	<b>59</b>
2.1	Mineralogy as a science of specimens	59
	Minerals and other fossils · Identification and classification · Fossils of organic origin · Fossil localities · Prize specimens · Conclusion	
2.2	Physical geography as a spatial science	71
	Huge solid facts · The primacy of fieldwork · Proxy pictures · Maps as instruments · Conclusion	
2.3	Geognosy as a structural science	84
	The mining context · Structures and sequences · Primaries and Secondaries · Sequences of <i>Gebirge</i> · Fossils in geognosy · Conclusion	
2.4	Earth physics as a causal science	99
	The “physics” of specimens · The “physics” of physical geography · The “physics” of geognostic structures · The “physics” of rock formations · Conclusion	
2.5	The question of time	115
	The short timescale versus eternalism · Volcanoes, valleys, and strata · Estimates of the timescale · Encounters with theologians · Conclusion	
<b>3</b>	<b>THE THEORY OF THE EARTH</b>	<b>133</b>
3.1	Geothory as a scientific genre	133
	The meaning of “geology” · The goals of geothory · Conclusion	
3.2	Buffon’s cooling globe	139
	Buffon’s first geothory · Nature’s epochs · The earth’s timescale · Conclusion	
3.3	De Luc’s worlds ancient and modern	150
	The “Christian philosophe” · De Luc’s binary system · Natural measures of time · Conclusion	
3.4	Hutton’s eternal earth machine	158
	A deistic geothory · Cyclic processes · A theory confirmed by fieldwork · Time and eternity · Conclusion	
3.5	The standard model of falling sea levels	172
	The multiplicity of geothories · Neptunist geothory · Conclusion	
<b>4</b>	<b>TRANSPOSING HISTORY INTO THE EARTH</b>	<b>181</b>
4.1	The varieties of history	181
	The diversification of history · Chronology and biblical history · Chorographers and antiquarians · Herculaneum and Pompeii · Conclusion	
4.2	Fossils as nature’s documents	194
	Human history and its natural records · The natural history of fossils · Fossils and the earth’s revolutions · Conclusion	
4.3	Volcanoes and nature’s epochs	203
	The making of a physical geographer · The volcanoes of Auvergne · Epochs of volcanic activity · A lake on the site of Paris · Conclusion	



4.4	Rock formations as nature's archives	214
	The volcanoes of Vivarais · Nature's erudite historian · Censors and critics · Exporting geohistory to Russia · Conclusion	
4.5	Global geohistory	227
	Causal processes and geotheries · The place of contingency · Saussure as a geothorist · De Luc as a geohistorian · Conclusion	
5	PROBLEMS WITH FOSSILS	239
5.1	The ancient world of nature	239
	The deep past as a foreign country? · Fossils and geohistory · Migration and transmutation · Conclusion	
5.2	Relics of former seas	246
	Vanished shellfish · Living fossils · Fossil fish and possible whales · Explaining the former world · Conclusion	
5.3	Witnesses of former continents	261
	Fossil plants · Large fossil bones · The "Ohio animal" · Giant elks and bears · Conclusion	
5.4	The antiquity of man	275
	Humans in geohistory · Texts and bones · History from artifacts · Conclusion	
	Interlude: From survey to narrative	289

## **PART II RECONSTRUCTING GEOHISTORY**

6	A NEW SCIENCE OF "GEOLOGY"?	295
6.1	Revolutions in nature and society (1789–91)	295
	Meanings of revolution · Blumenbach's "total revolution" · Montlosier's continuous revolution · Geothory as a flourishing genre · Conclusion	
6.2	Geothory as geohistory (1790–93)	305
	De Luc's new system · A differentiated "former world" · The role of fossil evidence · A critique of Hutton · Conclusion	
6.3	Theorizing in a time of trouble (1790–94)	315
	Geothories and focal problems · Dolomieu's mega-tsunamis · Dolomieu on the Nile delta · The sciences under the Terror · Conclusion	
6.4	Geothory politicized (1793–95)	326
	De Luc and Blumenbach · Cultured despisers of religion · The politics of Genesis · Conclusion	
6.5	"Geology" redefined (1794–97)	337
	The sciences after Thermidor · Desmarest's survey of geothories · La Métherie's geothory · Saussure's geothory and Agenda · Dolomieu on "geology" · Conclusion	



7	DENIZENS OF A FORMER WORLD	349
7.1	A mushroom in the field of savants (1794–96)	349
	Fossil bones as a focal problem · The young Cuvier · The megatherium · The mammoth · Conclusion	
7.2	Cuvier opens his campaign (1797–99)	364
	Cave bears and fossil rhinos · Dolomieu and de Luc as Cuvier's allies · Cuvier's research program · Hostile critics · Jefferson's megalonix · Conclusion	
7.3	The Napoleon of fossil bones (1798–1800)	376
	Savants in wartime · Cuvier and the First Consul · Cuvier's network of informants · Cuvier's international appeal · Conclusion	
7.4	Lamarck's alternative (1800–1802)	388
	The threat of transformism · The response to Cuvier's appeal · Mummified animals from Egypt · Lamarck's Parisian fossils · Conclusion	
7.5	Enlarging a fossil menagerie (1802–4)	399
	A peaceful interlude · A cumulative case for extinction · Earlier and stranger mammals · Conclusion	
8	GEOGNOSE ENRICHED INTO GEOHISTORY	417
8.1	The "archaeology" of the earth (1801–4)	417
	Geognosy and fossils · Werner and geohistory · Cuvier and the history of life · Blumenbach's geohistory · A former world of plants · Conclusion	
8.2	The order of the strata (1801–6)	431
	The isolation of Britain · Smith the surveyor · Smith as a mapmaker · Smith as a geognost · Conclusion	
8.3	Timescales of geohistory (1803–5)	445
	Cuvier's Parisian lectures · The politics of the timescale · The challenge of Lamarck · Cuvier's middle way · Conclusion	
8.4	A new agenda for geology (1806–8)	456
	André's geothory · The progress of the sciences · The Geological Society · Conclusion	
9	THE GATEWAY TO THE DEEP PAST	471
9.1	The geohistory of Paris (1802–8)	471
	Brongniart as a geognost · Geognosy of the Paris Basin · Freshwater formations · Environmental geohistory · Conclusion	
9.2	Consolidating geohistory (1808–12)	484
	Beyond the Paris Basin · Controversial freshwater fossils · The Parisian case in full · Reactions outside France · Parkinson's new look · Conclusion	
9.3	Cuvier's <i>Fossil Bones</i> (1809–14)	499
	Research on fossil reptiles · Collected papers on fossil bones · Fossil bones and geohistory · Cuvier in English · Conclusion	



9.4	Parisian geohistory beyond Paris (1811–14)	512
	Fossils at the Geological Society · Webster on the Isle of Wight · Brocchi on the Subapennine fossils · Conclusion	
9.5	Geognosy into “stratigraphy” (1814–23)	529
	Europe at peace · Brongniart on the fossil criterion · Smith’s “stratigraphy” · Geology at Oxford · A global standard for stratigraphy · Conclusion	
9.6	The Tertiary era established (1816–25)	543
	Brongniart in Italy · Prévost on the Vienna Basin · Brongniart on the Tertiary era · Conclusion	
10	EARTH’S LAST REVOLUTION	557
10.1	The interface between past and present (1807–9)	557
	The frozen mammoth · Borderline problems · Actual causes · Lamarck and transformism · Antiquarian researches · Conclusion	
10.2	The problem of erratic blocks (1810–14)	571
	The problem posed · Von Buch on Alpine erratics · Hall’s mega-tsunami · Conclusion	
10.3	A “great and sudden revolution” (1812–16)	585
	The inadequacy of actual causes · The role of fossil quadrupeds · Transformism rejected · Dating the last revolution · An anglicized Cuvier · Conclusion	
10.4	Britain brought back into Europe (1813–16)	600
	Buckland’s Oxford lectures · A geological triumvirate · Caves and fossil bones · Conclusion	
10.5	Tracing the geological deluge (1816–22)	609
	Making claims for geology · The deluge on Buckland’s doorstep · A new theory of erratics · The problem of valley erosion · Cuvier’s revised discourse · Conclusion	
10.6	A spy hole into the past (1821–23)	622
	Kirkdale cave · Buckland at the Royal Society · Bursting the limits of time · Conclusion	
	Coda: retrospect and prospect	639
	Recalling Saussure · The centrality of geohistory · Towards modernity	
	Sources	653
	1. Places and specimens	
	2. Manuscripts and pictures	
	3. Primary printed sources	
	4. Secondary printed sources	
	Index	701