Georges Cuvier Fossil Bones And Geological Catastrophes New Translations And Interpretations Of The Primary Texts

A comprehensive illustrated guide to the birds of the Jurassic and Cretaceous periods and their dinosaurian forebears. Each species is illustrated in multiple views with size and distinguishing features highlighted. Includes introduction summarizing current research into bird origins and evolution, and what we know (and don't know) about the life appearance and habits of the first birds.
“A provocative and entertaining magical mineral tour through the life and afterlife of bone.” —Wall Street Journal Our bones have many stories to tell, if you know how to listen. Bone is a marvel, an adaptable and resilient building material developed over more than four hundred million years of evolutionary history. It gives your body its shape and the ability to move. It grows and changes with you, an undeniable document of who you are and how you lived. Arguably, no other part of the human anatomy has such rich scientific and cultural significance, both brimming with life and a potent symbol of death. In this delightful natural and cultural history of bone, Brian Switek explains where our skeletons came from, what they do inside us, and what others can learn about us when these artifacts of mineral and protein are all we've left behind. Bone is as embedded in our culture as it is in our bodies. Our species has made instruments and jewelry from bone, treated the dead like collectors' items, put our faith in skull bumps as guides to human behavior, and arranged skeletons into macabre tributes to the afterlife. Switek makes a compelling case for getting better acquainted with our skeletons, in all their surprising roles. Bridging the worlds of paleontology, anthropology, medicine, and forensics, Skeleton Keys illuminates the complex life of bones inside our bodies and out.
In 1650, Archbishop James Ussher of Armagh joined the long-running theological debate on the age of the earth by famously announcing that creation had occurred on October 23, 4004 B.C. Although widely challenged during the Enlightenment, this belief in a six-thousand-year-old planet was only laid to rest during a revolution of discovery in the late eighteenth and early nineteenth centuries. In this relatively brief period, geologists reconstructed the immensely long history of the earth-and the relatively recent arrival of human life. Highlighting a discovery that radically altered existing perceptions of a human's place in the universe as much as the theories of Copernicus, Darwin, and Freud did, Bursting the Limits of Time is a herculean effort by one of the world's foremost experts on the history of geology and paleontology to sketch this historicization of the natural world in the age of revolution. Addressing this intellectual revolution for the first time, Rudwick examines the ideas and practices of earth scientists throughout the Western world to show how the story of what we now call "deep time" was pieced together. He explores who was responsible for the discovery of the earth's history, refutes the concept of a rift between science and religion in dating the earth, and details how the study of the history of the earth helped define a new branch of science called geology. Rooting his analysis in a detailed study of primary sources, Rudwick emphasizes the lasting importance of field- and museum-based research of the eighteenth and nineteenth centuries. Bursting the Limits of Time, the culmination of more than three decades of research, is the

first detailed account of this monumental phase in the history of science.

A fascinating chronicle of the evolution of humankind traces the genetic history of the organs of the human body, offering a revealing correlation between the distant past and present-day human anatomy and physiology, behavior, illness, and DNA. Reprint. 75,000 first printing.

What is life? This question gives a new interest to every department of science that relates to life in any form, and the history of life offers a most suggestive field for research. The paleontology took its origin in the mind of the first person who, finding something like a shell or a bone naturally imbedded in gravel or in rock, indulged in speculations upon the nature of this thing which he had dug out-this "fossil"-and upon the causes which had brought it into such a position. In this rudimentary form, a high antiquity may safely be ascribed to paleontology, inasmuch as we know that, five hundred years before the Christian era, the philosophic doctrines of Xenophanes were influenced by his observations upon the fossil remains exposed in the quarries of Syracuse. From this time forth, not only the philosophers, but the poets, the historians, the geographers of antiquity occasionally refer to fossils; and after the revival of learning lively controversies arose respecting their real nature.

At the turn of the nineteenth century, geology—and its claims that the earth had a long and colorful prehuman history—was widely dismissedasdangerous nonsense. But just fifty years later, it was the most celebrated of Victorian sciences. Ralph O’Connor tracks the astonishing growth of geology’s prestige in Britain, exploring how a new geohistory far more alluring than the standard six days of Creation was assembled and sold to the wider Bible-reading public. Shrewd science-writers, O’Connor shows, marketed spectacular visions of past worlds, piquing the public imagination with glimpses of man-eating mammoths, talking dinosaurs, and sea-dragons spawned by Satan himself. These authors—including men of science, women, clergymen, biblical literalists, hack writers, blackmailers, and prophets—borrowed freely from the Bible, modern poetry, and the urban entertainment industry, creating new forms of literature in order to transport their readers into a vanished and alien past. In exploring the use of poetry and spectacle in the promotion of popular science, O’Connor proves that geology’s success owed much to the literary techniques of its authors. An innovative blend of the history of science, literary criticism, book history, and visual culture, The Earth on Show rethinks the relationship between science and literature in the nineteenth century.

"It is not often that a work can literally rewrite a person's view of a subject. And this is exactly what Rudwick's book should do for many paleontologists' view of the history of their own field."—Stephen J. Gould, Paleobotany and Palynology "Rudwick has not merely written the first book-length history of palaeontology in the English language; he has written a very intelligent one. . . . His accounts of sources are rounded and organic: he treats the structure of arguments as Cuvier handled fossil bones."—Roy S. Porter, History of Science

How can we bring together the study of genes, embryos and fossils? Embryos in Deep Time is a critical synthesis of the study of individual development in fossils. It brings together an up-to-date review of concepts from comparative anatomy, ecology and developmental genetics, and examples of different kinds of animals from diverse geological epochs and geographic areas. Can

fossil embryos demonstrate evolutionary changes in reproductive modes? How have changes in ocean chemistry in the past affected the development of marine organisms? What can the microstructure of fossil bone and teeth reveal about maturation time, longevity and changes in growth phases? This book addresses these and other issues and documents with numerous examples and illustrations how fossils provide evidence not only of adult anatomy but also of the life history of individuals at different growth stages. The central topic of Biology today—the transformations occurring during the life of an organism and the mechanisms behind them—is addressed in an integrative manner for extinct animals.

Everybody Out of the Pond At the Water's Edge will change the way you think about your place in the world. The awesome journey of life's transformation from the first microbes 4 billion years ago to Homo sapiens today is an epic that we are only now beginning to grasp. Magnificent and bizarre, it is the story of how we got here, what we left behind, and what we brought with us. We all know about evolution, but it still seems absurd that our ancestors were fish. Darwin's idea of natural selection was the key to solving generation-to-generation evolution -- microevolution -- but it could only point us toward a complete explanation, still to come, of the engines of macroevolution, the transformation of body shapes across millions of years. Now, drawing on the latest fossil discoveries and breakthrough scientific analysis, Carl Zimmer reveals how macroevolution works. Escorting us along the trail of discovery up to the current dramatic research in paleontology, ecology, genetics, and embryology, Zimmer shows how scientists today are unveiling the secrets of life that biologists struggled with two centuries ago. In this book, you will find a dazzling, brash literary talent and a rigorous scientific sensibility gracefully brought together. Carl Zimmer provides a comprehensive, lucid, and authoritative answer to the mystery of how nature actually made itself.

The burnt-red badlands of Montana's Hell Creek are a vast graveyard of the Cretaceous dinosaurs that lived 68 million years ago. Those hills were, much later, also home to the Sioux, the Crows, and the Blackfeet, the first people to encounter the dinosaur fossils exposed by the elements. What did Native Americans make of these stone skeletons, and how did they explain the teeth and claws of gargantuan animals no one had seen alive? Did they speculate about their deaths? Did they collect fossils? Beginning in the East, with its Ice Age monsters, and ending in the West, where dinosaurs lived and died, this richly illustrated and elegantly written book examines the discoveries of enormous bones and uses of fossils for medicine, hunting magic, and spells.

Well before Columbus, Native Americans observed the mysterious petrified remains of extinct creatures and sought to understand their transformation to stone. In perceptive creation stories, they visualized the remains of extinct mammoths, dinosaurs, pterosaurs, and marine creatures as Monster Bears, Giant Lizards, Thunder Birds, and Water Monsters. Their insights, some so sophisticated that they anticipate modern scientific theories, were passed down in oral histories over many centuries. Drawing on historical sources, archaeology, traditional accounts, and extensive personal interviews, Adrienne Mayor takes us from Aztec and Inca fossil tales to the traditions of the Iroquois, Navajos, Apaches, Cheyennes, and Pawnees. Fossil Legends of the First Americans represents a major step forward in our understanding of how humans made sense of fossils before evolutionary theory developed.

More than two centuries ago, William Paley introduced his famous metaphor of the universe as a watch made by the Creator. For Paley, the exquisite structure of the universe necessitated a designer. Today, some 150 years since Darwin's On the Origin of Species was published, the argument of design is seeing a revival. This provocative work tells how Darwin left the door open for this revival--and at the same time argues for a new conceptual framework that avoids the problematic teleology inherent in Darwin's formulation of natural selection. In a wide-ranging discussion of the historical and philosophical dimensions of evolutionary theory from the ancient Greeks to today, John Reiss argues that we should look to the principle of the conditions for existence, first formulated before On the Origin of Species by the French paleontologist Georges Cuvier, to clarify the relation of adaptation to evolution. Reiss suggests that Cuvier's principle can help resolve persistent issues in evolutionary biology, including the proper definition of natural selection, the distinction between natural selection and genetic drift, and the meaning of genetic load. Moreover, he shows how this principle can help unite diverse areas of biology, ranging from quantitative genetics and the theory of the levels of selection to evo-devo, ecology, physiology, and conservation biology.

This book places into modern context the information by which North American mammalian paleontologists recognize, divide, calibrate, and discuss intervals of mammalian evolution known as North American Land Mammal Ages. It incorporates new information on the systematic biology of the fossil record and utilizes the many recent advances in geochronologic methods and their results. The book describes the increasingly highly resolved stratigraphy into which all available temporally significant data and applications are integrated. Extensive temporal coverage includes the Lancian part of the Late Cretaceous, and geographical coverage includes information from Mexico, an integral part of the North American fauna, past and present.

Donald R. Prothero's science books combine leading research with first-person narratives of discovery, injecting warmth and familiarity into a profession that has much to offer nonspecialists. Bringing his trademark style and wit to an increasingly relevant subject of concern, Prothero links the climate changes that have occurred over the past 200 million years to their effects on plants and animals. In particular, he contrasts the extinctions that ended the Cretaceous period, which wiped out the dinosaurs, with those of the later Eocene and Oligocene epochs. Prothero begins with the "greenhouse of the dinosaurs," the global-warming episode that dominated the Age of Dinosaurs and the early Age of Mammals. He describes the remarkable creatures that once populated the earth and draws on his experiences collecting fossils in the Big Badlands of South Dakota to sketch their world. Prothero then discusses the growth of the first Antarctic glaciers, which marked the Eocene-Oligocene transition, and shares his own anecdotes of excavations and controversies among colleagues that have shaped our understanding of the contemporary and prehistoric world. The volume concludes with observations about Nisqually Glacier and other locations that show how global warming is happening much quicker than previously predicted, irrevocably changing the balance of the earth's thermostat. Engaging scientists and general readers alike, Greenhouse of the Dinosaurs connects events across thousands of millennia to make clear the human threat to natural climate change.

At a time when women were excluded from science, a young girl made a discovery that marked the birth of paleontology and

continues to feed the debate about evolution to this day. Mary Anning was only twelve years old when, in 1811, she discovered the first dinosaur skeleton--of an ichthyosaur--while fossil hunting on the cliffs of Lyme Regis, England. Until Mary's incredible discovery, it was widely believed that animals did not become extinct. The child of a poor family, Mary became a fossil hunter, inspiring the tongue-twister, "She Sells Sea Shells by the Seashore." She attracted the attention of fossil collectors and eventually the scientific world. Once news of the fossils reached the halls of academia, it became impossible to ignore the truth. Mary's peculiar finds helped lay the groundwork for Charles Darwin's theory of evolution, laid out in his On the Origin of Species. Darwin drew on Mary's fossilized creatures as irrefutable evidence that life in the past was nothing like life in the present. A story worthy of Dickens, The Fossil Hunter chronicles the life of this young girl, with dirt under her fingernails and not a shilling to buy dinner, who became a world-renowned paleontologist. Dickens himself said of Mary: "The carpenter's daughter has won a name for herself, and deserved to win it." Here at last, Shelley Emling returns Mary Anning, of whom Stephen J. Gould remarked, is "probably the most important unsung (or inadequately sung) collecting force in the history of paleontology," to her deserved place in history.
Whether the fossil record should be read at face value or whether it presents a distorted view of the history of life is an argument seemingly as old as many fossils themselves. In the late 1700s, Georges Cuvier argued for a literal interpretation, but in the early 1800s, Charles Lyell’s gradualist view of the earth’s history required a more nuanced interpretation of that same record. To this day, the tension between literal and interpretive readings lies at the heart of paleontological research, influencing the way scientists view extinction patterns and their causes, ecosystem persistence and turnover, and the pattern of morphologic change and mode of speciation. With Stratigraphic Paleobiology, Mark E. Patzkowsky and Steven M. Holland present a critical framework for assessing the fossil record, one based on a modern understanding of the principles of sediment accumulation. Patzkowsky and Holland argue that the distribution of fossil taxa in time and space is controlled not only by processes of ecology, evolution, and environmental change, but also by the stratigraphic processes that govern where and when sediment that might contain fossils is deposited and preserved. The authors explore the exciting possibilities of stratigraphic paleobiology, and along the way demonstrate its great potential to answer some of the most critical questions about the history of life: How and why do environmental niches change over time? What is the tempo and mode of evolutionary change and what processes drive this change? How has the diversity of life changed through time, and what processes control this change? And, finally, what is the tempo and mode of change in ecosystems over time?
The science of geology was constructed in the decades around 1800 from earlier practices that had been significantly different in their cognitive goals. In the studies collected here Martin Rudwick traces how it came to be recognised as a new kind of natural science, because it was constituted around the idea that the natural world had its own history. The earth had to be understood not only in relation to unchanging natural laws that could be observed in action in the present, but also in terms of a pre-human past that could be reliably known, even if not directly observable and its traces only fragmentarily preserved. In contrast to this radically novel sense of nature's own contingent history, the earth's unimaginably vast timescale was already taken for granted by many

naturalists (though not yet by the wider public), and the concurrent development of biblical scholarship precluded any significant sense of conflict with religious tradition. A companion volume, Lyell and Darwin, Geologists: Studies in the Earth Sciences in the Age of Reform, was published in 2005.

Revised, updated, and expanded with the latest interpretations and fossil discoveries, the second edition of Oceans of Kansas adds new twists to the fascinating story of the vast inland sea that engulfed central North America during the Age of Dinosaurs. Giant sharks, marine reptiles called mosasaurs, pteranodons, and birds with teeth all flourished in and around these shallow waters. Their abundant and well-preserved remains were sources of great excitement in the scientific community when first discovered in the 1860s and continue to yield exciting discoveries 150 years later. Michael J. Everhart vividly captures the history of these startling finds over the decades and re-creates in unforgettable detail these animals from our distant past and the world in which they lived—above, within, and on the shores of America's ancient inland sea.

Shawnee legend tells of a herd of huge bison rampaging through the Ohio Valley, laying waste to all in their path. To protect the tribe, a deity slew these great beasts with lightning bolts, finally chasing the last giant buffalo into exile across the Wabash River, never to trouble the Shawnee again. The source of this legend was a peculiar salt lick in present-day northern Kentucky, where giant fossilized skeletons had for centuries lain undisturbed by the Shawnee and other natives of the region. In 1739, the first Europeans encountered this fossil site, which eventually came to be known as Big Bone Lick. The site drew the attention of all who heard of it, including George Washington, Daniel Boone, Benjamin Franklin, Meriwether Lewis and William Clark, and especially Thomas Jefferson. The giant bones immediately cast many scientific and philosophical assumptions of the day into doubt, and they eventually gave rise to the study of fossils for biological and historical purposes. Big Bone Lick: The Cradle of American Paleontology recounts the rich history of the fossil site that gave the world the first evidence of the extinction of several mammalian species, including the American mastodon. Big Bone Lick has played many roles: nutrient source, hallowed ground, salt mine, health spa, and a rich trove of archaeological and paleontological wonders. Natural historian Stanley Hedeen presents a comprehensive narrative of Big Bone Lick from its geological formation forward, explaining why the site attracted animals, regional tribespeople, European explorers and scientists, and eventually American pioneers and presidents. Big Bone Lick is the history of both a place and a scientific discipline: it explores the infancy and adolescence of paleontology from its humble and sometimes humorous beginnings. Hedeen combines elements of history, geology, politics, and biology to make Big Bone Lick a valuable historical resource as well as the compelling tale of how a collection of fossilized bones captivated a young nation.

Lukas Rieppel shows how dinosaurs gripped the popular imagination and became emblems of America’s industrial power and economic prosperity during the Gilded Age. Spectacular fossils were displayed in museums financed by North America’s wealthiest tycoons, to cement their reputation as both benefactors of science and fierce capitalists.

Nineteenth-century paleontologists boasted that, shown a single bone, they could identify or even reconstruct the extinct creature it came from with infallible certainty—“Show me the bone, and I will describe the animal!” Paleontologists such as Georges Cuvier

and Richard Owen were heralded as scientific virtuosos, sometimes even veritable wizards, capable of resurrecting the denizens of an ancient past from a mere glance at a fragmentary bone. Such extraordinary feats of predictive reasoning relied on the law of correlation, which proposed that each element of an animal corresponds mutually with each of the others, so that a carnivorous tooth must be accompanied by a certain kind of jawbone, neck, stomach, limbs, and feet. Show Me the Bone tells the story of the rise and fall of this famous claim, tracing its fortunes from Europe to America and showing how it persisted in popular science and literature and shaped the practices of paleontologists long after the method on which it was based had been refuted. In so doing, Gowan Dawson reveals how decisively the practices of the scientific elite were—and still are—shaped by their interactions with the general public.

French zoologist Georges Cuvier (1769-1832) helped form and bring credibility to geology and paleontology. Here Martin J. S. Rudwick provides the first modern translation of Cuvier's essential writings on fossils and catastrophes and links these translated texts together with his own insightful narrative and interpretive commentary. "Martin Rudwick has done English-speaking science a considerable service by translating and commenting on Cuvier's work. . . . He guides us through Cuvier's most important writings, especially those which demonstrate his new technique of comparative anatomy."—Douglas Palmer, New Scientist

From the sixteenth to the eighteenth centuries, English buccaneers, privateers, and naval expeditions sought fame and fortune in the distant reaches of the South Sea. Beginning with the voyage of Francis Drake in the 1570s and continuing through that of George Anson in the 1740s, a series of predatory English adventurers pursued Spanish treasure, and for a few the dream of riches came true. For most, the voyages ended in disappointment, and sometimes death. This engrossing book investigates these maritime adventures and how they were described in popular accounts of the time--accounts that affected English consciousness and perceptions of the wider world and that influenced the planning and nature of the later great voyages of James Cook and others. Glyndwr Williams, a leading expert on the exploration of the Pacific Ocean, draws on printed accounts of South Sea voyages as well as unpublished records--buccaneer journals, expedition papers, and government documents from public and private archives. For English seamen preying on Spanish trade and treasure, the South Sea was limited to the waters lapping the shores of Chile, Peru, and Mexico. But the vision was wider for others, Williams reveals. Cartographers at home in England, untrammeled by the constraints and dangers of actual voyaging, produced speculative maps with a vast Terra Australis Incognita, with fabulous Islands of Solomon, and with a promised short passage from Atlantic to Pacific. Satirical and utopian writers from Joseph Hall to Jonathan Swift found ample space in the wide ocean for their fictional travelers. And contemporary published voyage accounts--marvelous, though not necessarily reliable--further blurred the line between real and imaginary, contributing to the alluring, exotic image of the South Sea that took root in English folk memory and long outlasted the age of the buccaneers.

"Arguably the best work to date in the history of geology."—David R. Oldroyd, Science "After a superficial first glance, most readers of good will and broad knowledge might dismiss [this book] as being too much about too little. They would be making one of the biggest mistakes in their intellectual lives. . . . [It] could become one of our century's key documents in understanding science and its history."—Stephen Jay Gould, New York Review of Books "Surely one of the most important studies in the history of science of recent years, and arguably the best work to date in the history of geology."—David R. Oldroyd, Science

Questions of national identity have long dominated China's political, social, and cultural horizons. So in the early 1900s, when diverse groups in China began to covet foreign science in the name of new technology and modernization, questions of nationhood came to the fore. In Unearthing the Nation, Grace Yen Shen uses the development of modern geology to explore this complex relationship between science and nationalism in Republican China. Shen shows that Chinese geologists—in battling growing Western and Japanese encroachment of Chinese sovereignty—faced two ongoing challenges: how to develop objective, internationally recognized scientific authority without effacing native identity, and how to serve China when China was still searching for a stable national form. Shen argues that Chinese geologists overcame these obstacles by experimenting with different ways to associate the subjects of their scientific study, the land and its features, with the object of their political and cultural loyalties. This, in turn, led them to link national survival with the establishment of scientific authority in Chinese society. The first major history of modern Chinese geology, Unearthing the Nation introduces the key figures in the rise of the field, as well as several key organizations, such as the Geological Society of China, and explains how they helped bring Chinese geology onto the world stage.

Georges Cuvier, Fossil Bones, and Geological CatastrophesNew Translations and Interpretations of the Primary TextsUniversity of Chicago Press

Mammoths and dinosaurs, tropical forests in northern Europe and North America, worldwide ice ages, continents colliding and splitting apart, comets and asteroids crashing catastrophically onto the Earth these are just some of the surprising features of the eventful history of our planet, stretched out over several billion years. But how was it all discovered, how was the evidence for the Earth s long history collected and interpreted, and what sorts of people put together this reconstruction of a deep past that no human beings could ever have witnessed? In "Earth s Deep History," Martin J. S. Rudwick tells the gripping story of the gradual realization that the Earth s history has not only been unimaginably long but also astonishingly eventful in utterly unexpected ways. Rudwick, the world s premier historian of the Earth sciences, is the first to make the story of the discovery of the Earth s deep history attractively accessible to readers without prior knowledge of either the history or the science, and in so doing he reveals why it matters to us today. "

Here, for the first time in English, is Georges Cuvier's extraordinary "History of the Natural Sciences from Its Origin to the Present Day." Based on a series of public lectures presented by Cuvier from 1829 to 1832, this first of a five-volume series, translated from the original French and heavily annotated with commentary, is a detailed chronological survey of the natural sciences spanning more than three millennia. It is truly astonishing in its detail and scope. Cuvier was fluent in many languages, English, German, Spanish, and certainly Latin, in addition to French. He was therefore well prepared to investigate and interpret firsthand the scientific literature of Europe as a whole. The work is an affirmation of Cuvier's vast encyclopedic knowledge, his complete command of the scientific and historical literature, and his incomparable memory. This history is remarkable also for providing in one place a large set of useful references to a vast ancient literature that is not easily found anywhere else. This huge body of information provides us furthermore with unique insight into Cuvier's concept of the natural sciences, and to the vast breadth and progress of this human endeavor. With this work, Cuvier fills an important gap in philosophical thought between the time of Carl Linnaeus and Charles Darwin.

In the late eighteenth and early nineteenth centuries, scientists reconstructed the immensely long history of the earth—and the relatively recent arrival of human life. The geologists of the period, many of whom were devout believers, agreed about this vast timescale. But despite this apparent harmony between geology and Genesis, these scientists still debated a great many questions: Had the earth cooled from its

origin as a fiery ball in space, or had it always been the same kind of place as it is now? Was prehuman life marked by mass extinctions, or had fauna and flora changed slowly over time? The first detailed account of the reconstruction of prehuman geohistory, Martin J. S. Rudwick's Worlds Before Adam picks up where his celebrated Bursting the Limits of Time leaves off. Here, Rudwick takes readers from the post-Napoleonic Restoration in Europe to the early years of Britain's Victorian age, chronicling the staggering discoveries geologists made during the period: the unearthing of the first dinosaur fossils, the glacial theory of the last ice age, and the meaning of igneous rocks, among others. Ultimately, Rudwick reveals geology to be the first of the sciences to investigate the historical dimension of nature, a model that Charles Darwin used in developing his evolutionary theory. Featuring an international cast of colorful characters, with Georges Cuvier and Charles Lyell playing major roles and Darwin appearing as a young geologist, Worlds Before Adam is a worthy successor to Rudwick's magisterial first volume. Completing the highly readable narrative of one of the most momentous changes in human understanding of our place in the natural world, Worlds Before Adam is a capstone to the career of one of the world's leading historians of science.

"The story starts with William Smith's early years, from apprentice to surveyor for hire, and from publication of his groundbreaking 1815 geological strata map to imprisonment for debt. Smith's 1799 geological map of Bath and table of strata, his first strata map of England and Wales, published in 1801, and photographs of some of Smith's collection of 2,000 fossils illustrate the tale. The remainder of the book is organized into four parts, each beginning with four sheets from Smith's hand-colored, 1815 strata map, accompanied by related geological cross sections and county maps (1819-24), and followed by sections of Sowerby's fossil illustrations (1816-19), organized by strata. Interleaved between the sections are essays by scholars that focus on the people and industries that benefited from the knowledge imparted by Smith's work. Concluding the volume are reflections on Smith's later years as an itinerant geologist and surveyor, plagiarism by a rival, receipt of the first Wollaston Medal in recognition of his achievements, and the influence of his geological mapping and biostratigraphical theories on the sciences, which culminated in the establishment of the modern geological timescale"--

In 1878, the first complete dinosaur skeleton was discovered in a coal mine in Bernissart, Belgium. Iguanodon, first described by Gideon Mantell on the basis of fragments discovered in England in 1824, was initially reconstructed as an iguana-like reptile or a heavily built, horned quadruped. However, the Bernissart skeleton changed all that. The animal was displayed in an upright posture similar to a kangaroo, and later with its tail off the ground like the dinosaur we know of today. Focusing on the Bernissant discoveries, this book presents the latest research on Iguanodon and other denizens of the Cretaceous ecosystems of Europe, Asia, and Africa. Pascal Godefroit and contributors consider the Bernissart locality itself and the new research programs that are underway there. The book also presents a systematic revision of Iguanodon; new material from Spain, Romania, China, and Kazakhstan; studies of other Early Cretaceous terrestrial ecosystems; and examinations of Cretaceous vertebrate faunas.

Based at the Parisian Museum of Natural History, Cuvier was able to compare the fossil bones he dug from the quarries of Montmartre with those of animals alive today. Guided by the principle of correlation, that all the parts of an animal must cohere, and by analogy, with living species, Cuvier boldly reconstructed extinct creatures from the incomplete skeletons he unearthed. This process is described in his Essay on the Theory of the Earth.