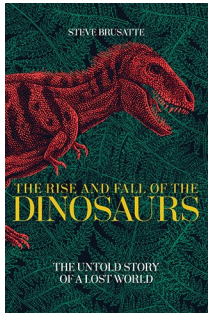


Theropods on top



The Rise and Fall of the Dinosaurs: The Untold Story of a Lost World

By Steve Brusatte

MACMILLAN: 2018.
416 PP. £20

Part autobiography and part popular science, *The Rise and Fall of the Dinosaurs* is Steve Brusatte's first foray into book-length science writing for an adult, non-specialist audience. However, he is an experienced popular science writer, with a sheaf of magazine articles to his credit, as well as several children's books. Brusatte is Reader in vertebrate palaeontology at the University of Edinburgh, where his research focuses on the origin and early evolution of the dinosaurs, the anatomy and taxonomy of the 'meat-eating' theropods, and the end-Cretaceous mass extinction, which caused the subjects of his research to go extinct. His writing style is engaging and fluent, his use of analogy relevant and appropriate. This book will therefore be accessible to those with some knowledge of dinosaur palaeobiology, as well as those coming to the subject for the first time.

The narrative takes the reader through the origin and evolution of the dinosaurs, and their rise to dominance, before taking a break to investigate Brusatte's favourite dinosaur, *Tyrannosaurus rex*, in more detail. Two whole chapters are given over to the tyrannosaurs before the tale is resumed, describing the origin of flight, the evolution of birds and finally the extinction of the dinosaurs. This last section, written from the perspective of a herd of *T. rex* that witnessed the meteorite impact, is one of the highlights of the book. Brusatte's own numerous contributions are woven into the main story, and he describes complex palaeontological

methodologies and findings concisely but entirely comprehensibly.

Throughout, the reader is introduced to a cast of characters who have influenced Brusatte's career, from undergraduate mentors to current collaborators. Some of these accounts smack somewhat of hero-worship, and others are a touch patronizing: the repeated referral to a number of my colleagues who hold senior university positions (and are in their late thirties, at best) as 'young guns' irked me somewhat, although there is no doubt that these characterizations enrich the story and the science. I particularly enjoyed the account of the life of Baron Franz Nopcsa von Felső-Szilvás, an aristocrat, prolific fossil collector and Austro-Hungarian spy from the early part of the twentieth century. The flamboyant, fascinating and ultimately tragic life of a man whose contributions are still regularly referenced in the palaeontological literature, and whose finds can be viewed today in London's Natural History Museum, is told with both sensitivity and humour.

Brusatte's writing is at its best when he is conjuring up imagery to describe a day in the life of a dinosaur, or the Late Triassic Pangaeian world. His description of the events that would have occurred on the last day of the Cretaceous — when a meteorite 10 km in diameter hit what is now Mexico and caused one of the largest mass extinctions of the past 541 million years — from the perspective of a *T. rex* is vivid and delightful. A flash of light so bright that it would have blinded animals in North America; the Earth's surface turning into a 'trampoline' as the magnitude of 11 earthquakes rocked it. Brusatte goes on to provide evidence for these events, detailing how geologists and physicists worked out what happened during the cataclysm. This elevates the narrative from a *Jurassic Park* style work of fiction to a detailed, rigorous scientific account. I thoroughly enjoyed these parts of the book and I found it difficult to put down.

I got somewhat out-*T. rex*-ed, though, in the middle section. Brusatte first

details the evolutionary history of the tyrannosaurs, the broader group to which *T. rex* belongs, describing the discovery and subsequent study of several members of the group, to which Brusatte himself has contributed. After this, an entire chapter is dedicated to all of the research that has been done on *T. rex*, from feeding, locomotion, visual acuity and sense of smell, to the function of its seemingly pointless tiny arms. While Brusatte is very good at choosing appropriate analogies to explain complex biomechanical and engineering techniques to a non-specialist audience, all of this information about a single animal, even if it is an icon of a lost world, was too much for me, and my interest in this section waned. But this is very much a personal account, and the way the book is written, from the chatty style full of Americanisms to the descriptions of Brusatte's own work, mean that at least some focus on *T. rex* was inevitable.

Overall I think this book will be a huge hit among dinosaur fans everywhere. Many a student CV has crossed my desk crowned with a sentence about how much they love the 'meat-eating' theropods, and this book will find a dedicated and enthusiastic audience among theropod geeks everywhere. But Brusatte's broad general knowledge, the diversity of the work that he himself has carried out and his ability to vividly reimagine the past elevate it from dinogeekdom, meaning that it should also be taken seriously by those with a broad general interest in the world of the past, and who want to find out more about the scientific methods that are used to investigate it. □

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