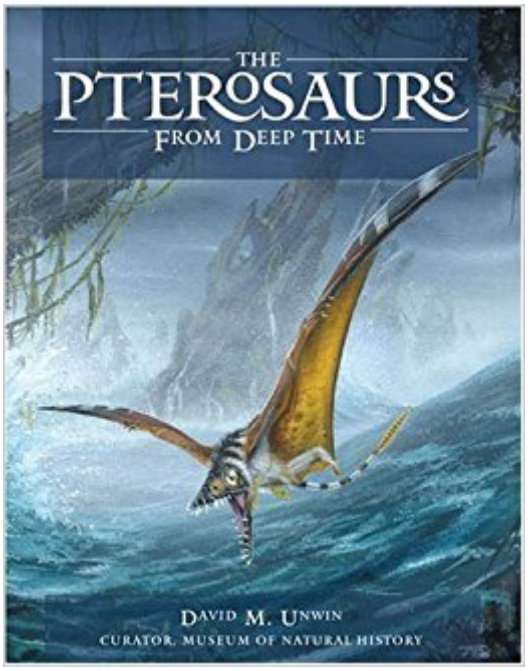
The Pterosaurs: From Deep Time



Synopsis

Here is the first complete portrait of the legendary flying dragons of deep timeÃ¢â ¬â œthe pterosaursÃ¢â ¬â œdesigned for non-specialists, yet founded on the real science of these bizarre creatures.Ã Â Presented lucidly and accessibly by one of the worldÃ¢â ¬â„¢s leading experts, David UnwinÃ¢â ¬â„¢s book is built on a mountain of new fossil discoveries and the latest research.Ã Â Ã Â About 220 millions years ago, a group of reptiles took to the EarthÃ¢â ¬â„¢s vast and open skies. No longer tethered to the ground, the earliest pterosaurs evolved into a multitude of diverse forms, spread around the globe, and ruled the skies until they went extinct along with the dinosaurs about 65 millions years ago, rarely leaving fossils as a record of their existence. What they did leave was a mystery for paleontologists to solve; an enigma so difficult to crack that it took centuries of false starts and missteps before the path to a true understanding of pterosaurs was uncovered.Ã Â Ã Â Now, an understanding of the fundamental nature of these strange creatures is finally possible.Ã Â In the last 15 years, stunning new fossil finds and significant advances in technology have led to a breakthrough in our knowledge of pterosaurs.Ã Â New fossils of the earliest species were discovered in Italy, a remarkably well-preserved and complete wing was found in Central Asia, and, most extraordinarily, a pterosaur embryo inside an egg was unearthed in China.Ã Â CAT scanning has let researchers glimpse inside pterosaur skulls and construct three-dimensional images of their bodies from crushed bones, and modern techniques for analyzing relationships between species have revealed surprising insights into the evolution of the group. Ã Â Drawing on these and other advances, David Unwin, caretaker of Archaeopteryx and curator at the Museum of Natural History in Berlin, paints pterosaurs and their world more vividly than has previously been possible.Ã Â He eloquently reconstructs their biology and behavior.Ã Â Pterosaurs werenÃ¢â ¬â„¢t scaly like dinosaurs, but hairy; most were brightly colored and adorned with remarkable head crests; they were excellent fliers with physiologically sophisticated wings; they walked on all fours; and varied in size from eight inches to forty feet in wingspan.Ã Â He shows how they lived their lives, raised their young, and interacted with the different environments of Mesozoic Earth.Ã Â Then, building on his thorough examination of their anatomy and lifestyle, and using the powerful technique of cladistic analysis, Unwin unravels the evolutionary history of pterosaurs and establishes their place in the one great tree of life. Ã Â Packed with 95 color and 30 black and white illustrationsÃ¢â ¬â œincluding 10 full-page original color paintings that are scientific recreations of different pterosaur speciesÃ¢â ¬â œThe Pterosaurs From Deep Time takes readers on an wondrous expedition back through the lost world of the EarthÃ¢â ¬â„¢s deep past. Ã Â Ã Â

Book Information

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Customer Reviews

DAVID UNWIN, Ph.D., is the curator for fossil reptiles and birds, Museum of Natural History, Humbolt University, Berlin. A world renowned, leading authority on pterosaurs, he has published extensively in scientific publications on their wing membranes, walking ability, and the history of the group. He lives with his wife Natalie BakhurinaÃ¢â ¬â •also an internationally respected pterosaur expertÃ¢â ¬â •in Berlin.

Unwin’s book is a short and easy introduction to paleontology using the pterosaurs as the selected fossils. He introduces the whole science - which is only about 200 years old - and the ’way’ of science with pro and con arguments of various hypotheses concerning dinosaurs which have unfolded over time. Were the pterodactyls warm blooded? How did they get as big as a Piper Cub? Did they raise their young? What evolutionary trends does their fossil record show? What group of dinosaurs did they evolve from? How does a reptile learn how to fly? The only thing the book lacks is a fold out diagram giving a complete pterosaur skeleton with the proper anatomic name for each of the bones and comparing it to a skeleton of a modern bird.

Paleontology books can be boring to read. This one wasn’t. The key was the tons of paintings , pictures and diagrams that at every step of the way helped whenever the text got to heavy in the wording. Not that this was a dense academic text, the author kept to a pretty chatty, non-scientific

style (maybe too much so). When I finished this book I felt motivated to read more on the subject-hats off to the author.

An outstanding work, David Unwin’s book ’The Pterosaurs from Deep Time’ should be considered the standard by which other popular (and even textbook!) books on paleontology should be compared. If only something similar could be written about the various sea-reptiles of the Mesozoic! Very well researched, excellent diagrams, photos and artwork, all the latest information, truly brilliant!

Are not dinosaurs, nor were they birds. They were a separate branch altogether and this book stresses in great detail the different varieties there were from the time of the Triassic to their eventual demise in the Cretaceous when birds took over and only a few of these magnificent creatures remained before the final extinction.

Outstanding book on Pterosaurs. So much interesting information you’ll need to read it slowly to absorb it; You need go no where else for information on this fascinating reptile.

this book is jam packed with information, its the book to own on the subject.

I really enjoyed this book.This is the book to read if you want some great information on pterosaurs. I majored in Biology in college and so I really like the detail the author goes into when speaking about the different genres, species, and anatomy. For someone who really just wants an overview or some quick facts, this book may be a little much. The pictures in the book are also great. There are lots of nice scenic paintings as well as technical drawings. I would not recommend this book for a younger child who is really interested in dinosaurs, I think to really appreciate this book you need to have some background in biology, or at least be a little older. All in all it is a really great book.

The Pterosaurs From Deep Time by David M. Unwin is a well-written even witty book, one of a very few books on the subject ever written for the general reader. It comes complete with an extensive bibliography, endnotes, and many illustrations, including full-color life restorations, photographs of fossils, and many diagrams illustrating pterosaur evolution, anatomical features, and movement. The first chapter was a general introduction to these "dragons of the air." These reptiles first took to the air 215 million years during the Triassic and thrived for 150 million years, vanishing

with the dinosaurs at the end of the Cretaceous. Unwin recounted some of the difficulties of studying pterosaurs; many of their fossilized remains consist of only scattered, broken bones (saying little more than "here be pterosaurs"), even complete skeletons are often extremely distorted by geological processes owing to the hollow-tube bones of these animals (forming what he called "picture fossils" or "road-kills"), researchers are often trapped in their thinking by following birds and bats too closely as analogues, and sometimes people are guilty of "temporal chauvinism," the notion that somehow pterosaurs were inherently inferior to modern fliers. Unwin wrote that "pterosaurology" has really taken off starting in the 1990s thanks to remarkable new finds in South America and China, new imaging techniques like CAT scanning and photographing in UV light, and computer modeling of pterosaur movement. Chapter two was pretty basic, discussing the Mesozoic world in general. Chapter three, titled "Considering Medusa," discussed how pterosaurs became fossils and showcased some of the most remarkable fossils ever found (my favorite was "the tree-biter", a _Ludodactylus_ from Lower Cretaceous Brazil that apparently got a yucca leaf lodged in its throat sac and starved to death; one can even see the frayed end of the yucca leaf, where the pterosaur may have tried to dislodge it by rubbing it against the ground). Only around 5,000-6,000 pterosaur fossils are known and only 100 have preserved soft parts. Chapter four looked at the pterosaur family tree, how the approximately 100 species described thus far are related to one another. There were eight main branches, ranging from the dimorphodontids, the least derived of all pterosaurs to the azhdarchoids, the last pterosaurs of the Mesozoic and whose numbers include the largest flying creature of all time, _Quetzalcoatlus_, which may have had wingspans of 10 meters (33 feet) or more. A key point in this chapter is understanding the difference between the earlier rhamphorhynchoids and the later, more diverse pterodactyloids. Chapter five examined pterosaur head anatomy, which like further anatomical discussions was both informative and not too hard for the interested layperson to follow as his discussion was well-supported with illustrations and helpful definitions. He looked at pterosaur teeth (with few rare exceptions, they had no cutting edges to dismember prey or cut off bite-sized chunks or anything to grind or pulp food, though one group became filter-feeders and another was able to crush clams and crabs in its jaws), how at least one group, the insectivorous anurognathids, had short bristles rimming the edges of their mouths like modern nightjars, helping it to catch insects, and the weird world of pterosaur crests (check out the extraordinary forked crest of _Nyctosaurus_). Chapter six looked at other features of pterosaur anatomy. It is important in particular to understand the pteroid (there is debate over whether it is equivalent to a thumb or a bone unique to pterosaurs), a bone that had a huge role in pterosaur aerodynamics and the notarium (unique to the larger pterodactyloids). Also discussed are pterosaur

body covering ("hair" that wasn't really hair) and issues of pterosaur metabolism (how things like hair, a largish brain, and fibro-lamellar bone tissue are "consistent with an active physiology" but "do not necessarily demand it"). Chapter seven looked at pterosaur young. In 2004, after 200 years, not one but three pterosaur eggs were found in the space of six months. Pterosaurs laid soft-shell eggs, showed no evidence of taking care of their young, and apparently could fly and fend from themselves very shortly after birth (if not immediately). Interestingly, it would seem that pterosaurs at different life stages fed on different prey items and filled different ecological roles (something prevalent in the Mesozoic) and there were few "small" species of pterosaur to compete with young, as the young were the "small" species in effect. Owing to how pterosaurs laid their eggs and issues relating to how big they could get and when they reached sexual maturity, pterosaurs appear to still have much in common with other reptiles. Chapter eight looked at how pterosaurs flew. Were they passive gliders or active fliers? This chapter showed that they were clearly active fliers and in some ways may have been more efficient than birds or bats. Key points in this chapter are understanding the microscopic structure of wing membranes (particularly the presence and role of wing fibers), the overall arrangement of the flight membranes (the patagia, divided into a propatagium or fore-wing, cheiropatagium or hand-wing - the biggest membrane - and a leg-wing or cruropatagium, which crucially for purposes of ground locomotion and available ecological niches was split up the middle in the pterodacytloids), the role of the pteroid and the notarium, and the role that the webbed feet of pterosaurs played (working much like twin tail fins). Chapter nine looked at one of the most contentious of issues, how pterosaurs moved upon the ground. The rhamphorhynchoids were excellent climbers but were barely crawlers while the pterodactyloids were quite capable walkers. Chapter ten looked at the overall history of pterosaur evolution, of when different groups arose, their ecological roles, and when and why they eventually went extinct. Interesting facts include that the rhamphorhynchoids were extremely conservative, evolutionary speaking, changing little in 75 million years; pterosaurs reached their greatest diversity in lifestyles and in numbers of species in the Early Cretaceous (slightly more than half of all known species come from this time), and that only toothless forms survived until the Late Cretaceous.

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