

## Book Reviews

### Feathered Dinosaurs: The Origin of Birds.

**JOHN LONG & PETER SCHOUTEN  
2008**

*CSIRO Publishing. 193 pages, lavishly illustrated with fine paintings and diagrams. \$49.95.*

The evolution of birds from reptiles has been controversial ever since the publication of Darwin's *Origin of Species* in 1859. By an extraordinary coincidence the first fossil feather was discovered within a year, and a year later the beautifully detailed fossil of *Archeopteryx* was found at the same site in Bavaria. Over the last twenty years many new fossils have been discovered, especially in China, and these findings have revolutionised our understanding of both birds and dinosaurs.

One group of carnivorous dinosaurs, the theropods, including tyrannosaurid dinosaurs like the six tonne *Tyrannosaurus rex* or the nimble *Velociraptor*, are now regarded as close ancestors of birds. There are many lines of evidence for this view, but perhaps the most compelling is that many theropod fossils have the distinct impressions of feathers. This is highly significant because feathers used to be the single diagnostic criterion for identifying birds, but now even the experts can be baffled in distinguishing the fossils of feathered theropods from birds. Thus birds are currently distinguished using a suite of criteria based on their specialised adaptations to flight. This book illustrates all the families of theropods that are known to have been

feathered and discusses how they evolved into birds.

Fossils by their very nature tend to be fragmentary, distorted and somewhat dull, which coupled with the palaeontologists' penchant for long scientific names can make it difficult to appreciate the significance of the finds. Thus the collaboration of the palaeontologist John Long with the artist Peter Schouten is a valid way to bring these fossils to life. A common criticism of such books is that the colours and body shapes are largely speculative and thus misleading. Of course, colours are not preserved in fossils, but some of the recent Chinese fossils are so detailed that the patterns of the former colours are preserved.

In this book the artist's notes besides each painting admirably justify the reasons for the particular depiction and make it clear when the interpretation is purely speculative. There is much excellent biology in these notes with sound reasoning for the decisions made. For example, the colouring of the illustration of *Beipiasaurus inexpectus* (page 92) is justified by the similarity of its hollow fossilised contour feathers to the feathers of modern cotingas that have white, blue or bluish-green feathers. Similarly, the fossils often give clues to habitat and diet and this leads to fascinating arcane details on the adaptive advantages of having an iris of different colours for particular habitats and for catching different types of prey.

Palaeontologists are able to extract extraordinary amounts of information from fossils, such as uncovering a developing

foetus in a fossil egg, or the space for bird-like air sacs in the vertebrae of fossil dinosaurs. Some precipitously formed fossils even reveal behaviour such as how eggs were incubated. Throughout the book there is considerable scholarship, the scientific names are explained, they capture the excitement of research, and the fossils are interpreted using insights from recent studies on the ecology and behaviour of living animals.

My main criticism of the book is the loose integration of the preliminary chapters with the illustrations. I found it very useful to write the page numbers of the paintings in the margins of these chapters because being able to immediately look up the dinosaur or bird under discussion helped my understanding. It was disconcerting to find that some of the most intriguing illustrations, including some of the recent fossil birds, are not even mentioned in the introductory chapters. Similarly, the features that characterise birds are only briefly outlined on the last page of the introduction, when an earlier explanation would have clarified the significance of many of the fossils. Also it would have helped to have some plates of the actual fossils, if only to confirm the interpretations in the paintings. There is a single figure showing evolutionary relationships but it is inadequately explained, despite its potential utility in providing an overview and structure for the book. Nevertheless, this book is a timely and beautifully illustrated review of the latest evidence on the evolution of birds from theropod dinosaurs. It succeeds superbly in introducing many new and unfamiliar animals and can be enjoyed simply for the beautiful paintings, or careful reading will provide many insights into birds and their feathered ancestors.

**Jeremy Robertson**