New Titles

Source: BioScience, 59(5) : 447
Published By: American Institute of Biological Sciences
URL: https://doi.org/10.1525/bio.2009.59.5.17

anachronistic concept of a bird-reptile dichotomy and cite studies on the parasites of modern reptiles as proxies for what bugged dinosaurs. This and other misinterpretations stem from a lack of phylogenetic thinking—the third fatal flaw of the book—particularly the concept of stem groups, which are basal, primitive species and lineages that possess some but not all of the specialized features of the crown group.

In chapter 8, in a strange section titled "The Cretaceous: Age of Chimeras and Other Oddities," the authors describe chimeras as creatures having "features found in two or more present-day groups...[such that] how to classify them is a conundrum. Vertebrate paleontologists have *Archaeopteryx,* a strange animal with teeth and feathered wings with claws that appears both bird and reptile." In fact, almost all serious biologists accept that *Archaeopteryx* is a maniraptoran stem group to the birds. Likewise, *Burmaculex antiquus,* in Burmese amber, is a stem-group mosquito, even though the authors dismiss it because it doesn't have all the characteristics of modern mosquitoes. Ironically, the authors repeatedly cite *Melittosphex* in Burmese amber as a true bee, but it is a very primitive stem group. Every geological era has its share of stem groups; even today there are the egg-laying platypus and echidna, monotremes that are a stem group to the therian mammals that retain primitive, synapsid features.

Given the diversity in the Cretaceous of blood-feeding arthropods, it would not be at all surprising if they were vectors of pathogens transmitted to vertebrates of that era. Chapter 20, "The Discovery of Cretaceous Diseases," is a personal account of how the authors extracted tissues from biting midges in Burmese amber and presumably found the remains of *Leishmania*- and *Haemoproteus*-like microbes, even viruses. Unfortunately, the vague, dark forms in their light micrographs fail to convince. Since cells within amber-fossilized insects are well known to have preserved organelles, identification of the putative pathogens should have been made with electron microscopy.

Assuming that arthropods did spread pathogens among dinosaurs, would this have caused or contributed to the demise of dinosaurs? The authors write, "You cannot discount the probability that diseases, especially those vectored by miniscule insects, played an important role in exterminating the dinosaurs" (p. 202, the final sentence of the book). They cite introduced vectors and diseases that wreaked havoc among native populations of plants and animals, and an array of human diseases and epidemics such as leishmaniasis, Lyme disease, malaria, plague, and yellow fever. But *Homo sapiens* on an evolutionary scale is an introduced species, which is why some native people have evolved only modest resistance to a few of these diseases, and why native animals show great immunity. Is there, in fact, any case of a native host species becoming extinct as a result of a native pathogen? This is the conceptual Achilles' heel of the book. But why take such liberty with facts? It could be argued that license was taken to appeal to the broader audience of dinophiles and fossil collectors. Popularity should not, however, sacrifice accuracy.

DAVID GRIMALDI
David Grimaldi (e-mail: grimaldi @amnh.org) is with the Division of Invertebrate Zoology at the American Museum of Natural History in New York.

References cited

Grimaldi D, Engel MS. Fossil Liposcelididae and the lice ages (Insecta: Psocodea). 2006. Proceedings of the Royal Society B 273: 625–633.

Grimaldi D, Junfeng Z, Frazer NC, Rasnitsyn A. 2005. Revision of the bizarre Mesozoic scorpionflies in the Pseudopolycentropodidae (Mecopteroidea). Insect Systematics and Evolution 36: 443–458.

NEW TITLES

Aptamers in Bioanalysis. Marco Mascini, ed. Wiley, 2009. 336 pp., illus. $125.00 (ISBN 9780470148303 cloth).

Complexity: A Guided Tour. Melanie Mitchell. Oxford University Press, 2009. 349 pp., illus. $29.95 (ISBN 9780195124415 cloth).

Ecology and Evolution of Parasitism. Frédéric Thomas, Jean-François Guégan, and François Renaud. Oxford University Press, 2009. 240 pp., illus. $70.00 (ISBN 9780199535330 paper).

Functions in Biological and Artificial Worlds: Comparative Philosophical Perspectives. Ulrich Krohs and Peter Kroes, eds. MIT Press, 2009. 312 pp., illus. $50.00 (ISBN 9780262113212 cloth).

Heatstroke: Nature in an Age of Global Warming. Anthony D. Barnosky. Island Press, 2009. 288 pp. $26.95 (ISBN 9781597261975 cloth).

Label-Free Biosensors: Techniques and Applications. Matthew A. Cooper, ed. Cambridge University Press, 2009. 304 pp., illus. $70.00 (ISBN 9780521711517 paper).

Light and Video Microscopy. Randy O. Wayne. Elsevier, 2009. 312 pp., illus. $99.95 (ISBN 9780123742346 cloth).

99% Ape: How Evolution Adds Up. Jonathan Silvertown, ed. University of Chicago Press, 2009. 224 pp., illus. $26.00 (ISBN 9780226757780 paper).

Renewable Energy from Forest Resources in the United States. Barry D. Solomon and Valerie A. Luzadis, eds. Taylor and Francis, 2008. 352 pp., illus. $170.00 (ISBN 9780415776004 cloth).

doi:10.1525/bio.2009.59.5.17