PALEONTOLOGY

Almost All Things Dinosaurian

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Encyclopedia of Dinosaurs. PHILIP J. CURRIE and KEVIN PADIAN, Eds. Academic Press, San Diego, 1997. xxx, 869 pp., illus., + plates. $99.95. ISBN 0-12-226810-5.

During the last two decades, certain aspects of the study of dinosaurs have edged ever closer to academic entropy. Discovery of many previously unknown dinosaurs, as well as radical uprooting of long-standing conventional wisdom regarding dinosaur biology, have helped to attract a large, eclectic group of dinosaur "experts." Thus, although much of the mushrooming dinosaur literature is solid, electronic and journal publications on the subject often emanate from individuals with little or no appropriate academic training. Similarly, recent presentations at annual meetings of the Society of Vertebrate Paleontology have included musical interpretation of an attack by a predaceous dinosaur and a keynote address on the behavior of sauropod dinosaurs given by a movie producer. Unfortunately, the overarching impression gained from many recent contributions to the dinosaur literature is that their authors have acted more as advocates than as scientists, promoting conclusions supported mostly by subjective assumptions or by data subject to alternative interpretations.

Consequently, assembly and synthetic evaluation of current information on dinosaurs has become an increasingly daunting task. Nevertheless, in *Encyclopedia of Dinosaurs*, Currie and Padian have attempted just that. In doing so, they have produced a massive tome, consisting of about 280 contributions from 123 authors. Among the dozens of topics covered, extensive sections detailing dinosaur collection, description, and systematics are undoubtedly among the most complete ever assembled in a single volume. Cosmopolitan descriptions of field collection sites and important geologic formations range from a two-line entry about fragmentary Late Cretaceous remains of Algerian dinosaurs to multipage coverage of Mongolian and North American dinosaur collection sites. Historical accounts of noteworthy fossil-collecting expeditions also accompany many of the descriptions.

Similarly, the book contains a seemingly exhaustive description of museums worldwide in which dinosaur bones currently reside. Again, these accounts range from a one-paragraph entry describing fragmentary remains of ornithischian dinosaurs in the Albany Museum in Grahamstown, South Africa, to extensive descriptions of the American Museum of Natural History and the famous dinosaur quarry of the Zigong Dinosaur Museum in China.

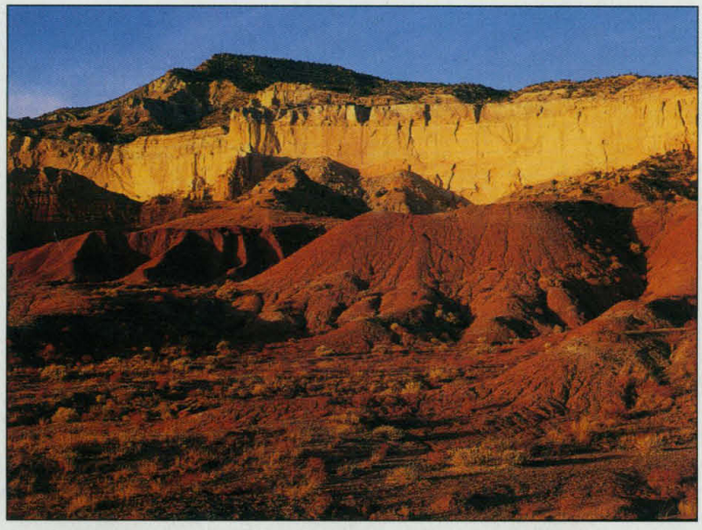
A priori, such detailed inclusion of the occurrence of dinosaur fossils might seem excessive. However, these sections serve as appropriate supplements and references for the *Encyclopedia*'s concise treatments of Mesozoic plate tectonics and the biogeographic history of dinosaurs on each of the continents.

Classification, morphological description (to the family level for many), and illustration of dinosaur taxa are comprehensive, with more than 20 color recreations included. Thus, whereas the volume's coverage of famous taxa (such as tyrannosaurs, hadrosaurs, and sauropods) is pro forma, reviews of the most obscure groups (such as fabrosaurs and therizinosaurs) will be of interest to both amateurs and academics.

The *Encyclopedia* falls short in most sections dealing with interpretation of dinosaur physiology and reproduction. Many of these entries are overly crafted to adhere to recent conventional wisdom that dinosaurs were, in many respects, birdlike—current paradigms hold that "living birds are dinosaurs." For example, in the chapter "Feathered Dinosaurs," we are told that some dinosaurs may have been endothermic because the Chinese theropod *Sinosauropteryx* possessed nonaerodynamic "feathers," each of which, like modern bird feathers, seems to have been composed of "a central rhachis and branching barbs" (p. 241). Yet a detailed literature account actually states that "much more work needs to be done to prove that the integumentary structures of *Sinosauropteryx* have any structural relationship to feathers" (*1*).

Another entry titled "Reproductive Behavior and Rates" states that, like many modern birds, some dinosaur babies possessed limb bones so poorly ossified that they "should have been immobile, and therefore altricial" (nestbound) (p. 634). However, the most recent peer-reviewed literature on the subject indicates that possible altriciality in baby dinosaurs cannot be determined on the basis of limb bone structure (*2*). In "Growth and Embryology," dinosaur long-bone growth plates are said to be particularly "birdlike" (p. 285), when, in fact, they are equally crocodile-like (*3*).

The *Encyclopedia of Dinosaurs* is perhaps the most comprehensive treatment of almost all things dinosaurian ever to have appeared in a single volume. As a consequence, it will certainly become a standard general reference as well as a good entry into the current literature. For years to come, it will remain almost an essential addition to the library of any serious student of dinosaurs, whether lay or professional.



FRANÇOIS GOHIER

Sands of dinosaur time. The Mesozoic formations at Ghost Ranch, New Mexico: Chinle (foreground), Entrada (cliffs), Morrison (overlying slopes), and Dakota (upper cliffs). At other classic sites in the western United States, the Morrison has yielded spectacular skeletons of giant Jurassic sauropods, such as *Apatosaurus*, and the Dakota has preserved abundant tracks of Cretaceous dinosaurs.

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References

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3. R. W. Haines, in *Biology of the Reptilia*, C. Gans, A. d'A. Bellairs, T. S. Parsons, Eds. (Academic Press, London, 1969), vol. 1, p. 81.