BOOKS: PALEONTOLOGY

Dinosaurs for Adults

Lawrence M. Witmer

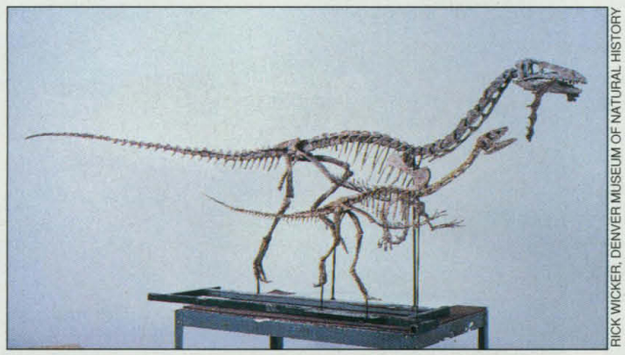
The Complete Dinosaur. JAMES O. FARLOW and MICHAEL K. BRETT-SURMAN, Eds. Indiana University Press, Bloomington, 1997. xiv, 752 pp., illus. $59.95. ISBN 0-253-333349-0.

The universal allure of dinosaurs is a phenomenon that transcends geographic, political, and generational boundaries. No longer are dinosaurs a "proper" interest for just wide-eyed children and stodgy professional paleontologists. Widespread adult interest in virtually all things dinosaurian has entered the cultural mainstream. All manner of intellectual pursuits have sprung up for the adult dinosaur aficionado. There are dinosaur Web pages, Internet discussion groups, CD-ROMs, magazines, and television shows. There are Dino-Fest conferences at which the public can interact directly with professional paleontologists. Dinosaur art has become a legitimate creative genre. And, of course, there are the movies. What is inescapable is that dinosaurs have become a common and accepted avocation among adults around the world.

The Complete Dinosaur, edited by Jim Farlow and Mike Brett-Surman, is a celebration of this trend and a gift to serious dinosaur enthusiasts—both professional and amateur. Consisting of 43 chapters distributed over six sections and penned by 47 authors, the volume has the stated objective of being "the single most authoritative account of dinosaur paleontology accessible to the general reader." This is certainly an ambitious goal, but, by any measure, this is a highly successful volume. Farlow and Brett-Surman go to great lengths to keep their general readers on board. They do everything from explaining citation format and compiling a wonderful glossary to reprinting classic *Calvin and Hobbes* strips. And there is the now de rigueur section of glossy color plates of dinosaur art. However, the accessibility of this volume to a wide audience is ultimately determined by the chapter authors, most of whom have little experience in writing for the nonspecialist. As might be expected, the result is somewhat uneven.

The organization of the book is logical and effective. Part One provides the historical chronicle of dinosaur discovery. Part Two describes how dinosaurs are studied, beginning with dinosaur collection, continuing with osteology and taxonomy, and concluding with museum exhibits and dinosaur art. Most of these chapters are clearly directed to the nonprofessional, but excellent chapters by Chapman and Schweitzer on quantitative and molecular approaches, respectively, are more sophisticated.

Part Three of the volume constitutes, for the most part, a fairly conventional walk through the various groups of dinosaurs. It is clearly intended to provide background information for the uninitiated, and it does so successfully. Professionals, however, will probably find little here that they have not seen elsewhere—and, in several instances, by the same authors in other recent edited volumes.



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Small, swift, and agile. Adult and juvenile *Coelophysis*, from Ghost Ranch, New Mexico, where the Late Triassic Chinle Formation has yielded hundreds of skeletons of these early theropods.

Part Four, which deals with dinosaurs as living organisms, truly represents the heart of the book. Not only is it the longest section, but it effectively captures what is emerging as the most innovative and vibrant direction of dinosaur research. Many of the chapters include new primary research, published here for the first time. As a result, professionals are treated to some first-rate papers, although some general readers will probably find some of these rough going. Sampson and Chin give us well-reasoned glimpses into dinosaur social and dietary behaviors, respectively. Alexander writes a particularly engaging chapter on dinosaur biomechanics, commenting on popular debates such as that on the ability of sauropods to rear up on their hind limbs. The pioneering paleopathologist Rothschild reveals dinosaurs to be a pretty healthy lot, with remarkably low incidences of osteoarthritis, osteomyelitis, and dental pathology, although healed fractures are fairly common. The two chapters on dinosaur footprints demonstrate how trackways have become a new, fruitful area of research.

But the bulk of this section (five chapters by 13 authors) is devoted to the physiology and growth of dinosaurs. Drawing on a range of approaches, these chapters together show that discussion has matured beyond the shrill endothermy-versus-ectothermy debates of the 1970s. New types of evidence (such as upper respiratory anatomy, covered by Ruben and colleagues), as well as fresh interpretations of traditional evidence (such as bone histology, discussed by Reid), show that there is some physiological middle ground and, more importantly, that the inference of a more reptilian metabolism does not return dinosaurs to the realm of sluggish leviathans. Perhaps the most significant aspect of this part of the book is that it amply shows that dinosaur science is no longer "owned" by traditional, geologically trained paleontologists. Rather, scientists from other disciplines—in this volume, applied biology and mechanics (Alexander), clinical rheumatology (Rothschild), physics (McIntosh), comparative physiology (Paladino, Spotila, and Ruben and colleagues)—are increasingly making critical contributions, challenging received wisdom, and taking the science to a higher level.

Part Five deals primarily with the Mesozoic world the dinosaurs inhabited, covering plate tectonics, biogeography, and global biotic evolution. Dinosaur extinction is treated in a novel and successful manner by means of a dialogue between a catastrophist (Russell) and a gradualist (Dodson). And finally, Part Six comprises a single chapter devoted to the presentation of dinosaurs by the media, ranging from comic books to stamps to films, showing just how culturally pervasive dinosaurs have become.

Indeed, dinosaurs are instructive and enjoyable on many levels, from toys to turbinates, and herein lies the success of *The Complete Dinosaur*. Most professional dinosaur paleontologists started out as "dino-fans," and dinosaurs continue to be an effective vehicle for educating the public about science. But intellectually challenging material aimed at the nonspecialist, as in this volume, has the additional effect of "recruiting" scientists from other disciplines into dinosaur research, invigorating the entire field.

The author is in the Department of Biomedical Sciences, College of Osteopathic Medicine, Ohio University, Athens, OH 45701, USA. E-mail: witmerl@ohiou.edu