THE Complete DINOSAUR

Edited by James O. Farlow and M. K. Brett-Surman
Any one of the larger carnivorous dinosaurs would meet the case. Among them are to be found all the most terrible types of animal life that have ever cursed the earth or blessed a museum.

—Sir Arthur Conan Doyle, *The Lost World*

As summarized in the first part of this book, our knowledge of dinosaurs has accumulated through the combined efforts of many people, professionals and amateurs alike, over the last century and a half. We now know a great deal about these “fearfully great” reptiles, and we are learning more all the time.

So how do we know what we know? What are the bases for the statements about dinosaur biology and evolution that will be made by one contributor after another in the remaining sections of this book? Those questions are the subject of Part Two, which describes how paleontologists, and the other professionals who assist them, find, study, and interpret dinosaur fossils.

This section begins by explaining how a paleontologist decides where to look for dinosaur bones, and what is done with them once they are found; both traditional and state-of-the-art methods of collecting and preparing dinosaur fossils are summarized.

It would be very nice to have a living *Anatotitan* or *Triceratops* to study in the field or laboratory, but nature hasn’t been that kind to us. Most of our information about dinosaurian evolutionary relationships, or about
how the great reptiles functioned as living animals, comes from study of
their skeletons. This means that in order to understand how paleontolo-
gists interpret dinosaurs, one must have a basic knowledge of the bones of
the dinosaur skeleton, and so we devote chapter 7 to a tour of the different
bones of a dinosaur's body.

One of the major goals of paleontology is to reconstruct, to the extent
that this is possible, the course of evolution. In dinosaur paleontology this
involves determining the phylogenetic relationships of the various dino-
saur groups to each other, and also to other kinds of animals. How is this
done? Chapter 8 explores different approaches to the naming and classify-
ing of organisms, including dinosaurs.

One of the key developments in evolutionary biology over the last
generation has been the general acceptance of the principles of phyloge-
netic systematics (cladistics) in interpreting the evolutionary relationships
among different groups of organisms, including dinosaurs. Although a
cladistic approach to organizing information about evolutionary patterns
is an eminently logical way of doing things, it comes as a shock the first time
one encounters it. (Birds are dinosaurs? Get out of here... ) So our chapter
on classification explains how phylogenetic systematics works, and com-
pares its approach to dinosaur classification with a more traditional
approach.

To say that dinosaur classification is contentious is like saying that the
Atlantic Ocean is a bit damp. The number of different dinosaur classifica-
tions operational at any one time can be described by the formula

\[ C = (N + A) - 1 \]

where C is the number of classifications, A is the number of amateur
palentologists, and N is the number of dinosaur paleontologists. The
"-1" represents the true classification, which we shall never know (part of
Durham's Law). The stability of any classification can be a double-edged
sword. A classification can be stable because we have obtained a close
approximation to the actual relationships of the organisms under study.
Unfortunately, stability can also reflect consensus due to the lack of an
adequate fossil record—or a stagnation of research.

Geologists have constructed a formidable set of terms to describe the
intervals of earth history during which dinosaurs and other ancient organ-
isms lived. Readers will not be able to understand how dinosaurs evolved
unless they understand the names applied to the various intervals of Mesozoic
time. Consequently we include a short chapter to orient the
novice in a timely manner.

Although some field and laboratory methods in paleontology have not
changed in the last century, new technologies have revolutionized much of
the way in which dinosaurs are studied. Chapter 10 describes these new
technologies, and the way they are affecting the research methods of
palentologists.

Jurassic Park gripped the imagination of the moviegoing public with the
possibility that dinosaurs might be re-created from genetic material in
dinosaur blood once imbibed by Mesozoic mosquitoes. Palentologists are
indeed interested in the possibility of recovering dinosaur biomolecules,
but there is very little chance that these can be used to populate our zoos
with living examples of the fearfully great reptiles. On the other hand,
dinosaur biomolecules may well provide us with valuable insights into the
relationships of dinosaurs to other animals. It is, in consequence, necessary
to include a chapter about the problems and potential of finding and
studying such biochemical traces of dinosaurs.
The results of scientific research on dinosaurs are generally published in learned technical journals written by and for scientists. However, the general public has an insatiable interest in dinosaurs, and part of the mission of major natural history museums is to satisfy that curiosity by putting dinosaur fossils, and explanatory material about them, on display. This is not an easy task. Chapter 12 describes all the planning and labor that goes into putting together a successful dinosaur exhibit.

Our most vivid impressions of dinosaurs as living creatures are based on the work of scientific artists. The final chapter of Part Two outlines the thinking and the steps that a paleontological artist goes through in preparing a scientifically accurate drawing or painting of a dinosaur as a living animal.
The physiology of dinosaurs has historically been a controversial subject, particularly their thermoregulation. Recently, many new lines of evidence have been brought to bear on dinosaur physiology generally, including not only metabolic systems and thermoregulation, but on respiratory and cardiovascular systems as well. During the early years of dinosaur paleontology, it was widely considered that they were sluggish, cumbersome, and sprawling cold-blooded lizards. However, with the discovery of much more It's not just the study of Dinosaurs but of all ancient living things. As to the name: > The term itself originates from Greek παλαιός, palaios, "old, ancient", ὄν, on (gen. ontos), "being, creatu... The definition of paleontology is the study of fossils of animals and planets. Dinosaurs fall in this field of study since their remains are all fossilized. Therefore paleontologist have to come in and examine the remains. Early humans, planets, animals fossils are studied by paleontologists. 8 views Â· Answer requested by. Anthony Paparo.