

Book Review

Anthropoid Origins. Edited by John G. Fleagle and Richard F. Kay. Plenum Press, New York, 1994, xvi + 708 pp., \$139.50 (USA), \$167.40 elsewhere (hardback).

In contrast to the deceptively simple and unassuming title of this volume, its papers reveal a complexity of unresolved problems, issues and debates that have long been a source of critical concern for scientists interested in anthropoid evolution. The authors mainly address issues of phylogenetic relationship, with special attention to how anthropoids, which all agree are a holophyletic group, are related to other primates, and what the Paleogene record can contribute to an understanding of their evolutionary history, paleobiology and biogeography. Quite understandably, this volume does not actually provide answers to any longstanding question, but it represents a genuine advance in our understanding of the important issues by introducing new approaches and a wealth of original data. There are several reasons why this volume is a welcome and important contribution.

First, the application of cladistic methods by several authors in the volume, although not always in association with its attendant philosophy, provides the basis for a much needed critical review of the detailed characters used to assess anthropoid relationships. Needless to say, my enthusiasm in this regard is not entirely shared by all of the authors, some of whom prefer a more traditional, Simpsonian, approach to phylogenetic analysis. The differences of opinions and simmering tensions on display in the text positively contribute to the success of the book, and some of the liveliest debates center around this particular topic. Nevertheless, having stated this, it is difficult to evaluate to what extent the contents of the volume actually represents the diversity of views in the field, since more than half of the 24 contributors have a Duke University affiliation. The book might have profited, by inclusion of further contributions and viewpoints from European and Asian scholars currently working on early

anthropoid fossils; there are only two chapters by Europeans: Franzen and Godinot.

Second, until recently there were relatively few fossils that were directly pertinent to discussions of anthropoid origins. With the evident lack of a close relationship between anthropoids and the well-known groups of euprimates from Eocene deposits in the western Holarctic, frustrated scholars had to be content with speculations about the origins of anthropoids based on the meager remains of *Oligopithecus* and parapathecids from the Egyptian Fayum, and the enigmatic Pondaung primates from the Eocene of Asia. Over the past 10 years, however, the search for potential stem anthropoids has intensified, with attention being focused especially on sites in Afro-Arabia and Asia. There is now a startling array of new and exotic forms added to the pantheon of possible contenders, all of which are discussed in this volume: *Catopithecus*, *Plesiopithecus*, *Proteopithecus*, *Serapia*, and *Arsinoea* from Quarry L-41 in the Fayum; *Algeripithecus*, *Djebelémur*, *Tabelia*, *Biretia*, and *Altialsius* from Paleocene and Eocene sites in other parts of North Africa; *Omanodon* and *Shizarodon* from the early Oligocene of Oman; and *Rencunius*, *Asiomomys*, *Eosimias*, *Altanius*, *Panobius*, and *Kohatius* from the Eocene of Asia. For those who want to know more about these latest discoveries, without confessing to not having kept up with the original literature, this book is an excellent starting point. A recent addition, not included here, however, is the intriguing *Wailekia* from the late Eocene of Thailand.

Third, the 19 individual chapters are uniformly of a high standard: well-written, peer-reviewed, tightly edited contributions by authorities with something worthwhile to say. The volume is loosely organized around several interconnected themes. A review of early euprimates from Europe and North America sets the scene (Rose *et al.*, Covert and Williams, Beard and MacPhee, Franzen), followed by a discussion of the dating, morphology, and evolutionary relationships of possible early anthropoids from Asia and North Africa (Holroyd and Ciochon, Ciochon and Holroyd, Gingerich *et al.*, Simons *et al.*, Gebo *et al.*, Godinot), and a detailed examination of the functional and phylogenetic implications of craniodental and postcranial characters (Kay and Williams, Ravosa and Hylander, Ross, Dagosto and Gebo, Ford). Interspersed among these chapters are more theoretically oriented papers on aspects of systematics (Rasmussen, Cartmill) and an extremely useful synthesis of Eocene mammalian paleobiogeography (Holroyd and Maas).

Most of the contributors to the volume, using various lines of evidence, conclude that tarsiers (and omomyids) are the sister taxon to anthropoids, thus providing further support for the consensus view of Haplorhini as a holophyletic concept. With this in mind, and the dawning realization that

there might truly be a fossil record for anthropoids dating back to the early part of the Paleogene, several authors discuss the notion that anthropoids might represent a third group of Eocene primates, separate from adapids and omomyids. This is a reasonable assumption, up to a point, but it may lead to faulty reasoning concerning the phylogenetic placement of particular fossils. There is an unstated tendency among paleontologists to assign fossils to crown groups, and since we have only the vaguest notion of what constitutes the ancestral haplorhine morphotype, it is very likely that haplorhines, not clearly identifiable as belonging to Tarsiiformes, will be recognized as anthropoids. The structure of the phylogenetic tree logically dictates, however, that there is at least a fourth group of Eocene euprimates out there—stem haplorhines. It should not be overlooked, despite the fact that it currently has no members. I suspect that there already exists more than a few stem haplorhine “moles” phenetically posing as anthropoids among the growing ranks of purported early anthropoids.

This is an excellent book. It represents one of only a handful of edited volumes published over the past 5 years that falls into my must-have category, and for anyone seriously interested in primate evolution it will undoubtedly prove to be an essential source for future reference.

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