



EVOLUTIONARY STUDIES

Do Elephants Have Knees? And Other Stories of Darwinian Origins. By Charles R. Ault Jr. 2016. Cornell University Press. (ISBN 978-1-5017-0467-3). 240 pp. Hardcover. \$27.95.

Lurking in the title of Charles R. Ault Jr.'s book are two intentional ambiguities. The “Darwinian origins” are both the origins of various evolutionary lineages—tetrapods, elephants, whales, and birds among them—and the origins of Charles Darwin himself: three chapters retell episodes from his childhood and his voyage aboard the *Beagle*. And the “stories” are both the sober narratives of historical and biological scholarship and the whimsical and playful tales of children’s literature, including both enduring classics such as Kipling’s *Just-So Stories* and Stevenson’s *Treasure Island* and relative

novelties such as Leo Lionni’s *Fish is Fish* and Bernard Wiseman’s *Morris the Moose*.

Beyond the triple motifs of Darwin, evolution, and stories, there is no overarching theme: *Do Elephants Have Knees?* is a collection of essays rather than a monograph. But that is not a fault, especially because each essay abounds with stories, anecdotes, and insights, often from unexpected quarters, along with diligent references to the scientific and scholarly literature relevant to the subject at hand. Occasionally whimsical illustrations by Jan Glenn add to the appeal of the text. A favorite, captioned “*Megatherium* imitating a small child,” shows a giant ground sloth pensively tasting a bouquet of flowers while a young girl enjoys a lollipop.

Consequently, it is safe to say that there is something for everybody—admirers of Darwin, aficionados of natural history and evolutionary biology, and connoisseurs of children’s literature alike—in *Do Elephants Have Knees?* Particularly appealing in its eclecticism was chapter 6, “Out on a Limb,” which combines a well-illustrated explanation of the value of sketching vertebrate limbs during a trip to the zoo—Ault plausibly suggests, “the hand trains the eye and the eye stimulates the mind” (p. 101)—with a reminder of the importance of limb homology in studying vertebrate evolution with a discussion of the work of animator Chuck Jones.

A weakness of the book is the treatment of systematics. In his discussion of whales, for example, it is unclear whether Ault intends to define artiodactyls in terms of possession of a double-pulley astragalus or to offer a character-based cladistic definition of the group. On the former, old-fashioned, approach, Artiodactyla turns out to be paraphyletic, because modern whales are descended from artiodactyls yet lack astragali altogether. On the latter, modern, approach, it is

not possessing the character but descent from ancestors possessing the character that matters. Accordingly, whales, both ancestral and modern, and even-toed ungulates are all assigned to the monophyletic Cetartiodactyla.

Ault might be thought to have preempted such criticism by observing that classifications are relative to purposes, citing a famous 1818 legal decision (*Maurice v. Judd*) that whales are, for the purpose of a statute governing the inspection of fish oil, fish. “Labeling a whale a fish is not wrong, just the consequence of categorizing according to a purpose not shared among evolutionary biologists,” he writes, jokingly adding, “Such impertinence!” (p. 151). But it isn’t impertinent for evolutionary biologists to have realized that for their purposes, “all true classification is genealogical,” as Darwin wrote, and it would have been pertinent for Ault to have clearly recognized as much in his book.

Ault writes elegantly and, at times, hilariously—as when he describes the protowhale *Basilosaurus* as resembling “a morbidly obese dachshund with the snout of a crocodile” (p. 146). But he also takes his time: the chapters of *Do Elephants Have Knees?* are ruminative, allusive, and digressive. A hurried teacher in need of a striking example to use in the classroom might do better to seek elsewhere—perhaps in Lewis I. Held Jr.’s *How the Snake Lost Its Legs* (2014) or Léo Grasset’s *How the Zebra Got Its Stripes* (2016), to name two recent popular books that similarly revel in the narrative possibilities afforded by evolutionary biology, but do so at a faster pace.



Glenn Branch
National Center for Science Education
Oakland, CA
branch@ncse.com