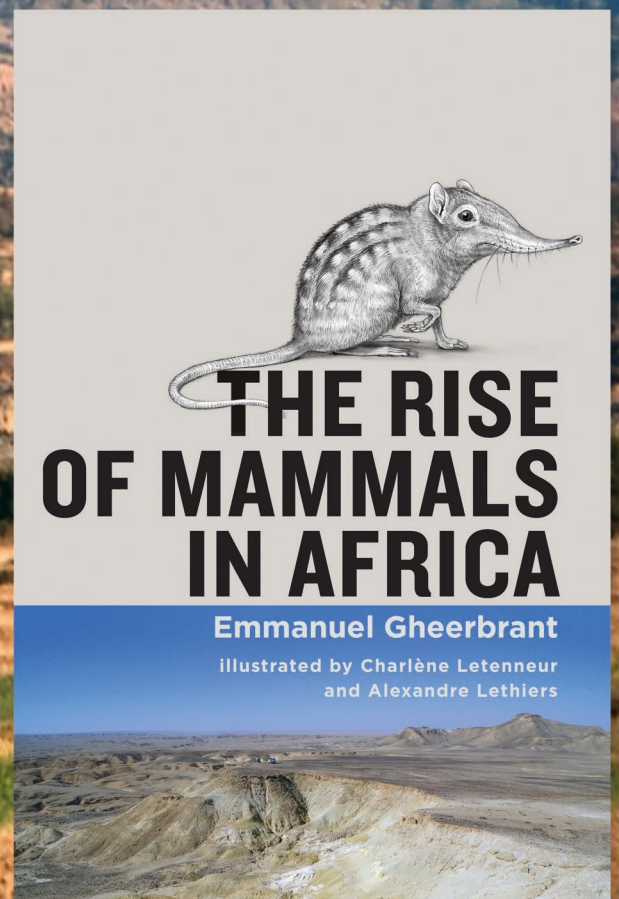
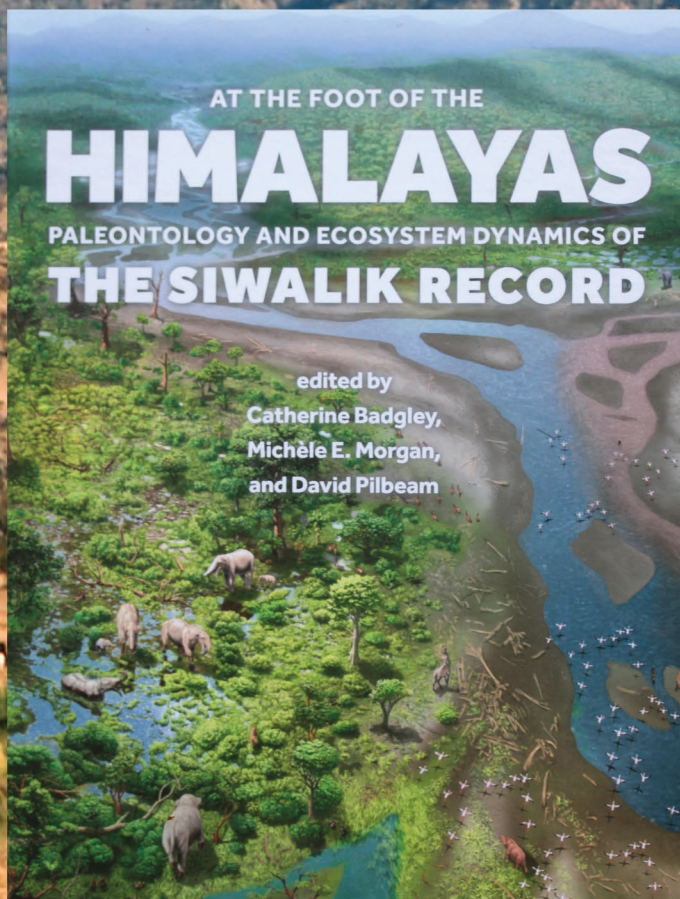


Living paleontology: Review of *At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record* and *The Rise of Mammals in Africa*

Pascal TASSY



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Living paleontology: Review of *At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record* and *The Rise of Mammals in Africa*

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ABSTRACT

Two books (Badgley C., Morgan M. E. & Pilbeam D. (eds) 2025. — *At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record*. Johns Hopkins University Press, Baltimore, xv + 553 p.); and Gheerbrant E. 2025. — *The Rise of Mammals in Africa* (illustrated by C. Letenneur and A. Lethiers). Johns Hopkins University Press, Baltimore, xvi + 265 p.) are reviewed. They are, each in their own way, fine illustrations of the vitality of an ancient science, palaeontology. They are very different. The first is a collective work on the evolution of Miocene faunas of the Siwaliks, written by specialists for specialists. The second is an introduction to the evolution of placental mammals and the role played by the African continent.

RÉSUMÉ

La paléontologie vivante: analyse de At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record et de The Rise of Mammals in Africa.

Deux livres (Badgley C., Morgan M. E. & Pilbeam D. (eds) 2025. — *At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record*. Johns Hopkins University Press, Baltimore, xv + 553 p.); et Gheerbrant E. 2025. — *The Rise of Mammals in Africa* (illustrated by C. Letenneur and A. Lethiers). Johns Hopkins University Press, Baltimore, xvi + 265 p.) sont présentés et analysés. Chacun à sa manière est une belle illustration de la vitalité d'une vieille science, la paléontologie. Ils sont très différents. Le premier est un ouvrage collectif sur l'évolution des faunes miocènes des Siwaliks, écrit par des spécialistes pour des spécialistes. Le second est une introduction à l'évolution des mammifères placentaires et le rôle joué par le continent Africain.

KEY WORDS

Fossils,
Siwaliks,
Africa,
evolution,
Cenozoic.

MOTS CLÉS

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These two books are, each in their own way, illustrate vitality of an ancient science, palaeontology. Both were issued in 2025 by the same publisher, Johns Hopkins University Press. Yet, they are very different. The first is a collective work on the evolution of Miocene faunas of the Siwaliks, written by specialists, for specialists. The second is an introduction to the evolution of placental mammals and the role played by the African continent; it is the work of one author and two illustrators. But in both cases, we learn how field research over the last half-century has revolutionized our understanding of the history of life on Earth.

The book *At the foot of the Himalayas. Paleontology and ecosystem dynamics of the Siwalik record* presents the results of three decades of fieldwork (1973-2000) in the Potwar Plateau (Pakistan) led by David Pilbeam in association with the Geological Survey of Pakistan, known as the “Yale-GSP project” followed by the “Harvard-GSP project”. This project already yielded many articles on the geology and paleontology of the Potwar Plateau, such as Behrensmeyer & Tauxe (1982), Barry (1995) and Flynn (2003) but the volume presents an update on the taxonomic assessments and provides a synthesis of the stratigraphic and palaeo-ecological evolution of the fauna between 18 and 6 million years ago. This is an impressive volume remarkably edited by Catherine Badgley (University of Michigan), Michèle E. Morgan and David Pilbeam (Harvard Peabody Museum). It contains 27 chapters written by 33 authors from eight countries. It is divided in three parts. The first part, “Framing Chapters”, sets the scene from different viewpoints – geology, chronology, taphonomy, paleoecology (nearly 100 pages); the second, “Faunal Chapters” is an up-to-date presentation of the taxa, from molluscs (chapter 6) up to bovids (chapter 23) – nearly 300 pages –; the last part, “Synthetic Chapters”, offers a brilliant integration of the various data (nearly 150 pages). Each taxonomist will read directly the chapter concerning his preferred group. Yet I surmise that many will have an eye on the primates (chapter 12 by Kelly *et al.*). They will learn that the orangutan affinities of the famous *Sivapithecus* Pilgrim, 1910 (Pilbeam 1982) are questionable. Not surprising, rodents are especially detailed (chapter 11 by Flynn *et al.*: 163-198). In chapter 22 on giraffoids (by Solounias & Danowitz) – 37 species are recognized and nine are new and not yet fully described –, the genus *Bramatherium* is listed. This *Bramatherium* Falconer, 1845 made me think of the early beginning of paleontology and evolutionary thinking. It is a stratigraphic forerunner of the Pleistocene *Sivatherium*. It happened that this last genus, described by Falconer and Cautley in 1836, was the subject of a vivid controversy between Blainville and Geoffroy Saint-Hilaire which took

place in Paris in 1837, at the Museum (Blainville 1837; Geoffroy Saint-Hilaire 1837). In these remote times, no giraffe was known in Asia, but bovids were. For Blainville, a fixist, *Sivatherium* was a strange antelope far different from a giraffe. For Geoffroy it was indeed a giraffe, different from extant giraffes because of evolution. For him the time was ripe to study animals through “the history of their slow and successive modifications, under the influence of simultaneous changes in the surrounding environments”. Exactly what is done today.

Especially informative and interesting are the synthetic chapters of the last part. The evolution of the faunas and the composition of major groups, that is, the community structure and patterns of change in correlation with the reconstruction of the successive paleoenvironments. The unprecedented detailed work done in the Potwar Plateau is displayed in chapter 25 in which Morgan *et al.* analyze six mammalian paleocommunities dating from between 14,1 and 7,4 Ma, each representing a 100-ky time interval. This is brilliant chapter, but all synthetic chapters are brilliant. It is truly fascinating to discover how a small geographical area such as the Potwar Plateau reveals, step by step, the faunal evolution that developed on a global scale from the Middle Miocene to the Upper Miocene.

In the last chapter, an epilogue, Badgley *et al.* consider future research, notably in the Kamliar Formation (*c.* 18-14 Ma). Indeed after Falconer's expeditions in the 1830s and Pilgrim's in the 1910s-1920s – to name but two of the numerous researchers who have explored the Siwaliks –, and after the impressive work done by the Yale/Harvard GSP project, the foot of the Himalayas has not revealed all his secrets.

In *The Rise of Mammals in Africa* Emmanuel Gheerbrant (CNRS-Muséum National d'Histoire Naturelle) explains the role of Africa in the beginning of the evolution of placental mammals during the Paleogene. In his prologue, Gheerbrant effectively starts with Hemingway's beloved “big five”: the lion, leopard, elephant, rhinoceros and buffalo. These five placental mammals are thus a key to understanding the evolutionary history of modern mammals and the place occupied by Africa. However, what interests the author is not so much how these iconic animals emerged, but rather the role played by their distant precursors from the early Cenozoic period, which are as poorly understood as they are rich in information. All over the world, palaeontology has its readers, enthusiasts who want to go beyond Wikipedia. This book is primarily aimed at them. Others will be surprised to discover what mammals are to a palaeontologist.

The first chapter, “Origin and first diversification of placental mammals”, sets the scene by reviewing the key features of placental evolution on a global scale. The second chapter, “The African theatre of origins”, tells the story of the African continent over eighty million years, between 110 and 23 million years ago (Ma). The third chapter, “Mammalian paleontology in Island Africa”, is a sort of tour of African paleontological sites explored since 1877, where we see that the most crucial discoveries have taken place over the last thirty years, to which Emmanuel

Gheerbrant has contributed. The fourth chapter, “Mammal succession and evolution in Island Africa” is a highlight. It presents, in chronological order, the establishment of the clades of mammals, large and small, whether or not they belong to current groups. There is a biodiversity here that the zoology of living species cannot suggest. This taxonomic diversity is also a festival of names unknown to non-mammalogists, such as *Daouitherium rebouli* Gheerbrant & Sudre, 2002, *Abdounodus hamdii* Gheerbrant *et al.*, 2001, *Seggeurius amourensis* Crochet, 1986, or even *Eritreum melakeghebrekristosi* Shoshani *et al.*, 2006... and many more besides. The second tour de force is the subject of the following chapter, “Evolution and relationships of the major endemic groups in Island Africa”. This time, the central theme is taxonomic and evolutionary. The origin and destiny of the major mammal groups are analyzed through the concepts of endemism (local evolution, hence the omnipresence of the concept of “Island Africa”) and dispersal. Here again, the non-specialist readers will find themselves immersed in large groups of mammals with slightly more familiar names, such as Afrotheria, Afroinsectiphilia, or Anomalumorphia. The sixth and final chapter, “An overview of mammal evolution in Island Africa”, is a summary of the above, approached from the perspective of palaeobiogeography, which the attentive reader will already have understood to be central to the entire work. In his epilogue, Gheerbrant asks the question “What is next in the quest for African origins?” The conclusion comes as no surprise: more than ever, new exploration and field research are needed if we are to unlock the secrets still hidden in the African soil. Indeed, despite the profusion of new discoveries presented by Emmanuel Gheerbrant (many of them were due to the author himself), there are still countless fossils to be found, a conclusion already drawn from the reading of the book on the Siwaliks. This epilogue is not the very end, as the reader is treated to a 44-page appendix: the list of species discovered in the Paleogene of Africa. This is a valuable resource for any student and researcher wishing to update their knowledge.

Ultimately, enriched by so much new information, the reader continues the reflection initiated by the epilogue. Many discoveries hinge on very little. Sometimes beautiful skull remains, often a few teeth, or even just one: these are the starting points for questioning ideas previously taken for granted. As always, new discoveries raise new questions. To illustrate this point, I will give just one example. The genus *Arsinoitherium* Beadnell, 1902, a very large beast described at the beginning of the 20th century in the Oligocene of Egypt, is well known to young enthusiasts of “prehistoric animals” because of its unusual appearance. It has long been isolated within the evolution of Mammalia. Today, it is linked to the small *Stylolophus* Gheerbrant, Schmitt & Kocsis, 2018 described in the Eocene of Morocco in 2018 (Gheerbrant *et al.* 2018). *Stylolophus* also resembles the Palaeomasiidae, a family known in Turkey and Romania (whose affinities have long remained conjectural), whose relationship to *Arsinoitherium* has been confirmed. It fol-

lows that palaeogeography poses a problem. Although there is a province known as Balkanatolia (Licht *et al.* 2022), it appears to be quite separate from the “African island”. As Gheerbrant has pointed out on several occasions, Africa’s isolation did not prevent necessary faunal exchanges throughout the Paleogene period before the eastern Tethys Sea finally closed. It was therefore in relative isolation. The terms of exchange remain mysterious. New deposits and new taxa will inevitably lead to the reconsideration of certain hypotheses. It is sometimes difficult to distinguish between the palaeobiogeography of localities and the palaeobiogeography of taxa: a problem that remains difficult to resolve.

All of this is illustrated with maps, phylogenetic trees, anatomical drawings and reconstructions. Sixteen plates offer numerous colour photographs of deposits (exoticism guaranteed) and a few iconic fossils. It is also worth noting the quality of Charlene Letenneur and Alexandre Lethiers’ drawings and diagrams in the text, which are both educational and aesthetically pleasing. Incidentally, readers will grasp the art of reconstruction by comparing plate 9 which shows the fossils of *Ocepeia daouiensis* and figure 4.6 which presents the reconstruction, or plate 10 and figure 4.9 (*Phosphatherium escuillei*). The book’s format and layout make it very pleasant to handle, which is an added bonus.

Both books are great publishing successes. It is fortunate that publishers, in this case Johns Hopkins in Baltimore, are still able to produce such books despite the anti-science wave that now characterizes our era, particularly in the United States. Let us hope that other books will follow: paleontology is a never-ending science.

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