

f13 The marsupials

< opossums, convergence, island continents, Panama land bridge >

The *mise en scène* does not determine the players.¹

Marsupials are mammals characterized *not* by a pouch (*marsupium*) that some but not all have but by premature birth of the young and the born's further development after each has moved itself sluglike to where it has found and attached its mouth to a lactating nipple (*mamma*) on the mother.

Marsupials of the Americas (the ameridelphians)² and of Australia (the australadelphians),³ living and fossil are distinctly different in the details of their ankle bones.⁴ (Almost true—one small group: the living *Dromiciops australis*, which inhabit the temperate rainforests of southern Chile, and its fossil relatives in the Microbiotheridae there, are australadelphians.) The ankle bone of the australadelphians is the more evolved. Is this enough to prove that australadelphians evolved in the Americas and migrated across Antarctica to Australia when in the Cretaceous these continents were one? Patricia Vickers-Rich and Thomas H. Rich suggest, in their richly illustrated book *Wildlife of Gondwana*, that a definitive answer must await the collection of additional fossils.⁵

In Africa, marsupial evolution and radiation was in competition with placentals that had entered the continent with them. Marsupials were extinct in Africa when that continent was again joined by land to the northern continents in the Oligocene.

In South America (where yet exist 7 species of the family Caenolestidae and about 65 species of the “opossum” family Didelphidae) there is a good fossil record of marsupial evolution. The pioneer marsupials that entered South America were carnivores. The placentals that entered South America with them were herbivores. The South American marsupials evolved rapidly and radiated into many carnivore⁶ and, also, herbivore species. The South American placental mammals remained herbivores in their evolution and radiation.

In Australia (where yet exist some 175 marsupial species), the fossil record is relatively poor for the origin of the marsupials. Yet, for the visibility there of kangaroos, koalas, wallabies and wombats, Australia and Tasmania (where lives the largest marsupial carnivore, the stout, fox-terrier sized “Tasmanian devil,” *Sarcophilus harrisii*)⁷ in popular thought is the proverbial home of marsupials in their existing distribution and variety. So we know they fared well there (except for the hapless fallen 20 meters and trapped, along with a sampling of some now extinct, that left their died-of-thirst remains between 200,000 and 780,000 years ago in Leana's Breath cave, Nullarbor plain)—and not in competition with placentals.⁸ As a matter of record, the only prehistoric placentals in Australia were flying mammals (the bats) and late arriving humans and the land animals which (invited and uninvited) accompanied them (the dog and the rat). From the Paleogene, Australian marsupial fossils found are mostly teeth. In 2008, Ben Kear has excavated from late-Oligocene limestone, northeastern Queensland, the skull and partial skeleton of a non-hopping (primitive) kangaroo *Nambaroo gillespieae* (like extant forest dwelling musky-rat kangaroo).⁹ Stephen Wroe has recently described fossil skeletal material from Miocene and Oligocene deposits, Riversleigh, northwestern Queensland, and late-Paleocene deposits, Murgon, southeastern Queensland.¹⁰ However, a single jaw and a cranial fragment of a primitive platypus, *Steropodon galmani*, is the lot from the Cretaceous.

Marsupial and placental stocks were equally diverse in the fossil record at the beginning of the Cenozoic in the northern continents. From there, conventional wisdom has it, the marsupials were the vanguard of outward displaced populations which entered the southern continents before these became island continents. In these havens, the marsupials could diversify into those niches that, in the northern continents, became occupied by the placentals.¹¹ □