Z. Morph. Anthrop.	71	2	135—142	Stuttgart, August 1980

Dental and cranial adaptations in Eocene Adapidae

By **Philip D. Gingerich**, Ann Arbor

With 2 figures in the text

Summary: There is no animal living today that makes an ideal model for what an Eocene adapid was like in terms of its behavior and adaptations. Nor can one living model adequately represent a group as diverse as the Adapidae. Adapids possessed a mosaic of anatomical features, some primitive and some relatively advanced for their time. They share a few specializations (chiefly postcranial) with lemuroids, and at the same time share a number of advanced specializations with anthropoids. Most adapids weighed between 0.6 and 8.0 kg, they had relatively small brains by modern standards, their dentition indicates a range in dietary adaptations from frugivory to folivory for most species, and at least one genus *(Adapis)* was sexually dimorphic. Considering all of these features, an average adapid may have resembled the hypothetical combination of a gentle lemur and a squirrel monkey.

Zusammenfassung: Die Adapidae besaßen ein Mosaik primitiver und relativ evoluierter anatomischer Merkmale. Besonders im postcranialen Skelett weisen sie zum einen einige Spezialisationen der Lemuriformes auf, zum anderen evoluiertere Merkmale der Simier. Das Körpergewicht der meisten Adapiden lag zwischen 600 und 8000 g. Sie hatten relativ kleine Gehirne, ihre Bezahnung läßt auf eine frugi- bis folivore Ernährung schließen. Zumindest ein Genus *(Adapis)* verfügte über einen Sexualdimorphismus. Unter Berücksichtigung aller Merkmale könnte der durchschnittliche Vertreter der Adapidae einer hypothetischen Primatenform aus der Kombination von Totenkopfaffe und einer kleinen Lemurenspezies geähnelt haben.

The primate family Adapidae is first known from the lower Eocene of Europe and North America. At first appearance, the European radiation is more diverse (including *Donrussellia*, *Protoadapis*, and *Pelycodus*) than that in North America (where only *Pelycodus* is represented). This suggests that Europe was possibly closer to the center of origin of the family than North America was. Other circumstantial evidence suggests that the origin and initial radiation of Adapidae was probably in Africa and/or South Asia during the late Paleocene or earliest Eocene. Some 17 genera and 48 species of adapids are known from the Eocene of Europe, Asia, Africa(?), and North America, compared with a single Oligocene genus *(Oligopithecus)* with one species from Africa, and two relict genera *(Indraloris* and *Sivaladapis)* with three species in the Miocene of South Asia (GINGERICH & SAHNI, 1979).

The phylogenetic relationships of Adapidae in Europe and North America have been reviewed recently (GINGERICH, 1977, 1979; GINGERICH & SIMONS, 1977). In this paper I would like to discuss in general terms some of the dental and cranial adaptations of Eocene Adapidae.

0044-314X/80/0071-0135 $ 2.00

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