

The following sources, dating back as early as 1969, beg to differ



Cynodont Reptile with Incipient Mammalian Jaw Art

Alfred Sherwood Romer

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Evolution of the Mammalian Middle Ear

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ABSTRACT The structure and evolution of the mandible, suspensorium, and stapes of mammal-like reptiles and early mammals are examined in an attempt to determine how, why, and when in phylogeny the precursors of the mammalian tympanic bone, malleus, and incus (postdentary jaw elements and quadrate) came to function in the reception of air-borne sound. The following conclusions are reached:

It is possible that at no stage in mammalian phylogeny was there a middle ear similar to that of "typical" living reptiles, with a postquadrate tympanic membrane contacted by an extrastapes. The squamosal sulcus of cynodonts and other therapsids, usually thought to have housed a long external acoustic meatus, possibly held a depressor mandibulae muscle.

In therapsids an air-filled chamber (recessus mandibularis of Westoll) extended deep to the reflected lamina and into the depression (external fossa) on the outer aspect of the angular element. A similar chamber was present in sphenacodontids but pterygoideus musculature occupied the small external fossa. The thin tissues superficial to the recessus mandibularis served as eardrum. Primitively, vibrations reached the stapes mainly via the anterior hyoid cornu, but in dicynodonts, therocephalians, and cynodonts, vibrations passed mainly or exclusively from mandible to quadrate to stapes and the reflected lamina was a component of the eardrum.