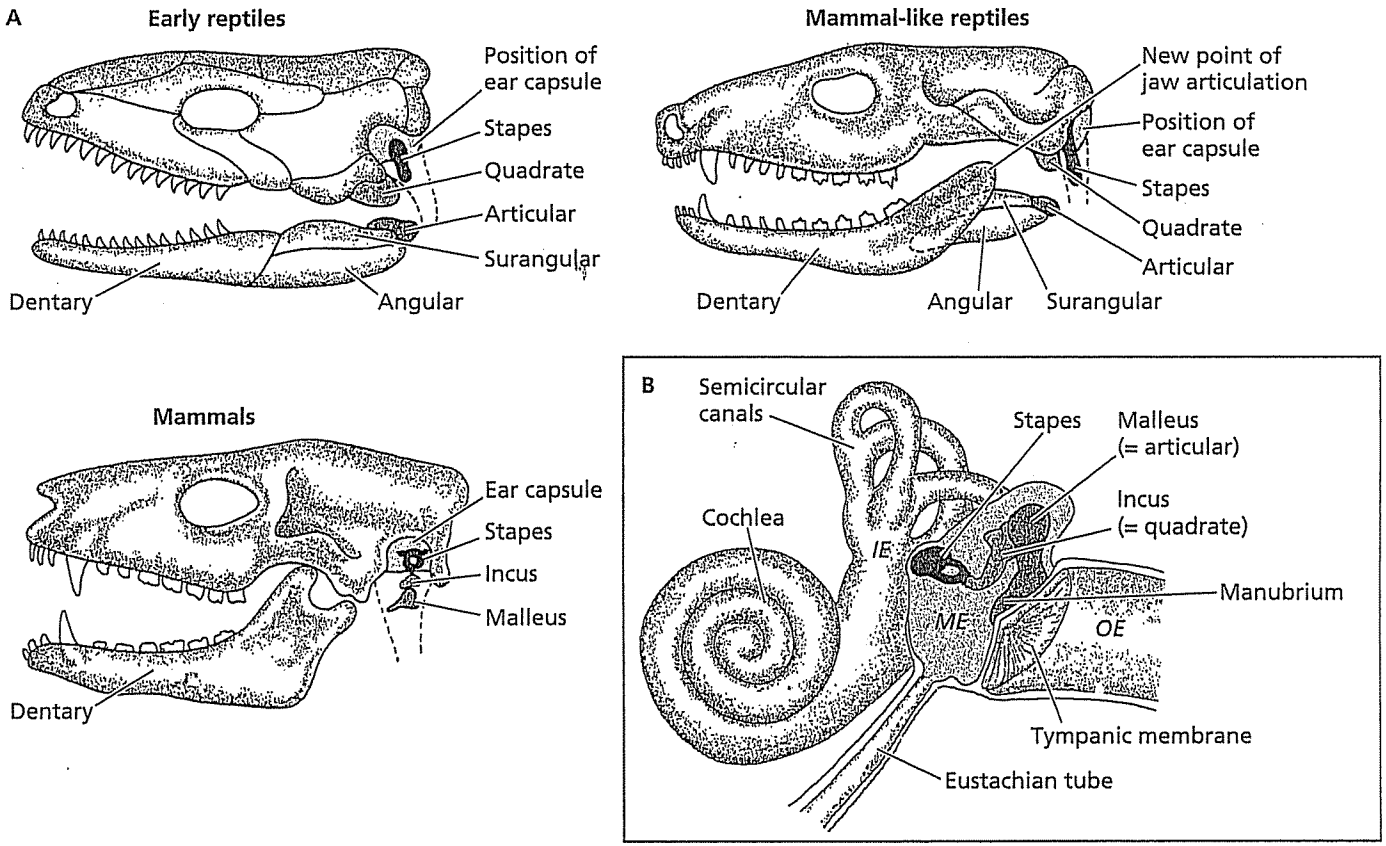

Figure 4.5 Transition of the jaw and history of the ear ossicles. Please note that we use traditional terminology in the following caption as pertains to Early Reptiles (= amniotes), and Mammal-like reptiles (= synapsids). (A) Simplified transition of the jaw structure from reptiles through mammal-like reptiles to mammals, showing the increase in size of the dentary bone and decrease in postdentary bones. The quadrate and articular bones of mammal-like reptiles eventually changed from their dual role of jaw joint and sound transmission to solely sound transmission in mammals. (B) Outer ear (*OE*), middle ear (*ME*), and inner ear (*IE*) of modern mammals. The tympanic membrane is now supported by the tympanic bone, derived from the former reflected lamina of the angular bone (see figure 4.6). The articular bone has become the first of the three small bones (ossicles) in the middle ear, specifically, the malleus. The second ossicle, the **incus**, is derived from the quadrate bone. The mammalian stapes, much reduced in size from the reptilian stapes, connects the incus to the inner ear through the fenestra ovalis (the "oval window"). Thus, in mammals, the stapes is not connected directly to the tympanic membrane as in reptiles, but instead is connected through a lever system of two small bones—the malleus (former articular bone) and the incus (former quadrate bone)—the familiar "hammer, anvil, and stirrup." *Adapted from G. Simpson and W. Beck, 1965*, Life, *2nd ed., Harcourt, Brace, World.*