## THE RISE OF THE MAMMALIA

rudimentary incisors observed by Rheinhardt. In the aberrant Orycteropus (Aard-Vark), with ten adult teeth, Thomas finds seven milk teeth behind the maxillary suture (thus taking us into the molar region of the typical heterodonts). The last of these milk teeth is large, and two-rooted; behind this are three large permanent posterior teeth, apparently belonging to the first series. The large lateral tooth of Bradypus is suggestive of a canine. From this rapidly accumulating evidence it appears probable that the ancestral Edentates had four incisors, a canine and eight or more teeth behind it, the double succession extending well back so that the first series did not become permanent at the fifth tooth, behind the canine as in the Marsupials and higher Placentals. If these are primitive conditions, as seems probable from comparison with fossil Edentates, they carry the divergence of the Edentates, like that of the Cetaceans, back into the Mesozoic period. Comparative anatomy and embryology thus point back to highly varied branches of a generalized placental heterodont stem in the Mesozoic, and a much earlier divergence than we formerly imagined. Now let us see what the early Mesozoic mammals point forward to.

There are three distinct and contemporary Jurassic types, the Multituberculates, the Triconodonts, and the Trituberculates. Are not these the representatives of the Prototheria, Metatheria, and Eutheria? In the archaic Multituberculates we have seen a monotreme type of jaw and vestiges of a typical ancestral formula. The Triconodonts are a newer group, perhaps derived from the Dromotheriidae (incipient Triconodonts) of the Trias although these appear to be aberrant; the typical forms extend from Amphilestes to Triconodon, and exhibit the first stages of development of the inflected Marsupial jaw. The Trituberculates include the Amphitheriidae and Amblotheriidae with true tuberculo-sectorial lower molars, like those of modern Insectivores; they alone exhibit the typical angular placental jaw, - no reason can be assigned for calling them Marsupials, excepting the traditional reverence for the Marsupial stem theory. Now, it is very significant that the average dentition of these old but highly

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