

diverse forms, namely, Multituberculates, 3. ? 4. 6., Triconodonts, 4. 1. 4. 7., Trituberculates, 4. 1. 4-5. 8., is also the dentition to which the existing mammals apparently revert.

The third problem is from what type of molar tooth did the mammalia diverge?

*Primitive Trituberculism.*

There is a very general tendency among the vertebrates as a whole, fishes and reptiles as well as mammals, to form what are called 'triconodont' crowns by the addition of lateral cusps to simple cones. In the mammals alone, these three cusps pass into higher stages of evolution, through what is called 'trituberculy' in which these cusps form a triangle. The discovery of primitive wide-spread trituberculy by Cope, was a great step forward. In looking over the odontographies of Cuvier, Owen, Tomes and Baume, we find there is no suspicion of this common type around which the highly diverse mammalian molars centre. The molars of the clawed and hoofed mammals can now be compared, as we compare the hand or foot of the horse with that of the cat, because they spring from a common type. All the specialized mammalian series, ungulates, primates, carnivores, insectivores, rodents, marsupials, are found playing similar yet independent adaptive variations upon one type. We thus have a key to the comparison of all molars with each other, and with the reptile cones; take the human grinders for example: the anterior outer cusps in the upper jaw and the anterior inner cusps in the lower jaw are homologous with each other and with the reptilian cone. Leaving aside for the moment the Multituberculates and Monotremes, every known triassic, jurassic, cretaceous and basal cocene fossil (excepting *Dicrocynodon*) is in some stage of trituberculy; all the known cretaceous molars are simple triangles above; all later fossil mammals also converge to trituberculy, until in the lowest cocene, every molar is tritubercular, and the early stages of divergence are so similar that it requires a practiced eye to distinguish the molar of a monkey from that of a horse. Embryology supports the evidence of these fossil series; thanks to the recent admirable researches