

stance observed by M. Agassiz, that all, or nearly all, the fossil fishes found in strata in and below the magnesian limestone, are heterocercal, or have their tails unequally bilobate, like the shark, sturgeon, lepidosteus, &c. (*fig. 29.*); but this form of tail is rarely found in the oolitic and superior systems of strata.

What is the general determining cause or function of this remarkable heterocercal structure in fishes is at present matter of conjecture. In the shark and sturgeon it is accompanied with a remarkable position of the mouth; but as this is not the case in the recent lepidosteus, or the fossil palæoniscus, it is an unsafe basis of reasoning. Perhaps the true solution may be found in the analogy which placoid fishes in general, and certain ganoid fishes, present to the class of reptiles; an analogy perceived by Linnæus, and strongly corroborated by the recent researches of Agassiz, as to the structure of the teeth, cranial sutures, air-bladder, &c. That the upper lobe of the heterocercal tail may really be viewed as the analogue of the real tail of reptiles, appears from this, that the *vertebral column is continued into it*. We, therefore, view this remarkable structure as a *character of the organisation of certain ancient geological periods*, and refer to the scaly surface of the upper caudal lobe of tetragonolepis, and other oolitic genera, as indications of its gradual change to the truly double or homocercous tail fin (*figs. 27, 28.*), which is one of the *characteristics of the existing period*.

All the fishes of the silurian, carboniferous, saliferous, and oolitic systems, and two thirds of those in the cretaceous system, are stated by Agassiz to belong to extinct genera.

Reptiles.

Of the existing four orders of reptiles, — batrachida, chelonida, ophidia, saurida, — the two former are partly aquatic, partly terrestrial; the two latter principally tenants of the land. Agreeably to the general rule, the ter-