

be thought of for a moment, since many of the bones (*e.g.* along the top of the skull) arise in the skin.

Gegenbaur has been a powerful exponent of the idea that new structures do not arise *de novo*, but from alterations in pre-existing structures. Thus he has been a supporter of the theory that the limbs of vertebrates have arisen from an alteration in the position and function of some of the branchial or visceral arches whose original use was to support gills.

As another instance we may refer to the musculature of the tongue. This does not occur in fishes, whose tongues are all non-muscular. The mobility begins in amphibians, and Gegenbaur has shown that the muscles are at first too small and weak to be used to move the member. They serve in the young tadpole merely to compress the glands of the tongue, but they grow in strength and take on a new function which has been of great importance to amphibians and higher animals.

The basis of a natural classification, and what comes to the same thing, a probable pedigree, has been found in the recognition of homologous structures in different organisms. It is therefore of great importance that the homologies be secure, and it is distinctive of modern morphology that the question of the criteria of homology is not treated in the easy-going fashion that was for a time prevalent.

Historically, the case stands thus. To Owen, homology meant anatomical correspondence in the relative position and connections of parts. Gradually the anatomical correspondence found embryological corroboration, and this was most welcome. But the modern enthusiasm for embryology and the influence of the Recapitulation Doctrine have led to a predominance of the embryological, and a partial superseding of the anatomical criteria. This has often given rise to a wildness of speculation as to pedigrees (phylogeny) which leaves the anatomist bewildered.

From this exaggerated confidence in the embryological revelation of relationships, the inevitable reaction has ensued. Thus Prof. E. B. Wilson gives many examples which show that "embryological de-