

The resemblance in origins in these examples might suggest homology with the holocephalan muscles.

On the other hand, the levator maxillae superioris lies, always, caudad or superficial to the R.maxillaris V., whilst these holocephalan muscles lie rostrad and deep to that nerve. The development of the levator maxillae superioris from the upper portion of the mandibular muscle plate appears to render it quite impossible that the muscle should acquire a situation rostrad and deep to this nerve. For the present, the most that can be said is that these muscles are derived from the same part of the muscle plate as the pterygoideus.

The pterygoideus. That this is the homologue of the pterygoideus of the plagiostomes seems to be quite satisfactorily proven by its relation to the mandibular and maxillary rami of the Vth nerve, and by a comparison with the pterygoideus muscle in *Chiloscyllium*.

The quadrato-mandibularis muscle lying behind the pterygoideus, with the nerve between them, is very much reduced and would appear to represent the pars posterior only of the plagiostome muscle.

It will be noted that in these last two muscles the Holocephali again present resemblances rather to the Amphibia and Teleostomi than to the rest of the Elasmobranchii.

From the foregoing review it is apparent that in their epiarcualia obliqui, epibranchial spinal, coraco-branchialis and hypobranchial spinal muscles the Holocephali are essentially elasmobranchial in character. In the form of the branchial levators, the levator operculi and the interhyoideus they resemble the teleosts. In the form of the interbranchial muscles, the adductors of the jaws and the depressor mandibulae they resemble the amphibians.

### THE MUSCLES OF THE BONY FISHES.

The whole of the teleostomes are, in their cephalic musculature, essentially similar. There are differences between individual members of the Teleostei as great as those between them, as a group, and *Polypterus* and/or *Lepidopterus* and *Amia*; nor, with the possible exception of the branchio-mandibularis muscle, are such differences of a more significant character.

#### TELEOSTOMES.

		Branchial Segments.	Hyoid Segment.	Mandibular Segment.
Superficial constrictors	Dorsal ..	Absent	Lev.operc.hyohyoideus	Absent
	Ventral	Absent	Hyohyoideus Protractor	hyoidei Submentalis Interm.post.
Deep Constrictors	Dorsal ..	Absent	Absent	Dil.operc.
	Ventral ..	*Subarcualis transv.	Absent	Absent
Levators .. . . . .		Lev.arc.branch	Add.arc.pal., Add.hyom., Add.operc.	Lev.arc.pal.
Epibranchial Spinal Muscles ..		Retr.dors.arc.br.	Absent	Absent
Adductor Muscles	Dorsal ..	Epiarc.obliqui, transversi and recti	Absent	Pterygoideus
	Middle ..	Add.arc.br.	Absent	Temporomassetericus
	Ventral ..	*Subarcualia obl.	Absent	Absent
Ventral Interarcual Muscles ..		*Subarcualia recti	Absent	Absent
Depressors .. . . . .		Claviculo-branch.	Absent	Absent
Hypobranchial Spinal Muscles		Claviculo-hyoideus	Genio-hyoideus	Absent

\* These muscles are derivatives of, or substitutions for, the interbranchialis muscles of the Plagiostomes. They develop from the deep portion of the primordial muscle plate.