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**Publication/Creation**

[Place of publication not identified] : The Record, 1907.

**Persistent URL**

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# Teleosts With a Conus Arteriosus Having More Than One Row of Valves

By HAROLD D. SENIOR

Reprinted from THE ANATOMICAL RECORD, Vol. 1, No.  
4, May, 1907, pages 83-84

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TELEOSTS WITH A CONUS ARTERIOSUS HAVING MORE THAN ONE  
ROW OF VALVES. By HAROLD D. SENIOR. *Washington University,  
St. Louis, Mo.* With 1 figure.

The teleostean genera believed to be most closely related to *Amia calva* are *Elops*, *Megalops*, *Tarpon*, *Albula* and *Pterothrissus*, the first three belonging to the family Elopidae and the last two to the Albulidae. In all these genera the heart has a distinct muscular conus arteriosus which is, except in the case of *Elops*, furnished with two transverse tiers of valves.

That *Butirinus* (*Albula*) differed from the majority of teleosts in having two tiers of valves at the arterial end of the heart, was pointed out by Stannius in 1846. An excellent description of the heart of this fish was given by Boaz in 1880 in the light of Gegenbaur's important work showing the essential difference between conus and bulbus.

Johannes Mueller, *Ueber den Bau und die Grenzen der Ganoiden*, 1846, remarks that *Elops*, among other teleosts examined by him, has only one tier of arterial valves, a statement which has been verified by an examination of two specimens of *E. saurus*.

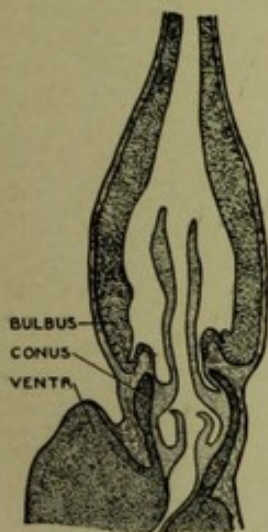
A description of the conus in *Tarpon atlanticus* appeared in the Biological Bulletin for last February, and a note on the conus of *Megalops cyprinoides* will appear in the same journal in April or May. The heart from a specimen of *Pterothrissus gissu* (Hilgendorf) measuring 24.5 cm. including caudal fin is here described for the first time.

The conus arteriosus in *Pterothrissus* is plainly visible from the exterior, although its base is, ventrally and to the right, to some extent buried in the ventricle. Dorsally and to the left the conus is in contact with visceral pericardium practically from end to end. The bulbus,



which is not so dilated as is usual in teleosts, very slightly overlaps the adjacent portion of the conus.

The conus valves are arranged in two tiers, each tier having a right and left cusp meeting, when in apposition, at the mid-sagittal plane. The accompanying figure, showing the ventral surface of a frontal section (X 10) passing through the middle of the valves, indicates the general relations of the conus. The prodigious depth of the distal cusps as compared to the shallower corresponding cusps of *Albula*, *Megalops*, and *Tarpon*, is the most remarkable feature in this heart, and strongly reminds one of the deep distal cusps in *Amia*.



Frontal section of the conus arteriosus in *Pterothrissus*.

The conus is proportionately longer in *Pterothrissus* than in any other form of teleost. The average length of conus as compared with ventricle (measured from the apex to the root of conus) is as 1 to 3.5. In *Megalops* this proportion is 1 to 4 (judging from the figures given by Boaz the proportion is about the same or slightly less in *Albula*); in *Tarpon* the proportion is 1 to 4-5.

The atrio-ventricular valve in *Pterothrissus* is placed to the left of the midline and has four cusps.

