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FURTHER STUDIES ON THE *TRUNCUS ARTERIOSUS* OF *RANA*

By

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(*Four Text-Figures*)

Since studying the *Truncus arteriosus* of *Rana* found in the eastern portion of the United States, I have had an opportunity to investigate two common species found in Japan, *Rana temporaria* and *Rana nigromaculata*. Both species have been checked with the findings made in the North American forms. As was to be expected, *Rana temporaria* as it exists in Japan was found to be identical with *Rana temporaria* of Europe. Consequently there is nothing new to report concerning this species in comparison to the European *Rana temporaria*. However, a slight variation occurs in checking it with *Rana pipiens* and *sphenocephala*.

A cross section of *Rana temporaria* (Fig. 1) shows the anterior bulbus valves presenting close similarity to *Rana pipiens*. The main difference is in relation to *Valve 1*.

In this series the valve is composed of a distinct dorsal portion (*Valve 1. B*); the ventral portion or *Valve 1. A* being fused with the *Septum bulbi* and the beginnings of the *Septum principale*. BOAS ('82) has pointed out the fact that *Rana temporaria* in some cases deviates from the normal condition, in that the *Septum principale* does not divide the valve into two pockets. It is to be remembered also, that *Rana catesbeiana* differes in this respect though in a slightly different manner, since, in that species the *Septum principale* fails to join up with the *Septum balbi* and *Valve 2*.

1) Conribution No. 11, from the Zoological Institute, Faculty of Science, Hokkaido Imperial University, Sapporo.

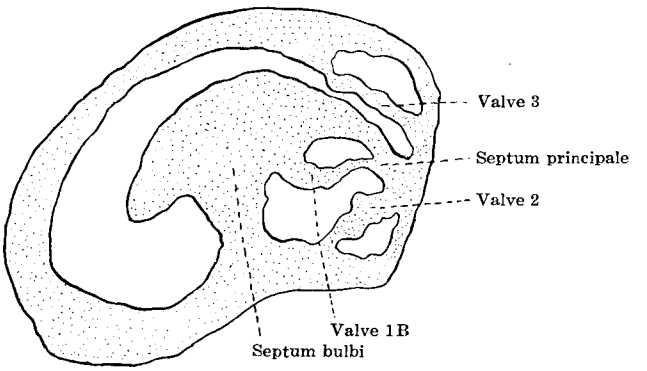

Fig. 1. Cross section through the anterior *Bulus cordis* valves of *Rana temporaria*. ca. ×10.

In *Rana nigromaculata* an apparently abnormal situation exists. (Fig. 2.) We find that *Valve 1* does not exist as a separate structure but is fused with the anterior margin of the *Septum bulbi* and the beginnings of the *Septum principale*. There is thus no bisection of *Valve 1*

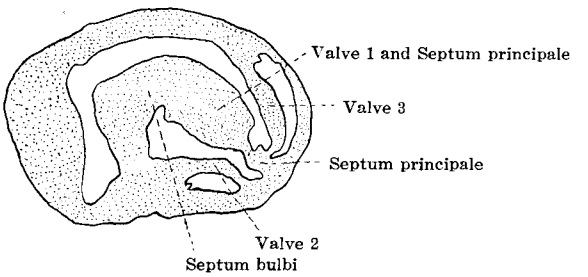

Fig. 2. Cross section through the anterior *Bulbus cordis* valves of *Rana nigromaculata*. ca. ×8.

by the *Septum principale*. The structure appears thick and heavy in cross section; this being the only evidence for supporting a view-point that *Valve 1* is fused with the *Septum bulbi*, since it is far to heavy to be single.

The middle portion of the *Bulbus cordis* is normal in both species. The large *Septum bulbi* is the same in shape and size as in the American *Rana*. However, the posterior cordis valves are interesting in one or two respects. With *Rana temporaria* as found in Japan, one meets

identical conditions to those noticed by GAUPP ('96) in European *Rana* (Fig. 3). The *Dorsal ventral valve* appears strong and well developed between the *Left* and *Right ventral valves*. In *Rana nigromaculata* such is not the case (Fig. 4). The *Dorsal valve* is weak and does not make its appearance until the *Septum bulbi* is free and well developed. That is to say, the *Dorsal valve* appears more anteriorly in *Rana nigromaculata* than in *Rana temporaria*.

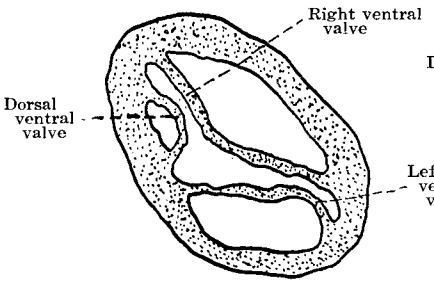

Fig. 3. a.

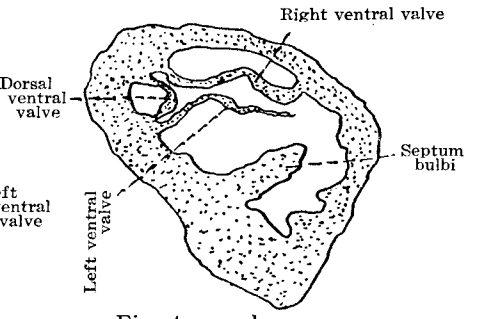

Fig. 4. b.

Figs. 3–4. Cross sections through the posterior *Bulbus cordis* valves.
a. *Rana temporaria*. b. *Rana nigromaculata*. ca. ×8.

At this level also, the *Left ventral valve* is weak and has broken away from the bulbus wall. Otherwise the condition is similar to that found in American *Rana*.

This slight variation in *Rana nigromaculata* from the American *Rana* and *Rana temporaria* is interesting though difficult to explain.

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