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A SIMPLE METHOD FOR COLLECTING THE TADPOLE LARVAE OF  
THE ASCIDIAN, *HALOCYNTHIA RORETZI* (V. DRASCHE)<sup>1)</sup>

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The reactions to light and gravity of the tadpole larvae of the ascidia were reported by Grave (1926), Mast (1921) and others. The larvae of *Amaroucium constellatum* and *A. pellicidum*, when released from the adults, orient positively to light and gravity, but soon after liberation they are reversed to react negatively. When the light is rapidly reduced the resting larvae response by becoming active, and then leave the illuminated side to swim to the less illuminated side of the container. In *Molgula citrina*, which lacks light receptor, no response to light is made (Grave, 1920).

In *Halocynthia roretzi*, it takes a long time after hatching for the larvae to attain swimming ability (Hirai, 1963). The larva has an eye and a statolith in the sensory vesicle on the dorsal side of the body, and a vertical fin around the tail. At the tip of the body there are three adhesive papillae. The response to light by reduction of illumination can be observed. The response becomes established when observing the activity of the larvae by reducing the illumination by shading with hand. The larvae, which were swimming beneath the water surface in the container opposite to the light source, were collected in Petri dishes of 5 cm in diameter. The dishes were set at a distance of 30 cm from the light source. As the light source an electric bulb (100W) was used. Though the tadpole larvae have alternate period of rest and activity, shading by hand on the resting larvae was tried, and the larvae which responded by becoming active and swimming were counted. As shown in Table I, a large majority of the resting larvae responded to the reduction of illumination. Soon after swimming induced by reduction of illumination, they again entered the resting state. Shading was carried out five times using two dishes.

For collecting, the larvae were left in the Petri dishes which had a diameter of 20 cm. The dish was put at a distance of 30 cm from the light source (100 W electric bulb). About ten hours or more, at approximately 13°C, after hatching, they

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Table I

Times of shading	No. of active larvae	
	A	B
1	10	10
2	8	9
3	9	10
4	10	8
5	9	7
Average	9.2	8.8

Ten larvae were kept in two dishes, and those that became active by the reduction of illumination were counted.

were illuminated for five to ten minutes. After that, the switch was turned off, and the larvae swarmed immediately toward the less illuminated side of the dishes. These larvae were pipetted up for use in the experiments. By repeating this process a large number of larvae were collected, and they were considered to be functionally and morphologically normal. These larvae showed exactly the same course in tail resorption process in time and morphological appearance by the treatment with Nile blue solution.

## LITERATURE CITED

- Grave, C., 1920. *Amaroucium pellicidum* (Leidy) form *constellatum* (Verrill). I. The activities and reactions of the tadpole larva. *J. Exp. Zool.*, **30**: 239-257.
- , 1926. *Molgula citrina* (Alder and Hancock). Activities and structure of the free-swimming larva. *J. Morph.*, **42**: 453-471.
- Hirai, E., 1962. On the duration of swimming larva of an ascidian, *Halocynthia roretzi* (v. Drasche). *Bull. Mar. Biol. Stat. Asamushi*, **11**: 121-125.
- Mast, S.O., 1921. Reactions to light in the larvae of ascidians, *Amaroucium constellatum* and *Amaroucium pellicidum* with special reference to photic orientation. *J. Exp. Zool.*, **34**: 149-187.