153. *Is Nomeus a harmless Inquilinus of Physalia?*

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(Comm. by A. OKA, M.I.A., Nov. 13, 1933.)

Speculations or hypotheses put forth upon casual observations often turn out to be groundless when the subject is more carefully re-investigated. If such speculations are taken into text-books or popular writings they are liable to lose their original intent, and to be considered as though they were well established facts or theories, and they would often be handed down as such in subsequent publications.

The alleged harmless inquilinism of *Nomeus* among the tentacles of *Physalia* is, I think, just such a case. It has been thought that *Nomeus gronovii* is protected from its enemies by entering the area embraced by the deadly tentacles of its host, the fish itself being immune to the action of nematocysts. It has also been conjectured that *Nomeus* gets the residue of food from *Physalia*, as does *Remora* from the accompanying shark (Waite 1901).

Some think that the relation between *Nomeus* and *Physalia* is symbiosis, stating that the swimming about of the fish among the tentacles may induce other small fishes to enter the deadly territory, and that *Nomeus* may thus help its protector to obtain more food.

On August 7, 1933 near the Mitsui Institute of Marine Biology, a great swarm of siphonophores, such as *Physalia*, *Vellela*, *Porpita* was drifted close to the shore accompanied by *Glaucus lineatus* (a pelagic nudibranch), *Janthina*, etc. Numerous *Nomei* were seen swimming under *Physalia*. While watching carefully these animals I soon found that, contrary to what has been written by previous authors, the fishes were vigorously attacking the *Physalia* from below, eating indiscriminately various zooids together with the tentacles.

In order to make sure that the fishes devour the jellyfish, I made sections of the stomach, and confirmed that the tissues of the host were actually in it. For the following few days the same thing was observed in the aquarium.

It may be added that the *Physalia*, I observed, was a very healthy one. And there is no mistake that the fishes attacked a weak or dying jellyfish. Were the *Nomei* particularly hungry when I saw them? This might be so. However, any fishes which behave friendly when

satiated, and do otherwise when they are hungry can not be welcome partners of *Physalia*. Furthermore, it is in a high degree improbable to think that *Nomeus gronovii* in the Japanese waters acts differently from that occurring in other regions of the globe.

Therefore, it may safely be concluded that *Nomeus* is not a harmless inquilinus of *Physalia*. And what is more, Garman (1896) states that "on several occasions *Physaliae* have been taken with partially digested *Nomei* in their grasp, which would indicate that the little fishes were sometimes preyed upon by the men-of-war."

At all event this much we can say that the relationship which exists between this stromateoid fish and *Physalia*, is not a friendly one.

Literature cited.

Garman S.: Bull. Labor. Nat. Sci. Univ. Iowa. vol. 4, p. 81, 1896.
Waite, E. R.: Records of Australian Museum. vol. 4, no. 1. p. 40, 1901.