A note on the formation of the
“false” dilatation in *Culex*
tritaeniorhynchus
summosus Dyar

By

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After blood feeding, normally the ovarioles of females mosquitoes develop to ripe eggs (Detinova, 1962). After the oviposition, the pedicel of each ovariole forms a folded sac with thin wall. When the contraction of the ovariole sheath is complete, there remains a small dilatation at the position of the former follicle in a parous female. The dilatation may be empty or include cell debris of a follicle, i.e., a follicular relic. But as was already recognized in *Anopheles* (Detinova, 1962) and *Mansonia uniformis* (Samarawickrema, 1962), the follicle degenerates, for some reason, after the blood feeding without the normal development thereafter, and forms the so-called “false” dilatation.

In this paper, the formation of the “false” dilatation in *Culex tritaeniorhynchus summosus* is reported.

The author wishes to thank Professor Mutsuo Katô for his many helpful discussions and suggestions during this works.

MATERIAL AND METHOD

Female mosquitoes, reared in the laboratory from egg rafts originating from the wild gravid ones obtained from in Natori City, Miyagi Prefecture in 1967, were used. Five per cent sucrose solution was given as food and a mouse as the blood source. The dissection and the age determination were based upon Detinova's methods (Detinova, 1962), and the classification of the follicular stages according to Mer and Macan' with necessary modification (Clements, 1963). The three follicular stages mentioned in this paper are as follows. No stage: the follicle

with eight undifferentiated cells and germarium is not distinguishable in the newly emerged females, Ia stage: the follicle is spherical and the oocyte is not differentiated, and Ib stage: the follicle is oval with an oocyte and 7 nurse cells surrounded by a distinct follicular epithelium, and is the resting phase which lasts until blood feeding.

RESULT AND DISCUSSION

In the present study, the “false” dilatations were observed only in one female's ovaries (Fig. 1). It had no sperms in the spermathecae. The dilatation was regarded as the “false” dilatation on the following criteria. 1) The female did not lay eggs, 2) the follicular stage, while the formation of dilatation normally accompanies with Ib stage (Yajima and Katô, 1968), was No stage, and 3) there was deep pigmentation in each dilatation as was also observed by Samarawickrema (1962).

If the females of *Culex tritaeniorhynchus*

Fig. 1 The “false” dilatation in the ovariole of *Culex tritaeniorhynchus summosus*

fd: “false” dilatation

f: follicle

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summorosus in nature have the "false" dilatation, it will be important to determine with accuracy the number of gonotrophic cycles. It may be considered broadly that these are two reasons on the formation of the "false" dilatation. One is the degeneration of a few remaining eggs in the ovary after the oviposition. It may be supported by the fact that such eggs often remained in the ovaries of wild parous females in Ib stage, and such eggs were not laid again under the laboratory condition except for one case in which a female laid eggs again four hours after its first oviposition. Hosoi (1954) said that the degeneration of a certain number of follicles in each gonotrophic cycle seems to occur normal in *Culex pipiens pallens* reared in the laboratory, and that the number of degenerating follicles was greater after a meal which was nutritionally inadequate. Even in this case, the number of gonotrophic cycles can be decided exactly by the "true" dilatations. Because, the "false" dilatations, if occurred, are few in the ovaries containing "true" dilatations. Another reason is the degeneration of the mass of follicles in the ovaries without oviposition. In case of *Culex tritaeniorhynchus summorosus*, the dilatation in No or Ia stage will be assumed the "false" dilatation. Because the dilatation accompanies Ib stage and not No or Ia stage (Yajima and Katô, 1968). However, it seems to be difficult to distinguish exactly a female which has Ib stage and a "false" dilatation in the same ovariole from a female with Ib stage and a "true" dilatation.

In nature, if females have "false" dilata-

tion, the former case will occur more often than the latter. And so, the number of gonotrophic cycles may be safely decided from the dilatation in the population level. However, the formation of the "false" dilatation in nature, especially the latter case, requires further investigation.

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摘 要

コガタアカイエカにおける "false" dilatation 形成の観察

1968年8月に、実験室で飼育していたコガタアカイエカを解剖したところ、"false" dilatation を形成していたのが観察された。このような "false" dilatation が野外の蚊でもみられるかいなかということは、正確な産卵回数を判定するときに問題となる。しかし、今まで野外のコガタアカイエカを多数解剖してきたが、"false" dilatation を形成していると思われる個体はまだ観察していない。野外では、そのような個体はあるとしても少ないのではないかと推測される。