Larval and Imaginal Forms in Chironomus s. s.

By

F. SØGAARD ANDERSEN

(Statens Skadedyrlaboratorium, Springforbi, Danmark).

In a recent investigation Thienemann and Strenzke (1951) arrived at results which (in their opinion) are in sharp contrast to the results of my rearings (Andersen 1949). To use the terminology of Thienemann and Strenzke, the contrast consists in their failing to find the »larval polymorphism» shown by my rearings.

However, this is only what might be expected. I found a tendency towards a free combination of characters (larval and imaginal) in quite small pools containing more than one larval type (cf. my table 7, p. 14; my locality 12 contained two larval types, not one, as stated by Thienemann and Strenzke p. 3).

On the other hand Thienemann and Strenzke took their larvae almost exclusively from ponds containing only one larval type (Thienemann and Strenzke 1951, p. 5). Accordingly they had no possibility of finding a tendency towards a free combination of larval characters, and their populations seem to have been quite uniform in regard to imaginal characters also (cf. Thienemann and Strenzke 1951, p. 7).

The uniformity of their populations may be partly due to the size of these populations (the size was unfortunately not recorded). In big populations selection will cause uniformity (cf. Andersen 1949, p. 61).

For the selection of uniform populations for their investigation, Thienemann and Strenzke mention two arguments: 1) that it is very difficult to secure mud free from larvae, and 2) that, in the living *Chironomus* larva, it is likewise difficult to decide whether the lateral appendices are present on the 10th segment or not.

However, if we are to progress towards solving the problem of chironomid metamorphosis, it is necessary to focus our attention on the method of rearing.

During my work I believe I have come to a method of obtaining mud free from larvae (Andersen 1949, p. 9, procedure 3): the mud is dried, pulverised, and soaked with filtered water. It is advisable to rear a single larva in each dish. A number of dishes with mud, but without

larvae, may be kept for control. By this method the first difficulty is overcome.

As to the second difficulty, I must admit that it is not always easy to decide whether the appendices are present on the 10th segment, especially when half-grown larvae are used. It is therefore advisable to use only full-grown larvae ready for pupation. (The half-grown larvae may be kept in mass cultures, from which the full-grown larvae may be picked out at intervals for rearing in single cultures). I examined all the larvae under a binocular microscope.

It may perhaps be advisable to narcotise the larvae before the examination. I have tried two agents which appeared to be promising, viz. CO_2 and ether. I used larvae of the *plumosus* type taken in Dyrehaven near Copenhagen on 17.VIII. 1951. As a CO_2 agent, mineral water (Carlsberg Export Water) was used after most of the bubbles had been removed by stirring. For etherisation ether was added dropwise to tap-water containing a larva. The larvae were examined in distilled water in order to distend them (the CO_2-narcotised larvae were flabby). Except for one dying from a wound, the larvae showed a normal behavior soon afterwards and the next day.

1949. Andersen, F. Søgaard: On the subgenus Chironomus — Vidensk. Medd. Dansk Naturh. Foren. (Copenhagen) Vol. 111, pp. 1—66.

1951. Thienemann, A. and K. Strenzke: Larventyp und Imaginalart bei Chironomus s. s. — Entom. Tidskrift (Stockholm), Årg. 72, pp. 1—21.