On the Sound-Production of the Females of Certain Auchenorrhynchous Homoptera.

(A Preliminary Note)

By

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In a previous paper (Opuscula entom. 1946, pp. 82—84) I have presented a short preliminary report on my investigations on the sound-production of Swedish *Homoptera Auchenorrhyncha* and on the organ enabling them to produce sounds. It appears that the males of all species examined by me are in possession of a sound-producing organ homologous to the tymbal apparatus of the species of the family *Cicadidae*. By means of this organ they have the capacity of emitting calls that are often very characteristic, but too weak to be heard by the human ear unaided. In my opinion, therefore, the tymbal apparatus is not peculiar to the *Cicadidae*, but, on the contrary, is common to the males of all groups of *Auchenorrhyncha*. If this organ in the future should be found to be absent in some group not yet examined, this absence will no doubt be due to reduction.

In the cicadids, as we know, the females are mute, lacking any functional equivalent of the tymbal apparatus of the males. This is so even in the case of most females of the remaining *Auchenorrhyncha*. There are however, certain exceptions, among the species studied by me. The present paper is a short account of these exceptions.

In the cercopids (*Neophilaenus*, *Aphrophora*, *Lepyronia*), the females have a sound-producing organ of the same structure as that of the males, though weaker. This organ enables them to produce clacking sounds usually emitted in a rapid, unrhythmical succession and apparently expressing dissatisfaction. (The males, too, are able to emit these calls and others in addition.) In the females of *Ulopa*, *Oncopsis*, *Jassus lanio* (L.) and *Platymetopius guttatus* Fieb., matters are similar.

In the males of the family *Cicadidae*, the musculature of the sound-producing organ consists essentially of one single, powerful, dorso-ventral muscle on each side. In most groups of Swedish *Auchenorrhyncha*, too, this muscle plays the leading part. However, there are in the region of the first and second abdominal segments several other muscles that appar-

ently have an accessory function for the modification of the sounds. In many males these muscles have attained a degree of development making them even stronger than the muscle corresponding to the tymbal muscle of the cicadids. In certain cases the latter muscle may even be reduced, the other muscles having assumed the leading part in the sound-production. For example, this is the case with the male of *Paropia scanica* (Fall.), in which the dorsoventral tymbal muscle of the *Cicadidae* has disappeared and is replaced by other muscles. In the female of *Paropia*, on the contrary, the dorso-ventral muscle in question is well developed and is the most important part of the sound-producing organ, enabling the female to emit calls expressing dissatisfaction. It is a remarkable fact, then, that both sexes of *Paropia* have functional sound-producing organs, although of different structure. The organ of the female apparently represents a simpler and more primitive stage.

In *Doratura stylata* (Boh.) the female has a sound-producing organ, quite as well developed as that of the male, and the calls of the two sexes are of the same quality of sound. The sound-production in this species has a distinctly sexual significance. Before pairing the male and female perform a duet often lasting several minutes. The song of the male, however, soon ceases, and he begins searching for the female, apparently guided by her continued singing.