

*Horaia montana* (Tonnoir, 1930b) suggests a similar pathway of reduction for this genus. *Horaia* as well shows great reduction in vein 1A. The simple but curved vein Rs of *Apistomyia* probably came from the forked vein Rs by loss of vein R4+5. However, there is no direct evidence to indicate that this in fact was the pathway of reduction. Greatest reduction in venation has occurred in *Hammatorrhina* where vein Rs is not present. Unfortunately little is known about *Hammatorrhina* and there is no evidence to indicate the pathway of reduction.

As the Edwardsiniinae possess large undivided eyes, other blepharocerids with divided eyes are considered to be more recently evolved. Stuckenberg (1955) showed that modification of the eyes in *Elporia* may have taken a number of pathways to result in convergence. As the majority of male apistomyid blepharocerids are holoptic, it is believed here that this represents the primitive apistomyid eye condition. Only *Peritheates*, *Nothohoraia* and the *Neocurupira* species (with one exception, *N. hudsoni*), have dichoptic males. The evolution of dichoptic males in *Neocurupira* (*Neocurupira*) appears to have taken place three times; *N. campbelli*, the *tonnoiri*-complex, and *N. rotalapisculus* and Form C of the *hudsoni*-complex; a situation comparable to that in *Elporia*. Downes (1969) has suggested a sexual role for the divided eye in Simuliidae. This may have some influence on eye evolution, but insufficient is known about the sexual habits of blepharocerids to suggest a similar reason for the evolution of divided eyes or why holoptery appears to have given rise to dichoptery.

The Apistomyiinae are separated from the other blepharocerid subfamilies mainly on the basis of the long diverging labial palpi and form a relatively distinct group. However, in 1963(a) Dumbleton described *Neocurupira campbelli* which has short labial palpi (a subfamilial characteristic of the Paltostominae), and in this work *Nothohoraia micrognathia*, also with short labial palpi, is described. Both these blepharocerids have, however, long pupal sheaths on the short labial palpi as well as having other apistomyid characteristics. Dumbleton considered that the short labial palpi of *Neocurupira campbelli* were the result of a recent single mutation, and until the pupal labial sheaths of the Paltostominae are examined in detail, Dumbleton's explanation remains the best both for *Neocurupira campbelli* and for *Nothohoraia micrognathia*.

Stuckenberg (*in litt.* 1967) has mentioned that in New Caledonia, there is in addition to neocurupirid blepharocerids, a blepharocerid with vestigial mouth parts and a straight vein Rs. He states that this form with vestigial mouth parts is obviously related to the neocurupirids. It would be interesting, when all stages have finally been described, to speculate on the relationships of this new blepharocerid with *Nothohoraia micrognathia* and *Neocurupira campbelli*.

Although blepharocerid pupal shape is very conservative, the gills show considerable variation. Surprisingly, the gills of Edwardsiniinae pupae are the most complex (Tonnoir, 1924, and Stuckenberg, 1958); the more primitive gills of four lamellae are found on the pupae of the other subfamilies. Within the Apistomyiinae the pupal gills are of two forms. Those of *Horaia*, *Neocurupira* and *Peritheates* with the lamellae long and placed anterolaterally, and those of *Apistomyia* and *Nothohoraia* with the lamellae short, notched and placed anteromedially. Unfortunately both types of gills have arisen independently within other subfamilies so that it is not possible to say which is the derived form. However, within the Apistomyiinae it is suggested that the *Neocurupira*-type is the more primitive.

There are a number of distinct larval forms within the Apistomyiinae. Generally, there has been a reduction of the anal division and the 7th proleg, and an anterior-posterior compression of the body division. The *Neocurupira* (*Neocurupira*)-*Peritheates* larvae show the least amount of reduction of the anal division and still retain obvious 7th prolegs. The *Apistomyia*-*Neocurupira* (*Austrocurupira*) larvae have a reduced anal division and the 7th prolegs are either very reduced or absent.