PSYCHE.

INTRODUCTION TO BRAUER AND VON BERGENSTAMM'S VORARBEITEN ZU EINER MONOGRAPHIE DER MUSCARIA SCHIZOMETOPA.—II.

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The *Muscaria schizometopa* are divided first into two groups: the Anthomyidae and Muscariae genuinae. The first show the costal vein continued to the end of the fourth longitudinal, and usually have small tegulae; the latter have between the third and fourth longitudinal, where the apical crossvein is lacking, only a membranous margin, and *usually the fourth longitudinal* before its end bent toward the third and terminating close behind it, *or at the curve dividing into a posterior false vein*, or a true one, which runs toward the edge, but seldom reaches it, *and an apical crossvein*, which ends near the third longitudinal, or even in it (first posterior cell open, or petiolate). Rarely the apical crossvein is lacking and the fourth longitudinal ends in the posterior margin, or before reaching it (Syllegoptera, Melia, Microtricha, Thrixion, Gastrophilus). Tegulae generally large, rarely small.

The Conopidae are separated from the Tachinidae, Muscidae, and Anthomyidae by their lack of vibrissae, and also by the disappearance of the vibrissal angle; while the cheek-margins, by their vibrissal ridges, either pass almost imperceptibly (only with a slight curve —*Myopa dorsalis* Fab.— below the middle of the face, or on the under edge of the head—*Myopa picta*) into the edges of the antennal grooves, or else (Conops) reach entirely up to the antennal prominence and bound the facial keel, and the antennal grooves are wanting [but this arrangement produces a very good imitation of antennal grooves].

The structure is similar in the Oestridae, where the vibrissal angles close up the antennal grooves below on both sides high above the oral margin, while the last continues up between the cheek-edges as a broad clypeus with a flat or edged facial keel (Hypoderma). In the Acalyptratae the clypeus forms the edge of the antennal groove below, and the angle is lacking (Dichromyia). The Cordyluridae, Scatophagidae, Helomyzidae, Sepsidae, have near the mouth the vibrissal angle and one vibrissa. Head like Macquartia. The boundaries of cheeks, vibrissal ridges, clypeus, etc. are best distinguished in Phasiidae (Trichopoda).

These parts of the head structure have been already described in general in the

monograph of the Oestridae (1863), and in the work on the Diptera of the Imperial museum of Vienna (Denkschr. acad. wissensch., v. 42, p. 108); therefore it is necessary here only to repeat briefly the principal characters, and to discuss those of chief importance from the new standpoint. The terminology employed is the same as that of earlier authors, so far as known, so that the comparison of our descriptions with those of others may be as easy as possible. Our terms differ from those of other authors only where an understanding of single parts made the addition of new terms necessary. This was particularly the case with the chitinous plates forming the epistoma [clypeus.]

In the Schizometopa the head is divided by a seam or fissure in front and above into two parts, which merge into each other below near the cheeks. This seam is more or less perpendicular to the longitudinal axis of the body, and runs as a curved wrinkle around the upper edge of the antennal prominence and thence downward, generally in a horseshoe shape. Above and outside of the curved seam lie the so-called front, the vertex and ocelli, the compound eyes, and the cheeks; below and inside the seam lie the lunula with the antennae, the epistoma (which generally deepens above into the antennal grooves and forms below the front edge of the oral cavity), and on both sides of the last the *vibrissal ridges*, reaching downward a greater or less distance, or disappearing by abbreviation. Each of these is separated from the clypeus by a furrow or seam, extending from the outer half of the antennal groove. The vibrissal ridges usually form at the lower end a small raised or re-entrant angle, pointing toward the middle line of the face,—the so called *vibrissal angle*, on which as a rule the longest bristles (or the genuine vibrissae) are located. When the clypeus lies in a hollow, the vibrissal ridges bound the facial groove, which must be distinguished from the antennal grooves, inasmuch as the latter may be secondary excavations within the former, or may occur alone with a smooth or elevated clypeus and often are united in a single groove (Dexiosoma). The last is always the case when the vibrissal ridges are lacking or abbreviated and the vibrissal angle forms the lower boundary of the antennal grooves. Longer bristles are often situated in that case on the outer edge of the antennal grooves, because the latter are identical with the facial groove (Oestromyla).

The position of the vibrissal angle has a relation to the lateral end of the curved seam. The latter often ends close to the vibrissal ridges, having a linear form; or the two ends may be more widely separated, enclosing a larger facial area (clypeus+vibrissal ridges and antennae) and ending close to the lower edge of the eye with a larger or smaller groove (the bow-groove, facial impression, oblique impression, of other authors), by which the upper and lower portions of the cheek [sides of face and cheeks] are sharply separated. If the end of the

curved seam is close to the edge of the mouth on each side, the long vibrissa on the vibrissal angle is close over or on the edge of the mouth (Phorocera); if, however, the curved seam ends high above the edge of the mouth (Macronychia, Phasia, Oestrus), the vibrissal angle and the long vibrissa (or if the latter is lacking, the angle is distinct) are high above the mouth, and the angle forms sometimes the lower edge of the antennal groove. The vibrissal ridges are therefore sometimes long, sometimes short or absent (Oestridae).

These variations have their effect on the clypeus. When the vibrissal angle lies low down, the clypeus generally reaches far below, and runs out past it or ends between the two; if the vibrissal angle rises higher, it is apparent that it is not correlated with the edge of the mouth, as that was before between it and the facial depression, but it may stand much higher than the edge of the mouth (the lower edge of the clypeus), and the latter run through between the angles, or separate them with a nose like ridge, or the clypeus above the edge may by their convergence (re-entrant vibrissal angles in Macronychia, Dexia, and others) be narrowed before its end, or in the middle, or entirely above (clypeus biscuit-shaped or half biscuit-shaped). If the vibrissal angle ends high up and bounds the antennal groove below and on the outside, then the downward-reaching clypeus is set off from the cheek edges—extending forward in this case—by the angle, and forms, if narrow, a facial ridge, furrow or groove (Dexiosoma, Oestrus); or, if it broadens below the antennal grooves, it forms a smooth or convex facial shield (Hypoderma).

The region bounding the oral aperture on the side is called the cheek, and its *so-called breadth* is really its hight in a profile view. Compared with the vertical diameter of the eye, it is generally called *broad*, if it measures 1-3 or more of the latter; and *narrow*, if it measures 1-4 or less. The breadth is also the diameter of the cheek from the lower edge of the eye to the lower edge of the head, measured in profile while the posterior margin of the eye is in a vertical position.

Bristles on the edges of the frontal stripe from the vertical area to that of the upper cheek (sides of face) are called frontal bristles or stripe-bristles; if they are in several rows, the supernumerary rows are on the orbital region, and we may speak of "several-rowed frontal bristles." Those on the ocellar triangle are ocellar bristles. Longer ones, at the extreme top of the head near the ocellar triangle, are vertical bristles. Single or paired bristles, or several in a group, on the periorbit near the edge of the eye below the lateral vertical bristles are called *orbital bristles*. They occur mostly in the female, but often in both sexes, are rarely entirely lacking, or are represented by rows of finer inconspicuous bristles (many Muscidae and Phasiidae). As a rule the orbital bristles are strong and bent downward, rarely upright or bent outward. Bristles sit-

uated on the edges of the vibrissal ridges, and the long one on the vibrissal angle are called vibrissae. If the ridges bear such bristles up to above the middle, the term "vibrissae ascending" is used to describe the character. If they are in a single row, they are simple or one-rowed; if in two or more, they are double rowed or bushy. Bristles on the edge of the cheeks (sides of face) may be mistaken for ascending vibrissae, but check vibrissae are always *below* the vibrissal angle. . . .

In relation to wing structure, we adopt in general the terminology used by Meigen, aud therefore differ from Rondani in the names of the veins.

The larger bristles on the abdomen we (with Rondani and Macquart) call macrochaetae; those on the posterior margin of the segment marginal, and those on the surface of the dorsal line discal. If these bristles stand at the side of the body, they are lateral. When we speak distinctly of discal and marginal macrochaetae, we always mean those in the dorsal (sagittal) line. If a further distinction is necessary, the bristles of the posterior edge may be distinguished as of the whole margin, or discal, or lateral; or, if in the middle only, as sagittal. Some tropical forms show particularly large bristles which are thick and straight, like *spines*, and often cover the whole abdomen, or stand together in groups, *bush*-like. Van der Wulp distinguishes these spines in certain groups, and we follow him in this respect in the distinction of *narrow* groups. But they form no character of a particular group but occur in several, which are separated from each other by other structures. All the remaining terms should be intelligible, as we follow entirely the methods of expression of Loew, Schiner, etc.

In regard to generic names, it has been our intention to retain the old name for that part of the genus to which the oldest species belongs. If that is impossible, on account of the name having been proposed for several species which now belong to other genera, the name must either be used in a narrower sense or discarded, because in the retention of names which had one meaning originally, and another quite different one now, only confusion and misunderstanding can arise. It is desirable also that describers of new species should not enlarge or narrow our genera as soon as species are found not exactly corresponding with their characters, but rather that they erect new genera, for the very good reason that, after this kind of modification by little patches has gone on for a time, it will be impossible to characterize the genus. . . .

The majority of authors seem never to have troubled themselves to give any account of the ideas represented by Tachininae, Dexinae, Phasinae, etc., but in all these cases to have had only one definite form in mind, so that the characters belonging to the name long since ceased to have any weight, when the habitus of the form under consideration suggested these groups. But how a different appearance may conceal relationship, and how similiarity with unrelated forms may deceive, no genus ever illustrated so strikingly as *Scenopinus*.