

Studies on Tipulidae.

Part. I. Review of the published genera of the Tipulidae longipalpi,

by

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Introduction.

For many years, in fact ever since the publication of the fourth volume of the Monographs on N. Am. Diptera (1868), it has been my intention to publish a Genera of the Tipulidae, consisting of a revised reprint of whatever refers to genera in the above-named volume, with the addition of such new forms as I hoped to discover in different public and private collections. My hopes however were doomed to disappointment, as most of the European Museums which I visited offered very little material. The Tipulidae unfortunately still remain too much neglected by collectors. Abandoning therefore my original plan, I concluded to publish without further delay some of the materials I had brought together towards its execution. Incomplete and disconnected as these materials are they will be of use to those who, some time or other, will take up again the work of the classification of the Tipulidae.

I begin with the Tipulidae longipalpi, which I have not absolved in my monograph.

The distinguishing characters between the Tipulidae longipalpi and brevipalpi have been explained at length in the above-quoted volume of mine, p. 17—21. They consist for the longipalpi:

1. In the course of the auxiliary vein, which ends in the first longitudinal, being incurved towards it; beyond the humeral crossvein there is no other crossvein connecting the auxiliary vein with the costa or the first vein.

2. In the structure of the cells round the stigma. The first longitudinal vein is usually incurved towards the second and attenuated in a peculiar manner before ending in it; an oblique cross-

vein connects the first vein, a short distance back of the tip, with the costa; this crossvein, together with the anterior branch of the second vein, form near the anterior margin a small rhomboid¹⁾ cell, very characteristic of the Tipulidae. It is absent in *Dolichocheza* and some related genera, because the branch of the second vein is wanting.

3. In the structure of the discal cell and the direction of the veins surrounding it. The vein separating the two posterior cells (Loew's posterior intercalary vein) issues very near the inner end of the discal cell, usually from the angle between this cell and the great crossvein; this, in most cases gives the discal cell a pentagonal shape, unless, as for instance in *Pachyrrhina*, the vein has no contact at all with the cell, and has the appearance of a direct prolongation of the fourth longitudinal vein; in such cases the discal cell is a parallelogram.

4. A distinct fold generally runs, in the Tip. longipalpi, across the wing from the inner end of the pterostigma, over the discal cell, to the penultimate posterior cell; it is more or less distinct in different genera.

5. The rostrum is usually more prolonged, than in T. brevipalpi, and its upper part has a characteristic projecting point, called nasus; it is very seldom wanting, and usually bears a tuft of hair.

6. The antennae in the normal types of the T. longipalpi are 13-jointed (those of the Tip. brevipalpi are 14—16 jointed).

7. The male forceps of the longipalpi is generally more voluminous and of a more complicated structure than that of the brevipalpi.

8. In size, the longipalpi are generally larger and more strongly built; the legs, and especially the tarsi, are longer.

9. That the longipalpi keep the wings divaricate in repose, while the brevipalpi fold them is generally true, but suffers good many exceptions: *Pedicicia*, although brevipalpi, keeps the wings divaricate, while the longipalpi *Pachyrrhinae*, as well as many Tipulæ, especially those with marmorate wings (*T. irrórata*, *hortensis*, *scripta* etc.) keep the wings folded in repose. (Compare v. d. Wulp, Handel. Ned. Ent. Ver. I. D., 1 St. 1854.)

¹⁾ In Monogr. etc. Vol. IV. I called it trapezoidal cell; rhomboid is better.

The Tipulidae brevipalpi are divisible into several sections, based on tolerably well-defined characters. Ever since the introduction of this division in 1859 very few doubtful, or intermediate forms have been discovered. Different in this from the brevipalpi, the bulk of the Tip. longipalpi, composed of the genera *Tipula* and *Pachyrrhina*, form a compact mass of the same relationship. The specialized groups existing alongside of that section of Tipulina are few in number and numerically weak, and it is difficult to discover available characters for the definition of these groups.

Thus the Ctenophorina and Dolichopezina, as groups, are perceptible to the entomological sense only, but it is a question dependent on further research whether they will be maintained as sections or not. South-America and Australia contain many abnormal and little-known forms of Tipulidae the relationship of which is as yet obscure; until we know more about them, the subdivision of the Tip. longipalpi must remain in suspense.

In the present paper I have endeavoured to sum up my actual knowledge of the classification of the Tipulidae longipalpi, as I have acquired it from the existing literature and the collections. I claim the reader's indulgence and beg him to remember, in perusing these pages that they were compiled from disconnected notes, taken in different times and at different places, and in most cases, in the absence of any specimens. I have divided my paper into the following paragraphs:

1. On Dolichopeza and its relatives.
2. On Ctenophora and its relatives.
3. On the australian Tipulina with pectinate antennae and especially on the genus Ptilogyna Westw.
4. On the South American Tipulina with pectinate antennae.
5. On the australian genera Leptotarsus Guér. and Semnotes Westw.
6. On the Tipulina in the narrower sense (*Tipula*, *Pachyrrhina* etc.)

I. On Dolichopeza and its relatives.

(*Scamboneura* O. S., *Apeilesis* Macq., *Megistocera* Wied.,
Tanypremma O. S. and *Brachypremma* O. S.)

Dolichopeza and a small group of little known exotic genera are distinguished by the extreme length and slenderness of their legs, (especially of the tarsi), and the light and delicate structure of their

bodies: characters which, in the european *D. sylvicola*, are connected with its habit of flying in zig-zag, *Ephemera*-like, in shady localities. Long appendages, whether antennae, legs, or caudal setae enable insects to regulate their flight, during such evolutions. Besides the european *Dolichopeza*, several north-american species of the same group, which I have had occasion to observe, share this habit of zig-zag flying on the same spot; among them is the *Tipula dispellens* Walk. for which I introduce the new genus *Brachypremna*. I have but little doubt that the tropical Megistocerae indulge in the same exercise.

The antennae of the male, in this group, are often much longer than those of the female; sometimes of extraordinary length. But that this character is, generically, an unimportant one, is proved by the genus *Megistocera*, where exceedingly long antennae will occur in some species, and exceedingly short ones in others, without any note-worthy difference in the rest of the organization.

The structure of the palpi, the spurs at the tip of the tibiae (usually present, although sometimes exceedingly minute) the arrangement of the veins round the stigma and the discal cell etc., prove that the genera in question are Tipulidae longipalpi. I am not able to characterize the group of Dolichopezinae as a whole in a satisfactory manner; besides the great length and slenderness of the legs, the anterior branch of the second vein may be used for that purpose: it is either altogether absent (*Dolichopeza*), or obsolete, or else perpendicular, and not as usual oblique, thus rendering the rhomboid cell near the stigma more or less square.

The genera may be grouped as follows:

Antennae 13-jointed; male forceps of a complex structure

Dolichopeza, *Scamboneura*, *Apeilesis*.

Antennae with less than 13 joints; male forceps small, of a simple structure.

Wings crystalline; fifth posterior cell not in contact with the discal.

Megistocera.

Wings not crystalline; fifth posterior cell in contact with the discal.

Head on a necklike prolongation of the thorax; seventh vein short, running into the anal angle. *Brachypremna*.

Head more closely applied to the thorax; the seventh vein reaches the margin some distance from the anal angle.

Tanypremna.

Dolichopeza.

Curtis, Brit. Entomol. Diptera, Tab. 62; 1825.

In the descriptions of this genus by previous authors one of the principal characters, which distinguishes it from the other Tipulina has not been mentioned: the total absence of the anterior branch of the second vein; that short, usually oblique vein, the origin of which coincides with the termination of the first vein in the second (comp. my Monogr. of N. Am. Dipt. IV, p. 290, fig. 6, the vein **b.**). A consequence of the absence of this vein is the absence of the rhomboid cell, distinctive of the majority of Tipulidae.

It is also worth noticing that in both european species of *Dolichopeza*, the great crossvein is inserted a considerable distance before its usual place alongside of the discal cell (compare the figures by Mr. Mik, Verh. Z. B. Ges. 1869, Tab. 4, f. 10. 11).

The antennae are described as 12-jointed by Curtis, Meigen, Zetterstedt and Walker. Schiner thought that he could count 13 joints. He was right, as I had an opportunity to ascertain on living male and female specimens; the last joint is very minute.

The spurs at the end of the tibiae, not mentioned by the authors, are exceedingly minute, hidden among hairs; more distinct on the hind legs only.

The rostrum is short, without nasus; a tuft of hair in its place.

The forceps of the male is more incrassate than that of *Megistocera* or *Tanypremna*; its structure seems to show some analogy to that of *Pachyrrhina*. I had occasion to observe the copula (in Heidelberg, July 26); the female was hanging down from some support to which it held on by its front legs; it bore the whole weight of the male, who was fastened to it merely by the forceps, hanging head downwards, with his legs stretched out. I have seen *Bittacomorpha* copulate in the same manner.

Two european species (*D. sylvicola* and *nitida* Mik) and one from Madagascar (*D. malagasya* Karsch) have been described.

Tipula annulata Say, Compl. Wr. II. 350 is related to *Dolichopeza*, but has a discal cell and shows some other differences; some other undescribed american species, provided with discal cells, likewise belong here, but have never been described (compare O. Sack. Catal. N. Am. Dipt. 1878).

Scamboneura.

O. Sack. Berl. Ent. Z. 1882, p. 95.

This genus has been sufficiently characterized by me; its principal feature consists in the apparent obliteration of the praefurca (the portion of the second vein before the origin of the third). Two species are known: *S. dotata* O. S. l. c. — from the Philippine Islands and *S. vittifrons* Walk. J. Proc. Linn. Soc. V, 144 — from Amboina.

Apeilesis.

Macq. D. E. Suppl. I, 8, Tab. 1, f. 3.

The type is *A. cinerea* Macq. from Tasmania. I saw a male specimen in the Museum in Vienna, which agrees with Macquart's description, with the following exceptions: Macquart says: jambes sans ergots; on the contrary the tibiae have distinct although very small, spurs. What Macquart takes for and figures as the male forceps, are simply digitiform appendages to the forceps, homologous I believe to similar, although smaller, appendages of *Dolichopeza*, and especially of the north-american *D. annulata* Say. The anterior branch of the second vein is wanting here, just as in *Dolichopeza*.

The comparisons Macquart makes with the *Limnobina* and *Ptychopterina* have no foundation; the venation, the 13-jointed antennae and the long legs prove the relationship to *Dolichopeza* and not to those groups.

Megistocera.

Maekistocera Wied. Dipt. Exot. 41, 1821; *Megistocera* Wied. Auss. Zweifl. I. 55.

Wiedemann, in the *Diptera Exotica*, introduced this genus for *Tipula filipes* Fabr. from Guinea and for *Nematocera fuscana* Wied. from Java. They are congeneric, and must therefore be regarded as the representatives of the genus. In the *Auss. Zw. Ins.* Wiedemann added a third species, *Meg. verticalis* from Java, which is an *Eriocera*, and *Meg. braziliensis* Wied. a *Pachyrrhina* with long antennae. Later authors have continued to describe as *Megistocerae* *Tipulidae* of different genera provided with very long antennae; not a single one of them belongs in that genus. *Meg. atra* Dol. is an *Eriocera*. *Meg. pacifica* Erichs., *dispar* Wk., *limbipennis* Macq., *dimidiata* Westw., *vulpina* Hutton, *chilensis* Philippi belong to the genus *Macromastix* (Syn. *Macrothorax* Jaenicke); they are closely related to *Tipula*, while *Megistocera* is a relative of *Dolichopeza*.

The distinguishing characters of true Megistocerae are: their crystalline wings, with a peculiar venation; the absence of a gibbosity on the front, behind the antennae; the small male forceps; the great length and slenderness of the legs etc. (Compare the details below.) True Megistocerae occur only in the tropical regions of Asia and Africa, and, as I am going to show, also of America.

The extraordinary length of the antennae is not, in this case, a generic character, first because it belongs (where it exists), to the male sex only; and second because there are species in which both the male and the female have short antennae. In the same way we have Anisomerae, Eriocerae, Tipulae and Pachyrrhinae with long or short antennae in the male sex, within the same genus.

Wiedemann, undoubtedly deceived by the smallness of the male forceps of *M. filipes* and *fuscana*, took his own male types for females. The fact is that the females of these two species were hitherto unknown, and it was not stated anywhere, whether they had long or short antennae. During my visits to nearly all the European museums I have met only with a single female of *M. fuscana* in the British Museum, collected by Mr. Wallace; its antennae are very short. When Macquart, D. E. Suppl. I, p. 18 corrected Wiedemann about the sex of his specimens, this correction was based on a wrong premise, on the antennae of Macquart's *M. limbipennis*, which, as I have stated above, is not a *Megistocera* at all.

Megistocerae with short antennae in both sexes have been found in America only; a Brazilian species, which I have seen in several museums, and a species from Cuba, described by Macquart as a *Tipula*; both must be referred to *Megistocera*, as, except the shortness of the male antennae, they agree in everything with that genus.

I will give now a more detailed description of the characters of *Megistocera*.

The venation shows the following peculiarities: the branch of the second vein is nearly perpendicular and resembles a crossvein; the auxiliary vein runs very close to the first vein and coalesces with it near the stigma; there is a short vein, connecting this spot with the costa. The straight praefurca is nearly in a line with the third vein; the continuation of the second vein forms a curve between the tip of the praefurca and the stigma and then runs nearly parallel to the third vein. The discal cell is very small; the intercalary vein is not emitted from it (in other words, the discal and fifth posterior cells are not in contact). The seventh vein is short and incurved into the anal angle, almost as in *Trichocera*. (Macquart's figure in D. E. Suppl. I, Tab. 2, f. 4 gives an incorrect representation

of the course of the seventh vein, as well as of the veins, surrounding the stigma; the figure by Mr. Van der Wulp, Tijdsch. etc. XXVIII, Tab. 4, f. 5 is better).

The antennae, in the male, where they are long, count, according to Wiedemann ten joints. I do not remember having attempted to verify this statement; nor do I find, among my notes any notice on the number of joints of the only female asiatic *Megistocera* which I have seen. The american *Megistocerae* with short antennae in both sexes count only eight joints.

The rostrum shows a distinct nasus; the last palpal joint is rather long; the legs are exceedingly slender; the ends of the tarsi are almost hairlike and to the naked eye, do not differ from the ends of the antennae; under the microscope the last joint of the tarsi, in the male appears linear, without excision on the underside; the ungues are exceedingly minute.

Forceps of the male small; horny appendages simple, opening like the blades of a penknife.

Ovipositor with a largely developed basal piece and minute valves at the tip; lower valves very much withdrawn under the basal piece.

About the species from Brazil, which I refer to *Megistocera* I find in my papers the following notice:

Antennae in both sexes of nearly equal length, very short, almost shorter than head and rostrum taken together; 8-jointed; there may be perhaps a 9th, rudimentary joint at the tip, which may be indistinct in the dry specimens; scapus of ordinary structure; joints 3—8 (♂) cylindrical, without verticils; 3 and 4 elongated, not differing much in length; the following ones gradually decreasing in length; two long hairs at the tip.

Rostrum of a moderate length, with a distinct nasus; last joint of palpi about twice as long as the preceding ones.

Wings longer than the body, crystalline; venation of *Megistocera*, except that the discal cell is a little larger; the peculiar thickening at the bifurcation of the fifth vein, exists here, as in *Megistocera*.

Legs very long; I perceive only a single long, slender spur on the hind tibiae; the front and middle tibiae seem to be spurless.

Ovipositor like that of *Megistocera*, its basal portion very much developed; the lower valves broad and curved, so as to leave a space between them and the upper side; upper valves very small, curved.

Forceps small, narrow, not unlike that of the typical *Megistocera* in structure.

I have seen representatives of this, as yet unnamed, *Megistocera* in the Museums in Berlin, Vienna and Leiden. The *Tipula longipennis* Macq. D. E. I, 1, 57, Tab. 5, f. 1 from Cuba is evidently a *Megistocera* with short antennae in both sexes; the venation, the structure of the ovipositor, as indicated on the plate, the 8-jointed antennae with two hairs at the tip etc. agree exactly with the statements which I have given above. Only the „ailes ... un peu jaunâtres“ prevent me from identifying it with the specimens which I remember seeing. I have not been able to find the type in the Museum in Paris.

The *Megistocera* at present known may therefore be tabulated thus (I give only the principal references):

I. Antennae of the male of extraordinary length, much longer than in the female (Old world species)

filipes (Fab.) Wied. A. Z. I, 56. — Guinea.

fuscana Wied. A. Z. I, 55; Macq. D. E. I, 18, Tab. 2, f. 4;

v. d. Wulp, Tijdschr. etc. XXVIII, 83, Tab. 4, f. 5. —

Malay Archipelago

II. Antennae short in both sexes (American species)

longipennis Macq. D. E. I, 1, 57, Tab. 5, f. 1. — Cuba. —

n. sp. (?) — — Brazil. —

Brachypremna.

nov. gen.

A number of species from America, which I have seen in collections resemble *Megistocera* in the great length of the legs, the simple structure of the male forceps and in some features of the venation; they differ in the wings not being crystalline; in the fifth posterior cell not being in contact with the discal and in the praefurca being in a line with the second, rather than with the third vein.

The following generic description is drawn from *Tipula dispellens* Walk. (United States, Mexico), specimens of which I have before me, and from notes taken in Berlin from specimens of *Tipula breviventris* Wied. (Brazil). I have seen in Berlin several undetermined species, from Brazil, Surinam and Porto Rico, belonging in the same group.

Head comparatively small, front narrow; rostrum rather short, with a very distinct nasus, bearing a tuft of hair at the tip; last joint of palpi whiplash-shaped, about 2 or 3 times longer than the preceding joint.

Antennae very short, not longer than the head, including the

rostrum; eleven-jointed; first joint elongate, second short, subglobular; joints of the flagellum longer than broad, slightly attenuate at base; the 5 or 6 last joints linear; the joints are not verticillate, but beset with scattered hairs.

Thorax elongate and comparatively narrow; prothorax *Limnobia*-like, that is prolonged into a neck, bearing the head; mesothorax gibbose, rather narrow (when seen from above); metanotum elongate, its posterior margin rounded; its surface is on the same level with the posterior part of the mesonotum, it may, for this reason, be easily mistaken for the scutellum.

Abdomen shorter than the wings, but varying in length in different species; male forceps not incrassate, of a simple structure; the elongate basal piece bears a linear horny appendage, folding under, or into it, like a penknife.

Ovipositor. I have no female of *B. dispellens*; but I took note in Berlin that another, unnamed species, had the ovipositor of the ordinary structure; valves rather small, narrow, pointed, straight.

Legs very long and slender, especially the tarsi; hind tibiae with two short spurs; I do not see any on the front tibiae.

Wings longer, in some species much longer, than the abdomen. The most striking features of the venation are: the branch of the second vein is perpendicular, like a crossvein, inserted at the point where the first vein incurves into the second; praefurca rather short, in one line with the remaining portion of the second vein; the latter moderately bisinuate; the proximal ends of the submarginal and first posterior cells are very near each other; the anterior crossvein short, sometimes almost punctiform; the discal cell is a somewhat irregular square; second posterior cell petiolate; the fifth in narrow contact with the discal. The seventh vein is very short and runs very near the margin of the wing into the anal angle (in *B. dispellens* the interval between them is a narrow, linear strip). —

Brachypræmna dispellens.

Tipula dispellens Walker, Trans. Ent. Soc. N. Ser. V, p. 333.

Brownish, mesonotum, metanotum and pleurae with brown stripes; tibiae and tarsi cream-white; costal cells brownish; wing-veins clouded with brown. Length ♂ about 15—16 mm.

Front and vertex brownish, the latter faintly paler in the middle; antennae pale-yellowish, not longer than the head; rostrum yellowish above, brown below; palpi brown, third joint pale. Ground color of the thorax brownish, more whitish on the pleurae; collar with a short double longitudinal streak in the middle and a lateral brown

stripe on each side, running towards the front coxa; lateral stripes of the mesonotum broad, brown, rounded in front with an interrupted white line in the middle; the intermediate stripe is double; the anterior ends of its two components are hook-shaped; posteriorly these stripes cross the suture and, diverging a little, reach the scutellum; the brown sides of the metanotum may likewise be considered as prolongations of these stripes; between them, beginning a little in front of the scutellum, there is a third, intermediate, stripe, which crosses the scutellum and metanotum in the middle and, attenuating, reaches the posterior margin of the latter. On the yellowish-white pleura, there is a brown stripe, beginning in front of the root of the wing and running towards the hind coxa; a similar, shorter and less well-defined stripe lower-down, above the middle coxae; all the coxae are marked with brown spots or streaks in front and behind; a brown stripe along the middle of the sternum, from the collare backwards. Halteres with brown knobs. Abdomen brownish above, with a faint longitudinal paler stripe on the two or three basal segments; along the lateral abdominal suture a whitish stripe is formed by a series of triangles, their broader end being on the anterior margin of each segment; on the second segment the white triangle is bisected by a brown line. Venter whitish, with a brown streak in the middle of each segment, triangular on segments 5—8, and thus forming a more or less interrupted longitudinal stripe. Femora brownish, except at the extreme base which is paler like the coxae; tibiae and tarsi cream-white. Wings subhyaline, with a pale brownish tinge; veins more or less clouded with brown; costal cells infuscated; stigma brown; a brown cloud along the costa, beyond the stigma.

Hab. * Dallas, Texas, (Boll); two males. I remember taking a specimen near Washington, D. C. which apparently belonged to the same species; I observed it hovering up and down in a shady place in the woods, not unlike *Dolichopeza*. — Mr. Walker's specimen was from Mexico. A female from Surinam, in the Berlin Museum, is either the same, or a closely allied species.

Tanyremna.

O. Sacken, Biol. Cent. Amer. Diptera, p. 19, Tab. 1, f. 2 (1886).

Tanyremna is very closely allied to *Brachypremna*; the differences are: the prothorax has no necklike prolongation, the head is closely applied to it; the seventh vein does not run into the anal angle, close alongside the margin of the wing, but has the ordinary, oblique position; the praefurca is shorter, more straight in its course, more oblique in its position; the remaining section of the second

vein less sinuate; the abdomen is comparatively longer; the metanotum less horizontal, more sloping.

The single specimen of *Tanypremna opilio* O. S. (Guatemala) from which I drew my description was pasted on a piece of cardboard and did not allow a close examination. A species from Brazil, in the Berlin Museum, with tibiae and tarsi conspicuously annulate with white, belongs, I believe, to the same genus.

II. On *Ctenophora* and its relatives.

1. *Ctenophora* and *Tipula*; the distinguishing characters between them.

Ctenophora and its relatives form quite a natural group among the *Tipulina*; but it belongs in the number of those groups which it is easier for the eye to perceive than for the mind to define. What character, or characters, should a Tipulid have, in order to be called *Ctenophora*? Pectinate antennae in the male? But we have the South-American genus *Ozodicera*, which, to all intents and purposes, is a *Tipula*, although it has pectinate or branched antennae in the male. And on the other hand we have the recently described genus *Prionota* v. d. W., which is a *Ctenophora* without pectinate antennae in the male. All the distinctive characters which I perceive, between the two groups, are merely comparative; the discovery of an absolute character is as yet a desideratum.

Compared to *Tipula*, the genus *Ctenophora* (in the widest sense), has shorter and comparatively stouter legs; the tarsi are usually shorter than the tibiae, the first joint of the tarsi is comparatively shorter, that is, about equal in length or but little longer than the four remaining joints taken together; while in *Tipula* the first joint is generally considerably longer than the rest of the tarsus; the ungues in *Ctenophora* are larger. (The legs of *Tip. nigra*, shorter than those of the other species of the genus, show some approach to those of *Ctenophora*.)

The front of *Ctenophora* is broader, the head much more closely applied to the prothorax; the rostrum as short as, or shorter than in *Pachyrrhina*, gibbose in front; the nasus is an obtuse, hairy projection.

The body of *Ctenophora* is smooth and glabrous, and the colors usually offer brilliant contrasts of black, red and yellow, which, among the other *Tipulina*, are approached only by some *Pachyrrhinae*.

The antennae in the great majority of the *Tipulina*, are verticillate; while in the *Ctenophorae*, in either sex, they are never verti-

cillate. This is the nearest approach I know of, to an absolute distinctive character. The genus *Stygeropis* Lw. (*Prionocera* olim) forms an exception; but Loew himself considered it as intermediate between *Tipula* and *Ctenophora* (comp. Stett. Ent. Z. 1844, p. 170). Some anomalous forms of *Tipulina* from Australia and South-America also have the antennae not verticillate.

2. *Pselliophora*

gen. nov.

That the subdivision of *Ctenophora* proposed by Brullé (Ann. S. E. Fr. 1832, p. 205 and 1833, p. 398) is well founded, has been already acknowledged by Schiner (Fauna Austr. II, 500, footnote and Wiener Ent. Monatschr. 1863, p. 220.). *Xiphura* and *Ctenophora* sensu stricto differ in both sexes in the structure of the antennae and of the genital organs. Larvae and pupae also afford very striking distinctive characters. The differences between *Dictenidia* Brullé and *Ctenophora* s. s. are of less moment; they are confined to the antennae in both sexes, and to the genitals in the male; larvae and pupae of both genera belong to the same type of structure.

This subdivision of *Ctenophora* being granted it becomes necessary to form a fourth group of equal value for a number of *Ctenophorae* from South-Eastern Asia.

Pselliophora (which means bracelet-bearer) gen. nov. comes nearest to *Ctenophora* s. s., represented by the European species *pectinicornis*, *flaveolata*, *elegans* etc. It is easily distinguished, however, by the following characters: 1. The four branches, issuing from the same antennal joint (in the male), are of the same length (in *Ctenophora* s. s., the inner pair is distinctly shorter); 2. The branches of the ♂ antennae are clothed with rather long, soft, not very dense hairs; 3. The 12th joint has two pairs of branches (only one in *Ctenophora* s. s.); 4. The forceps of the male has a different structure; the long protruding adminiculum, so conspicuous in *Ctenophora* s. s. is wanting here; 5. The females are more difficult to distinguish from those of *Ctenophora* s. s.; the most trustworthy character, as far as I can see, lies in the structure of the 3d joint of the antennae (first joint of the flagellum), which here becomes broader from base to tip, without having the expansion on the underside, such as exists in the females of *Ctenophora* s. s.; the other joints are more rounded, and thus the flagellum appears less serrate on the underside; the latter half of the abdomen is much less ex-

panded here, the upper valves of the ovipositor, more straight and pointed.

Many of the species of this group have a white ring at the base of each tibia (hence the name of the group); the wings are often brown, with well-defined white or yellowish spots; sometimes uniformly brown, or yellowish with brown tips. The two pairs of branches on joints 4—12 of the male antenna are slender and rather long, from one and a half to two and a half the length of the joints; the longest are in the middle of the flagellum.

A list of the described Pselliophoræ (sixteen in all) with remarks and descriptions, will be given below. —

3. Synopsis of all the described Ctenophoræ.

NB. This synopsis has been compiled from the published general and local lists. References are given for the less-known species only; the others will be found in Schiner's Fauna, in my N. American Catalogue etc.; the numbers in the square brackets refer to the observations at the end. *Ctenophora melanura* Walk, List. etc. I, p. 78, from Nepal is omitted, because, upon examination of the types in the Brit. Mus., they proved to be specimens of a large *Sargus*. As both specimens are without head and have the yellow color and black tip of the abdomen peculiar to some of the eastern Ctenophoræ, Mr. Walker mistook them for that genus. A communication of mine to Mr. v. d. Wulp on this subject was published by him in Tijdschr. etc. XXVIII, p. 81.

Dictenidia Brullé (Syn. *Ceroctena* Rond.; *Dicera* Lioy).

bimaculata Lin. Syn. *paludosa* Fab.; see Loew, Beschr. Eur. Dipt. II., p. 24.

idriensis Scopoli, Entom. Carn. p. 316. [1.]

pectinata Gmelin (apud Schiner).

Europe, from England to the Volgo-Ural region (Eversm.); Sweden, common; St. Petersburg (O. Sack.); Moscow (Fedsch.); N. France (Macq.); Holland (v. d. W.); Austria (Schin.); Galizia (Nowicki); N. and S. Hungary (Kowarz); N. Italy (Rond.).

Xiphura Brullé.

atrata M. Syn. *ichneumonea* De Geer; *Villaretiana* Brullé (apud auctores).

Var. *ruficornis* Meig. [2]; *nigrofasciata* Brullé;
flavicornis Wied. Meig. [3.]

Europe, from England to the Volgo-Ural region (Eversm.); north as far as Lapland (Zetterst.); S. Petersburg. (O. S.); Moscow (Fedsch.); Kharkow (Jaroschefski); N. France (Macq.); Holland (v. d. W.); Austria (Schin.); N. and S. Hungary (Kow.); Galizia (Now.); Tirol (Palm, Gredler); Dalmatia (Frnf.); N. Italy (Rond.); in Canada the identical, or a very similar sp. (v. d. W. Tijdschr. etc. XXIV, p. 147).

nigricornis M. — Sweden, incl. Lapland; S. Petersburg; England, Scotland; N. France; Westphalia (Kaltenb.)

fulvida Bigot, Ann. Soc. Ent. Fr. 1860, p. 769. — Sicily.

gracilis Portchinski, Horae etc. IX, p. 289, Tab. 9, f. 3. — Irkutsk. (Syn. *macra* Loew, Besch. E. D. III, p. 2. — Lake Baikal.)

amoena Loew, Besch. Europ. Dipt. II, p. 22 (strike out the descr. of the male, which, accord. to Lw. l. c. III, p. 3, refers to *Ct. vittata* M.); Portschinski, Horae etc. IX, p. 290, Tab. 9, f. 5—6; Irkutsk; Baikal.

sibirica Portch. Horae etc. IX. p. 287, Tab. 9, f. 1. — Irkutsk.

minuta Portch. Horae etc. IX, p. 288, Tab. 9, f. 2. — Irkutsk

fumipennis O. Sack. — N. America (Virginia).

topazina O. Sack. — N. America (Virginia).

frontalis O. Sack. — N. America (Massachusetts). (Syn. *succedens* Wk. — Canada; *dorsalis* Wk. Canada. — [4.]

Ctenophora M.

pectinicornis Linn. — Syn. *nigro-crocea* De G.; *variegata* Fab. (apud Schin.); *splendor* Harris, Eng. Ins. XIV, 3.

Sweden, including Lapland; Austria; Galizia (Now.); Salzburg (Storch); Germany; N. France; Holland; England; Tuscany (Rossi).

flaveolata F. — Syn. *crocata* Schr.; *variegata* Schr. (apud Schin.).

Europa, from England to the Volgo-Ural region (Eversmann); Sweden, southern and central; Livonia (Gimmerth.); Westphalia (Westhoff); Württemberg (v. Roser); Heidelberg (O. S.); France Réaumur, Macq.); Holland (v. d. W.); Graubundten (am Stein); Austria, Galizia, Salzburg; Hungary; N. Italy (Rond. Prodr. I, p. 187).

guttata M.

Northern Sweden; Norway (Zett., Siebke); S. Petersburg (Hummel); Livonia (Gimmerthal); Yaroslav (Fedsch.); Kharkoff

(Yaroscheffski); Austria; Germany, Heidelberg (O. S.); Holland (v. d. W.).

festiva M.

Kiew, Russia (Gimmerthal; variety?); Austria; Tirol (Palm, Gredler); Westphalia (Meigen, Westhoff); Württemberg; Holland; N. France; Zürich (Collect. Frey-Gessner).

elegans M.

Austria, N. and S. Hungary (Kow.); Westphalia; Württemberg; Holland.

vittata M.

S. Petersburg (O. Sack.); Livonia (Grimmerth.); Sibiria, Irkutsk (Portchinski, Horae etc. IX, p. 289, Tab. IX, f. 4 and Loew, Besch. Eur. Dipt. III, p. 3).

fastuosa Loew, Besch. E. D. II, p. 25.

Varna (in Turkey); Galizia (Now.).

tricolor Loew, Besch. E. D. I, p. 10. — N. Russia, Siberia.

magnifica Loew, Besch. E. D. I, p. 12. — N. Persia; Astrabad.

nubecula O. Sacken. — Illinois, N. Am.

angustipennis Loew. — California.

apicata O. Sacken. — New Hampshire, N. Am.

Pselliophora O. S.

fumiplena Walk. Ins. Saund. p. 449 (Ctenophora). — China. [5.]

laeta (Fab.) Wied. A. Z. I. 38 (Ctenophora); Macq. D. E. I, p. 42, Tab. 2, f. 1; Westw. Zool. Journ. V, p. 451 (descr. of antennae). — East Indies (Bombay, Scinde etc. and Ceylon).

taprobanes Walk. List etc. I, p. 77 (Ctenophora). — Ceylon.

ardens Wied. A. Z. I, 39 (Ctenophora). — Java.

NB. Doleschall, Bijdr. etc. has it from Amboina.

compedita Wied. A. Z. I, 39; v. d. Wulp, Tijdschr. etc. XXIII, p. 156, Tab. 10, f. 1 (Ctenophora). — Java.

NB. Walker, List etc. I, 64 has it (?) from Nepal; v. d. W. also refers some aberrant specimens from Harveka, Celebes and Aru (?) to this species (Notes from the Leyden Museum VI, p. 254).

annulosa v. d. Wulp, Notes fr. the Leyden Museum VII, 1 (Ctenophora). — Java.

javanica Dolesch. 1 Bijdr., Tab. 9, f. 1; v. d. Wulp, Tijdschr. etc. XXIII, p. 156, Tab. 10, f. 2 (Ctenophora). — Java.

incunctans Walk. J. Proc. Lin. Soc. IV, p. 93; v. d. Wulp,

- Notes fr. the Leyden Mus. VI, p. 255. (Ctenophora). — Celebes (Wlk.); Sangir, Tondano (v. d. W.) [6.]
- gaudens* Walk., J. Proc. Lin. Soc. IV. p. 93; O. Sack. Ann. Mus. Civ. Genoa etc. XVI, p. 399. (Ctenophora). — Celebes. [7.]
- velutina* v. d. Wulp, Notes fr. Leyd. Mus. VI, p. 256 (Ctenophora). Synon. *C. incunctans* Walk. ex parte (apud v. d. W.) — Celebes.
- curvipes* v. d. Wulp, Notes Leyd. Mus. VI, p. 254 (Ctenophora). — Gorontalo.
- chrysofila* Walk. J. Proc. Lin. Soc. I, pag. 6 (Ctenophora). Singapore.
- rubra* O. Sack. n. sp. — Laos. [8.]
- suspirans* O. Sack. Berl. Ent. Z. 1882, p. 94 (Ctenophora). — Philippine Isl.
- idalia* O. Sack., l. c. (Ctenophora). — Philippine Isl.
- dolens* O. Sack., l. c. (Ctenophora). — Philippine Isl.

Ctenophorae of doubtful location.

- xanthomelaena* Walk. List etc. I, p. 77 (Ctenophora). — East Indies. [9.]
- fuscipennis* Macq. D. E. Suppl. I, p. 10, Tab. 1. f. 4. (Ctenophora). — Brazil. [10.]

Notes, complementary to the Synopsis
(referring to the numbers in the square brackets).

1. I have no hesitation in referring *Tipula idriensis* Scopoli to *Ctenophora bimaculata*. Schiner (Scriptores austriaci etc.) recognized a *Ctenophora* in it, without making up his mind as to the species. The female in Scopoli may be doubtful. —

2. Loew, Besch. Eur. Dipt. II, 24, speaks of the specific identity of *Ct. atrata* and *ruficornis* as highly probable. But long before him, Ruthe had been of the same opinion (Oken's Isis 1831, p. 1207) and Erichson had observed a case of copula of *atrata* ♂ with *ruficornis* ♀ (apud Ruthe, l. c.). Imhoff (in the Insecten der Schweiz 1836—41) had made a similar observation and had reached the same conclusion. More recently Mr. G. de Rossi set the question at rest by breeding 12 males and 15 females from an old stump of alder; 7 of the males belonged to the typical form, 5 to the variety *ruficornis*; both copulated freely with the females. (Katter's Entomol. Nachr. 1882, p. 296).

In the abovequoted paragraph of the Europ. Dipteren, Loew speaks of a *Ct. nigrita* Brullé. Such a species does not exist, and the name merely appears as a slip of the pen in Macquart's Hist. Nat. Dipt. I, 79, instead of *nigrofasciata* Brullé.

3. I take *flavicornis* (W.) Meig. for the same as *ruficornis*. Meigen, who had not seen this species, merely reproduces Wiedemann's description, who had a specimen from Megerle in Vienna which he believed to be from Austria. But the species does not seem to have been found anywhere since, and Schiner know nothing about it; the only local list of Diptera in which I find a mention of *C. flavicornis* is Mr. Puls's untrustworthy list of diptera of the environs of Berlin (Berl. Ent. Z. 1864, Appendix). — About this list compare the unfavorable opinion of Gerstaecker, Entom. Bericht 1863—64, p. 405.

4. *Ctenophora dorsalis* Walker is represented in the Brit. Mus. by a male and a female; *Ct. succedens* by a single female, which is the same as the female of *dorsalis*. It seems probable that this species holds the same relation to the canadian *Ct. atrata* (see above), as *Ct. ruficornis* holds to the european *atrata*. I am not quite sure of the identity of *Ct. dorsalis* with my *frontalis*, as I have but an indistinct recollection of the latter.

5. *P. fumiplena*.

Ctenophora fumiplena Walk. Ins. Saund. p. 449.

Very variable in the color of the body and wings, the yellow sometimes prevailing over the black. Walker described the black variety.

Body deep velvet-black, including the antennae; second abdominal segment orange-red, except the hind margin, which is black; often the orange-red color appears on the sides of the third, fourth and even of the following segments, but always with a more or less large black, generally triangular spot on the hind margin, and also some black on the sides. Legs black, with white rings at the base of the tibiae; sometimes the base of the femora is more or less yellowish. Wings brown, sometimes pale-yellow at the base; a pale yellow crossband between the anterior margin and the fifth vein is connected with a pale yellow spot on the posterior margin at the end of the anal cell; this crossband crosses the distal end of the basal cells, but does not reach (distad) beyond the central crossveins. The crossband is often dissolved in several disconnected spots; sometimes these spots are very small, and in some specimens they disappear altogether and then the wing is uniformly brown. The legs are black with white rings at the base of the femora.

Hab. China.

There are two males and one female in the British Museum, likewise from China, with a yellowish-red thoracic dorsum; the prevailing color of the abdomen is reddish-yellow, only the first segment, and the posterior margins of the following segments, expanded into triangles, are black; male forceps rufous; legs yellow, tarsi brownish; a trace of the white ring is visible on them hind tibiae only; wings brown, with a pale yellow crossband, (as described above), only the shade of them much paler. I am strongly inclined to take even these specimens for a variety of *P. fumiplena*.

6. *P. incunctans*.

Ctenophora incunctans Walk. J. Pr. Lin. Soc. IV, p. 93. — Celebes.

There are three specimens in the British Museum. A male and a female have the head, the base of the antennae, the whole thorax, the coxae and the root of the abdomen reddish-yellow; the male bears the label „type“. This must be considered as the true *incunctans*. A female specimen, likewise labelled „type“, and bearing Mr. Walker's label „*incunctans*“ has only the disc of the thorax orange-red; collare, scutel and metanotum are black. I believe Mr. v. d. Wulp was right in describing this as a distinct species (*velutina*); he found a female specimen likewise from Celebes, in the Museum in Leyden. Mr. Walker's specimens have altogether black legs and brown wings; the whitish streaks, mentioned by him are inconspicuous.

7. *P. gaudens* Walk. (Celebes). Either this species is variable as to the extent of the black on the abdomen, and of the yellow at the root of the wings, or else there is more than one, closely allied, species from the same locality. — „Femoribus ochraceis, apice nigris“ does not quite agree with a specimen from Celebes which I now have before me; the base of the femora is dark reddish-brown.

8. *P. rubra* n. sp. ♂. Wings subhyaline, uniformly colored with a topazine yellowish-brown; stigma brown. Body orange-red, except the tip of the abdomen which is black (♂ forceps and a portion of the upper side of the two preceding segments); front also blackish, but vertex orange. Legs black, except the coxae and the root of the femora, which are reddish; a white ring on the tibiae.

Hab. Mouhot, Laos. A single male (British Museum).

9. *Ctenophora xanthomelaena* Walk. (East-India) described from a single female which I have seen in the Brit. Mus. I doubt that it is a *Pselliophora*; the ovipositor is somewhat like that of *Xi-*

phura; but the third joint of the antennae is not as elongate, as in *Xiphura*.

10. *Ctenophora fuscipennis* Macq. D. E. Suppl. I, p. 10, Tab. 1, f. 4, said to be from Brazil. This is the only *Ctenophora* as yet recorded from South-America. It must be closely allied to *Psel-liophora*, and has white rings like the species of that genus. Mr. v. d. Wulp, Tijdschr. etc. XXIII, p. 157 was even struck by its apparent resemblance to *Ps. javanica*. I would not admit *C. fuscipennis* Macq. as a south-american species, without further verification.

4. Summary notice on the geographical distribution of the Ctenophorae.

The distribution of the forty odd described Ctenophorae (one Dictenidia, ten Xiphuræ, twelve Ctenophoræ s. s., sixteen Psel-liophoræ, one Prionotus, and two species of doubtful location) is as follows:

nine in Northern and Central Europe (1 Dicten., 2 Xiph., 6 Ctenoph.).

two in Southern Europe (*Xiph. fulvida* Bigot, *Ctenoph. fastuosa* Lw.).

one in Eastern Europe and Siberia (*Cten. vittata*).

five in Siberia (4 Xiph., 1 Cten.).

one in Northern Persia (*Cten. magnifica* Lw.)

sixteen Pselliophoræ in South-eastern Asia, including China.

The most remarkable results of this survey are:

1. The total absence of Ctenophoræ 1) from Australia (including New Guinea), notwithstanding the abundance of Pselliophoræ in the Indo-Malayan archipelago; 2) from Africa, and 3) from the whole of America south of the United States. I have already stated that the occurrence of *Ct. fuscipennis* Macq. in Brazil, requires confirmation. In Australia and in S. America Ctenophoræ are replaced by other pectinicorn genera, as we shall see in the next paragraphs; from Africa we have nothing yet.

2. The comparatively considerable number of Ctenophoræ already recorded from, and peculiar to, Siberia, a region the dipterological fauna of which is as yet so very little explored. Four Xiphuræ from the environs of Irkutsk alone, besides one *Ctenophora* s. s.!

5. Early stages of *Ctenophora* sensu stricto and of *Xiphura* compared.

A general account of the larvae of *Tipula* and *Ctenophora* will be found in the Monographs on N. Am. Diptera, IV, p. 4—7. My purpose here in to justify the final separation of *Xiphura* from *Ctenophora* by a comparison of their larvae and pupae.

The european *Ctenophorae*, as we have seen, form two natural groups: *Xiphura* on one side, and *Ctenophora* sensu stricto plus *Dictenidia* on the other. Larvae and pupae of both groups show very marked differences.

The larvae of *Ctenophora* s. s. and *Dictenidia* belong to the same type of structure; whether there is any difference between them that may be deemed of generic importance I have been unable to ascertain. Like many larvae of Tipulidae, they have, at the anal end of the body a pair of pointed, fleshy lobes, and several smaller fleshy protuberances; their skin is tough and opaque, the opacity being due to a dense microscopic, appressed pubescence. Since the rather rough figures of the transformations of the larvae of this group by Reaumur (Mém. V, Tab. 1, f. 11—16), and De Geer (Vol. VI, Tab. 25) no good figure of them has been published, except in the work of Weyenbergh: Beitr. Z. anat. d. hemicephalen Dipteren-Larven; Haarlem 1872. Only Mr. Weyenbergh was mistaken in the identification of his species; the larva figured on Tab. I, f. 1 is that of a *Ctenophora* sensu stricto, probably *C. pectinicornis*, and not of *Xiphura ruficornis*, as the Explanation of the plate has it (l. c. p. 55 and passim).

The larva of *Xiphura* has no fleshy lobes at the end of the body; its stigma-bearing discs are protected by soft, fleshy swellings, surrounding them; its skin, very differert from the tough skin of the larva of *Dict. bimaculata* for instance, is exceedingly delicate and transparent; the anatomy of the larva can be studied through it. The reason for this difference of structure seems to lie in the mode of life of the larvae. I have repeatedly found the larva of *Dict. bimaculata* in the wet detritus under the bark of decaying trees; the appressed microscopic pubescence is a character common to many larvae living in damp situations. The larva of *Xiphura* lives in the decaying wood itself, and burrows in it; its mandibles for this reason are much stronger; and its stigmata are protected against the sawdust around them by the peculiar arrangement described by Mr. Hermann (Mitth. d. Münchener Ver. f. Ent. 1880, p. 146),

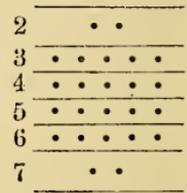
which enables them at the will of the larva, to be shut up or buried within the body.¹⁾

Figures of the larvae and pupae of the *Xiphura*-group may be found in Perris, Ann. des Sc. Natur. 1840, Tab. III, f. 29—37; Gerecke, Verh. d. Ver. für naturw. Unterhaltung in Hamburg, Bd. VI, 1880. Also in the old work of Fischer v. Waldheim, Oryctographie du Gouv. de Moscou 1830—37, Tab. XII. Only Fischer, like Weyenbergh, and Hermann made a mistake in determining the species; it is not the larva of *Ct. pectinicornis* which he figures, but that of a *Xiphura*, either *X. atrata* or *nigricornis*

The pupae of *Ctenophora* and *Dictenidia* are easily distinguished from those of *Xiphura* by the shape of their thoracic processes; these are long and pointed in *Ctenophora*; short, stout, as if doubled up in *Xiphura* (compare the abovequoted figures). The distribution of the spines on the abdomen is likewise different in the two groups. On the ventral side, in *Xiphura*, the spines begin with the fourth segment and are arranged by two's on the fourth, fifth and sixth segments, and two pairs on the seventh thus: In *Dictenidia bimaculata* on the ventral side of the abdomen, the spines begin with a pair on the second segment; then there are five on each of the four following segments, and again a pair on the seventh; the spines on the second have the tips of the legs between them; those on the seventh, are large, flat, bifid at the tip.



Xiphura.



Dictenidia.

The dorsal spines of the abdomen of *Xiphura* are six in number on the intermediate segments, and four on the seventh. *Dict. bimaculata* has two on the first segment, and four on each of the six following ones. Judging from the existing figures, the arrangement of the spines in the pupae of *Ctenophora* s. s. is nearer to that of *Dictenidia* than of *Xiphura*.

Among the pupae of *Tipula* and *Pachyrrhina* as far as I have seen them, and can make out from descriptions the rule is, that on the dorsal side there are no longer spines at all in the middle of the segment, but only rows of spinules on the posterior margins.

The larvae of *Xiphura* and *Ctenophora* are not particular as

¹⁾ Some mistake has occurred in the determination of Mr. Hermann's species when he says that „neither *C. pectinicornis*, nor *ruficornis* have such an apparatus etc.” (l. c. p. 147). But *ruficornis* is a *Xiphura*, a variety of *X. atrata*, and therefore has the apparatus he is describing.

to the kind of wood in which they occur. Thus I find that the larva of *Xiphura atrata* has been found in decaying oaks, poplars, alders, birches and linden. However no instance is on record, as far as I know, of a *Ctenophora*-larva living in the wood of a coniferous tree. *Ctenophora angustipennis* Loew (California) may form an exception, as I remember seeing the imago about the trunks of *Sequoia sempervirens*.

III. On the Australian Tipulina with pectinate antennae and especially on the genus *Ptilogyna* Westw.

The genus *Ptilogyna* was introduced by Westwood in the Zool. Journ. V, p. 440—451 and in the London and Edinb. Phil. Mag. 1835. I reproduce the definition contained in the Zool. Journ., as there is very little to be added to it:

„*Tipulae affinis. Rostrum capiti aequè longum. Antennae: ♂, 13-articulatae, art. 3^o ramum unicum e basi emittente; articulis 4—9 ramos duos longos e basi, alterumque e medio paullo breviorè emittentibus; 10^{mo} longo, ramis duobus basalibus, alteroque brevi, fere apicali; 11—13 brevibus, simplicibus; ♀, 14-articulatae, thoracis vix longitudine, graciles, articulo 1^{mo} crasso 3^o ad apicem infra producto, singulo articulorum 4—10 ramos duos ad basin emittente, ramo externo quam articulum ipsum paullo longiore, interno breviorè, articulis 4 terminalibus simplicibus. Alae cellula discoidea subapicali septemangulata, nervis fere ut in *Limnobia trisulcata* Schum. dispositis. (Tab. XXII, f. 14 ala, f. 15 antenna ♀).“*

The meaning of this last comparison is, that the submarginal cell is in complete contact with the discal, in consequence of which there is no small crossvein, and the first posterior cell is very much shortened. The reference to *Triogma (Limnobia) trisulcata*, as an instance of such a structure, was very well chosen.

An important character of this genus, which distinguishes it from all the related genera, consists in the absence of that pointed, usually more or less hairy, projection of the upper part of the rostrum, commonly called nasus. In *Ptilogyna* this projection is hardly apparent, and closely applied to the fleshy organs under it, instead of being isolated and protruding, as it is in the majority of the Tipulidae longipalpi.

The tibiae, even the front pair, have spurs at the tip (Macq. D. E. I, 1, 45 is mistaken in denying it).

The last joint of the palpi is about equal to the preceding joints taken together (as far as I could see in dried specimens).

The abdomen of the male is not club-shaped, the forceps being of a comparatively simple structure and not stouter than the remainder of the abdomen.

The ovipositor is slender and pointed, *Tipula*-like.

The principal characters in the above definition are: 1) the absence of a distinct nasus; 2) antennae of ♂ with three, those of ♀ with two, rows of branches; the branches in the ♂ very considerably longer than those of the ♀; 3) the complete contact of the submarginal and discal cells, and hence, the absence of the small crossvein.

The antennae, pectinate in both sexes, the absence of a nasus, the structure of the male forceps, perhaps also the position of the anterior branch of the second vein, which distinctly originates from that vein, and does not look like a prolongation of the first¹⁾, as it usually does in *Ctenophora*, constitute so many differences from the latter genus.

Within this definition, there is but one *Ptilogyna* hitherto described, and I have seen no other in any collection; it is the original type of the genus, *P. ramicornis* Walk., from Australia. Macquart received the same species, wrongly labelled North America, and identified it with *Ctenophora fuliginosa* Say (Dipt. Exot. I, 1, 146, tab. 3, f. 2). Loew, Linn. Ent. V, p. 391 showed that this identification was impossible and proposed to call the species *P. Macquartii*. Finally Schiner, Novara p. 38, described the same species once more as *Ptilogyna picta*.

Several other species have been described as *Ptilogynae*, but they all have a distinct nasus; they either belong to other genera, or their position is as yet doubtful.

1. *Ptilogyna par* Walker, Ins. Saund. Dipt. p. 446. — Australia. The type in the Brit. Mus. has the antennae of the male broken; those of the female are subpectinate or serrate, like those of a female *Ctenophora*. This, and the presence of long, distinct nasus prove that this is not a true *Ptilogyna*. Venation of *Tipula*; submarginal cell in punctiform contact with the discal.

2. *Ptilogyna flabellifera* Loew, Linn. Ent. V, p. 392, Tab. 2, f. 1—3. — Brasil. I have not found the type in Loew's collection in Berlin. The description and the figures show a remarkable conformity with the characters of *Ptilogyna*, except the presence of a

¹⁾ Of this character I judge merely from the figure in Westwood, Trans. Ent. Soc. 1881, Tab. 19, f. 14 c. Macquart D. E. I, 1, Tab. 3, f. 2 gives it differently, more like a *Ctenophora*.

distinct nasus, and the country of origin, which is Brazil, while the original *Ptilogyna* is from Australia. That the submarginal cell is not in contact with the discal and that the second posterior is petiolate, are characters of a secondary importance, which may vary in closely allied species. The male alone was described by Loew; it remains to be seen whether the female agrees with that of *P. ramicornis*.

3. *Ptilogyna simplex* Walk. Ins. Saund. Dipt. p. 446 (South-America) is an *Ozodicera*.

If on one hand the generic position of *Ptilogyna par* and *P. flagellifera* is doubtful on account of the presence of a nasus and for other reasons, on the other, there are some Australian flabelliferous Tipulidae without nasus, whose relationship to *Ptilogyna* is likewise uncertain.

Professor Westwood described an *Ozodicera longipedalis* from Australia (Trans. Ent. Soc. Lond. 1876, p. 502, Tab. 3, f. 4; also 1881, p. 381). In my manuscript notes, I find about it: „rostrum without distinct nasus, and formed as in *Ptil. ramicornis*." The expression in the description: naso elongato evidently refers to the rostrum. Now Ozodicerae, like true Tipulae, have a distinct nasus; moreover the eight species hitherto described are South-American, and not Australian. The position of *O. longipedalis* in that genus therefore is doubtful; it may be nearer allied to *Ptilogyna*. The sex of the specimen described by Westwood is not indicated; the antennae are like those of a female *Ptilogyna*; only there are 15, instead of 14 joints; the end of the abdomen, as represented on the figure, seems to be broken off; it is probably a female. *Pedicia gracilis* Walk. List etc. I, p. 37 (sine patria) which I identified with *O. longipedalis* is likewise represented by a female specimen in the Brit. Mus. The submarginal cell is not in contact with the discal, (it is in *P. ramicornis*); but this, as I have already said above, is not a character of great importance.

Macquart, D. E. I, 1, p. 42, Tab. 2, f. 2 introduced a new genus *Ctenogyna* for *C. bicolor* ♀, from an unknown country, probably Australia. He compares it to *Ptilogyna*, but says that it differs in the venation and the presence of spurs on the tibiae. Now, I have shown above that Macquart was mistaken when he wrote that the tibiae of *Ptilogyna* are spurless. The difference in the venation, if it merely consists in the contact of submarginal cell with the discal in *Ptilogyna*, would not constitute a sufficient distinctive character. The rostrum of *Ctenogyna*, if we can rely on Macquart's figure of the head, has no nasus; the antennae seem to be like those of a female

Ptilogyna (as figured by Westwood, Tr. E. S. Lond. 1881, Tab. 19, fig. 14b). Here again we have to keep our opinion in suspense, until more evidence is forthcoming. (I have seen Macquart's type in the Museum in Paris, but my notes about it are not conclusive.)

In the Museum in Vienna I have seen still another Australian *Tipula* with pectinate antennae and without distinct nasus. The incomplete notes which I took about it say that it differs from *Ptilogyna* in having, in both sexes, the branches of the antennae of the same length; the first joint of the antennae remarkably long; the third with a single branch; the following six joints with two branches at the base and the third about the middle; in the female, the latter branch is replaced by a toothlike projection (I believe that the tip of the antennae was broken off in the two specimens which I saw); rostrum of a remarkable length, once and a half as long as the head; forceps of the male of a simple structure, nevertheless club-shaped; compressed from the sides; wings with the second posterior cell sessile; the rest *Tipula*-like.

Thus I have shown that several forms occur in Australia apparently allied to *Ptilogyna* in the absence of the nasus and in the structure of the antennae, but which, on account of the incompleteness of our information about them it is at present impossible to locate. We must know more about them, before we can define the genus *Ptilogyna* and either include those species in it, or form new genera for them.

IV. On the south-american *Tipulina* with pectinate antennae.

Three distinct forms belong here. First, *Ptilogyna flabellifera* Loew, Linn. Ent. V, p. 392, from Brazil, already discussed under the head of *Ptilogyna*. As we have seen, this species being provided with a distinct nasus, cannot be considered a true *Ptilogyna*, although in the other parts of its organisation, it seems to agree with the Australian species of that genus; thus its case remains for the present in suspense.

The two other forms are *Ctedonia* Philippi and *Ozodicera* Westwood.

Ctedonia.

Philippi, Verh. Zool. Bot. Ges. 1865, p. 602, Tab. 23, f. 2.

This genus was introduced for four species from Chili. One of them, *Ct. bicolor*, is figured, and it is probably on the strength of this figure that Schiner, Novara etc. p. 32 and 34, somewhat hastily

declared *Ctedonia* to be a synonym of the Australian genus *Gynoplístia*, which belongs to the Section Limnophilina. Indeed the venation, as represented by Philippi, the course of the auxiliary vein, the position of the veins round the stigma; the shape of the discal cell and the course of the last vein issuing from it (intercalary vein), are all characteristic of the Section Limnophilina. The structure of the antennae is very like that of *Gynoplístia*.

The first *Ctedonia* I had an opportunity of seeing was a specimen labelled *Ct. flavipennis* Phil. (Chili) in Mr. Bigot's collection. It has nothing to do with *Gynoplístia*, and belongs to the Tipulidae longipalpi; it is a remarkable new form of the Section Tipulina, with pectinate antennae and without nasus. Now supposing the species to have been well determined, and *Ct. bicolor* to have been well-represented in the above-quoted figure, the genus *Ctedonia* becomes a compound of at least two heterogeneous forms (about the other two species described by Philippi we know nothing yet).

Philippi's generic and specific descriptions afford no light on this dilemma. The generic description contains the words: „Alae fere omnino ut in *Tipula*“, which would perhaps apply to *Ct. flavipennis*, rather than to *Ct. bicolor*, but not necessarily so. — I have taken the following description of the generic characters of *Ct. flavipennis* from the two specimens in Mr. Bigot's collection; it may be of use to those who will have to deal with *Ctedonia* in future.

Rostrum as long as the head, without nasus; palpi as in *Tipula*, last joint whiplash-shaped, although not very long. Antennae (♂) about one half longer than head and thorax together; joints of the scapus short; two first joints of the flagellum short, subcylindrical, emitting each a long, filiform branch on the underside; the following ten joints emit each a long, filiform branch on their upper side; all these branches are longer than half the antenna, some of them perhaps nearly as long as the whole antenna; they are more or less curled and beset with soft hairs; the end of the antenna is filiform, unbranched; I can count four or five joints on this end, but it seems as if the tip was broken off. (The male antennae, with their long, soft branches remind me of those of the coleopteron *Phengodes*). Thorax and abdomen *Tipula*-like; the end of the abdomen in the male but little clavate. Legs as in *Tipula*; tibiae with large spurs at the end. Venation of *Tipula*; the auxiliary vein ends in the first vein and is not connected by a crossvein with the costa; the first vein is incurved towards the anterior branch of the second and ends in it; the oblique crossvein usually connecting the end of the first vein with the costa is very indistinct here and

thus the little rhomboid cell, existing at this place in most Tipulidae is not separated here from the costal cell; praefurca rather long, with a stump of a vein near the root; the petiole of the first submarginal cell (that is, the interval between it and the origin of the third vein) very short; the bases of the second submarginal and of the first posterior are likewise on the same line; second posterior with rather a long petiole; discal cell rather large.

Gynoplistia fusca Jaenicke, Neue Exot. Dipt. p. 14 (Chili) of which I had a glimpse in Dr. von Heyden's collection in Frankfort, is, as far as I could see, the same species as *Ct. flavipennis* of Mr. Bigot's collection. It is not a *Gynoplistia*.

Ozodicera.

Macq. H. N. Dipt. I, p. 92; 1834.

Ozodicera is a *Tipula* with pectinate antennae.

Antennae 13-jointed; joints 4—9 are provided on the under-side, at the base, with one or two somewhat spindle-shaped branches; the last four joints have no branches (*O. argentina* v. d. W. Tijdschr. etc. XXIV, p. 148, differs in having a pair of branches on all the joints, from 4 to 13); the branches in the species which I have seen were about equal to the joints in length, and seemed to have about the same length in both sexes. — The species with one row of branches form the genus *Hemictetina* Westw. Zool. Journ. Vol. V; the perfect agreement in all the other characters induced Loew, Linn. Ent. V. p. 386, to treat it merely as a subgenus.

Rostrum prolonged like that of *Tipula*, with a distinct, pointed nasus; last joint of the palpi rather short for a *Tipula*.

Venation like that of *Tipula*; second posterior cell subsessile, or entirely sessile; subpetiolate in *O. argentina* v. d. W.

Legs in most of the species very long (like those of some of the *Tipulae lunatae*); tibiae with spurs at the tip.

The abdomen of the male is not, or is but very slightly club-shaped, and has a forceps of a very simple structure.

Such are the characters of the (eight) described and the undescribed species, which I have seen in collections; they are all south-american. —

- I. Antennae bipectinate (*Ozodicera* s. s.): 1) *apicalis* Macq. Loew, Linn. Ent. V, p. 389; 2) *fumipennis* Loew, l. c.; 3) *xanthostoma* Loew, l. c.; 4) *argentina* v. d. W. Tijdschr. etc. XXIV, p. 147.

- II. Antennae unipectinate (*Hemictaina*): 5) *griseipennis* Loew, l. c.; 6) *pectinata* (Wied.) Loew, l. c.; 7) *gracilis* Westw. Zool. Journ. V, p. 450; Lond. a. Ed. Phil. Mag. 1835, p. 281; id. Trans. Ent. Soc. Lond. V, 181, p. 380; 8) *simplex* Walk. Ins. Saund. p. 446 (*Ptilogyna*).

V. On the australian genera *Leptotarsus* Guérin and *Semnotes* Westwood.

Leptotarsus Guérin, Voy. de la Coquille, Dipt. p. 286, Tab. 20, f. 1 (1838) and *Semnotes* Westw. Trans. Ent. Soc. London 1876, p. 501, Tab. 3, f. 1, 2, are abnormal australian Tipulidae, distinguished by their very short antennae, with an incomplete number of joints (ten or less), the presence of a nasus and their peculiar coloring, yellow and black. I translate the definition of *Leptotarsus* (from a manuscript copy, as I do not have the work before me):

"According to the table of genera in the new work of Mr. Macquart (in the Suites à Buffon) the present genus must be referred to the division EE, containing species with a short and stout rostrum. Our insect differs from *Pachyrrhina*, the only genus in this division, by the structure of the last joint of the palpi and the number of joints of the antennae.

"Rostrum stout and short (fig. 1A); front but little protruding; three first joints of the palpi (fig. 1C) cylindrical and equal, the last as long as the two preceding ones taken together, subdivided in five very distinct joints, of which the first is the narrowest, and the last longer than the preceding; antennae (fig. 1B) filiform, 10-jointed; the first is large, cylindrical; the three following stout, short, equal in length; the fourth and fifth narrower and obconical; the four last much narrower, equal in length, elongate. Wings divaricate; five posterior cells; the second petiolate. Legs very slender; tarsi at least twice the length of the tibiae"; (follows the description of *Leptotarsus Macquartii*). —

The figure shows that the antennae are but a little longer than the head; that the rostrum has a distinct nasus; that the venation is that of a *Tipula*. I find in my notes that the figure represents a female; but no mention is made in the letterpress of the sex of the described specimen, nor of the structure of the forceps or the ovipositor.

Semnotes Westwood (l. c.) is represented by *S. imperatoria* and *ducalis*, both from Australia. The antennae here are still shorter than in *Leptotarsus*, shorter than the head, and they count

only 8 joints; last joint of the palpi short. As the sex of the specimens is not mentioned and forceps or ovipositor not described, I conclude that the latter are very little conspicuous and the sexes perhaps difficult to discriminate.

I have seen specimens belonging to these genera in different collections, but my notes about them are very incomplete; the only impression I retained is that these genera are closely related. I think that *Tipula nigrithorax* Macq. D. E. Suppl. IV, p. 15, Tab. 1, f. 4 (Tasmania), and perhaps also *Tipula clavata* Macq.; l. c. p. 14 Tab. 1, f. 4 (Tasmania) belong to *Leptotarsus*. However, the antennae of the latter (l. c. f. 4a) are figured as comparatively long, 12 or 13 jointed; the last joint of the palpi as whiplash-shaped etc. *Tipula tricineta* Walker, List etc. I, p. 73 also seems to belong here.

VI. The Tipulina in the narrower sense.

The genera belonging here are: *Ozodicera* Westw. (which has already been discussed in § IV, among the forms with pectinate antennae); *Macromastix* (Syn. *Macrothorax* Jaenn.); *Longurio* Loew, *Holorusia* Loew, *Stygeropsis* Loew, *Tipula* Linn., *Pachyrrhina* Macq. and *Nephrotoma* Meig.

Concerning Loew's new genera, I have neither notes nor specimens before me, and therefore merely translate the descriptions, adding such remarks as my recollections may suggest.

Stygeropsis Loew, Centuria IV, 42 (1863) was at first published under the preoccupied name of *Prionocera* in the Stett. Ent. Zeit. 1844, Tab. 2, f. 30, head; fig. 31, rostrum and palpi. It was characterized thus: „Corpus pubescens, abdomen cylindricum, breve; alarum nervi palporumque fabrica ut in *Tipula*; antennae 13-articulatae, subtus serratae, crassiusculae, pilis verticillatis destitutae; pulvilli desunt.“ Among these characters the: antennae subtus serratae, crassiusculae pilis verticillatis destitutae alone is of any value for the characterisation of the genus. The pulvilli desunt can merely mean that the empodia are small and inconspicuous, because in describing the north american *S. sordida* (l. c.) Loew says: empodio majore differt. Schiner says distinctly: empodia narrow, but present.

The original species *S. pubescens* Loew, from Posnania, was considered by Schiner, Fauna austriaca II, p. 521, as a synonym of *Tipula Diana* Meigen; Loew however, although he recognizes a *Stygeropsis* in *Tip. Diana*, maintains *S. pubescens* as a different species (see the note to the description of *S. sordida* in Centur. IV, 42).

At any rate he does not seem to have known *Tip. Diana* in 1844, because otherwise he would have mentioned it as congeneric with his *S. pubescens*.

Stygeropsis is a form characterizing northern regions; the prevailing color is a dull gray. Only one (or two, if *S. pubescens* Lw. be accepted as a species), european species are mentioned; but it is possible that some of Zetterstedt's lapponic species (*Tip. serricornis*, *subserricornis* etc.) may belong here. Loew described three north-american species, and I placed *Ctenophora Parryi* Kirby from arctic America in the same genus (see my Catal. N. Am. Diptera 1878, p. 40).

Longurio Loew, Centuria VIII, 2 (1869) is characterized thus:

"Small head, very short, 12-jointed antennae; rostrum shorter than the head, stout; palpi of moderate length; last joint a little longer than the preceding; abdomen slender, very long; hypopygium not incrassate, more like that of a *Limnobia*; terminal appendages of the forceps large, foliaceous."

Longurio testaceus Loew, from Massachusetts, is represented in the collection of Loew's north American types in Cambridge, Mass. by a single male specimen. which looks like an ordinary *Tipula*, with a very long abdomen, not unlike *T. juncea*.

Holorusia Loew, Centuria IV, 1 (1863). The type is a large californian *Tipula*, *H. rubiginosa*. I translate the generic character:

"The last section of the second vein is very arcuate, so that, in its middle course it comes very near the third, again rising towards the costa. The crossvein connecting the first with the second vein is obsolete, so that the inner marginal cell coalesces with the outer one; joints of the antennae short, provided only with very minute bristles; the rest as in *Tipula*. Besides the described species I have seen some *Holorusiae* from Java."

The *Tipula* from Java alluded to by Loew is perhaps the *Tip. praepotens* Wied., which, as far as I recollect, shows some structural characters of *Hol. rubiginosa*. Unfortunately, I have no specimens of either before me at present. Unless I am very much mistaken, these two species are closely related to the group of european *Tipulae* sensu stricto formed by *T. oleracea*, *paludosa*, *gigantea* etc.

The true extent and a better definition of the three last-named genera: *Stygeropsis*, *Longurio* and *Holorusia*, will be obtained only through a general revision of the now very numerous species of *Tipula*, european and exotic. Such a revision should aim at a systematic grouping of the species, with a definition of the groups based upon various parts of the body, including the male forceps. It is a

great desideratum, as the determination of the species, owing to their multitude, is now becoming very difficult and uncertain. Dr. Friedr. Westhoff, in his important paper „Ueber den Bau des Hypopygiums der Gattung *Tipula* Meig. Münster 1882“ has given an outline of such groups for the european species (l. c. p. 37—42), but he observes with perfect reason that a work of that kind, in order to be satisfactory, ought to embrace the species from all parts of the world. Mr. Belings numerous descriptions of the larvae and pupae of Tipulidae may furnish useful characters for the establishment of groups.

I will notice here that Mr. Lioy in his work: *I Ditteri distribuiti secondo un nuovo metodo naturale*, Venezia 1864, p. 34 proposes a new genus *Anomaloptera* for *Tipula nigra*; the only ground given for its separation from *Tipula* is that the second posterior cell, in most specimens, is sessile, as in *Pachyrrhina*. In order to distinguish *Anomaloptera* from *Pachyrrhina*, the generic definition is put thus: „Characters of *Pachyrrhina*, but the prolongation of the head rather long and narrow; front flat; first joint of the antennae elongate.“ At any rate the name *Anomaloptera* is preoccupied twice (Coleoptera and Hemiptera).

Pachyrrhina, although a compact enough genus, contains some forms of transition towards the genus *Tipula*, that require a closer study than they have as yet received.

Nephrotoma, based upon an abnormal number of joints of the antennae (♂ 19, ♀ 15) can hardly be maintained as a genus separated from *Pachyrrhina*. The number of joints, as well as their structure, is variable in the latter genus. The north-american *Pachyrrhina eucera* Loew, Centur. IV, 39 has the same number of joints as the european *Nephrotoma* (19 ♂, 15 ♀). But the north-american *P. polymera* Loew. l. c. 40 has 16 joints in the male, and 14 in the female. These species have the joints of the flagellum, in the male, deeply excised on the underside. *P. macrocera* has the joints of the same shape, but only 13 of them. Thus there is a gradual passage from the normal number 13 to the abnormal 19. *Megistocera braziliensis* Wied. the type of which I remember seeing in Frankfort, struck me at that time as a *Pachyrrhina* with long, filiform antennae, clothed with a dense, erect down (compare the figure of the antenna in Wiedemann, A. Z. I, Tab. VI, f. 14). The number of joints is the normal one, thirteen, and when Wiedemann, in the letter-press says twelve joints, he overlooks the minute terminal joint, distinctly marked in the figure. It would be inexpedient to introduce new genera for all these modifications in one organ only.

Pterelachisus Rondani, Magaz. de Zool. 1842, Ins. pl. 106 was

introduced for one of those species of *Tipula*, that have abortive wings in the female sex. As the rest of the organization is entirely unchanged, such a genus, based on one sex only, has no foundation. Compare Loew, Wiener Entom. Monatsschr. VIII, p. 124 (1864), who is of the same opinion.

Alophroida Rondani, Prodr. I, p. 188 (1856), is insufficiently characterized in the analytical table of the genera, which precedes Rondani's work. The type is a new species, *A. cinerea* which remained undescribed; it is some Tipulid with an open discal cell.

Macromastix.

Nomen novum for *Macrothorax* Jaennicke, Neue Exot. Dipt. p. 11, Tab. 1, f. 2 (1867) preoccupied in Liroy, I ditteri etc. 1864, p. 261.

When Mr. Jaennicke introduced the genus *Macrothorax* for *M. ornatus* from Australia, he had, it seems, no distinct conception of the genus *Megistocera*, to which he compares *Macrothorax*. He had before him the type of Wiedemann's *Megistocera braziliensis* which is no *Megistocera* at all, but apparently a *Pachyrrhina* with abnormal antennae. What other forms he had, I do not know, but the statement in his description that the venation of *Macrothorax* "is the same as in *Megistocera*" proves that he had not compared a true *Megistocera*. The consequence was that his description, based upon a mistaken comparison, is not clear. Moreover the species he describes, *M. ornatus*, has a largely developed thorax and a comparatively small abdomen, on which M. Jaennicke lays a great deal of stress, but which cannot be considered as characteristic of the genus.

There are several species of Tipulina from Australia and New-Zealand, provided with very long antennae in the male sex, and with a tubercle on the front, which I consider as congeneric with the *Macrothorax ornatus* Jaenn., and which (the name *Macrothorax* being preoccupied) I propose to call *Macromastix*. They have been all described as *Megistocerae*.

I shall attempt to draw the generic character of *Macromastix* from specimens of *M. vulpina* Hutton, which I have before me, as well as from notes taken by me from the other species of the genus, which I have seen in different collections.

Rostrum rather prolonged, with a very distinct nasus; last joint of palpi longer than the preceding ones, but not as long as

in ordinary *Tipulae*; front comparatively broad, with a large tubercle above the antennae (comp. Westwood, Trans. Ent. Soc. 1881, Tab. 18, f. 9a; also Jaennicke, l. c. f. 2a).

Antennae of the male much longer than the body; 13-jointed (?) first joint incrassate, second short, ringlike; flagellum almost filiform, the joints gradually increasing in length; I count 10 joints on the flagellum, but I believe there is, *Tipula*-like, a minute joint at the tip; the flagellum is clothed on the underside with a dense, microscopic pubescence mixed at regular intervals with minute spine-like bristles (conf. Westwood, l. c. f. 9a); in *M. vulpina* these minute spines are not visible. Antennae of the female not longer than the head, 13-jointed (according to Macquart and Westwood; I cannot count the joints distinctly in my specimens); first joint subcylindrical, joints of the flagellum somewhat attenuate at base; the last four or five joints much smaller; the whole flagellum beset with hairs, but not verticillate (see Westw. l. c. f. 9b).

Thorax of the ordinary structure (in *M. ornatus* Jaemm. it seems to be larger and more gibbose than usual); collar well-developed, but without neck-like prolongation, as the head is closely applied to it; thoracic suture deeply marked.

Abdomen, compared to that of an ordinary *Tipula*, stout and short; not club-shaped at the end; on the contrary the segment containing the male forceps is narrower than the others; the small forceps protrudes very little; the abdomen of the male differs but little in shape from that of the female, the more so as the ovipositor does not protrude; on the underside of the last abdominal segment of the female a pair of small, short, obtuse valvules are observable (I am speaking of *M. vulpinus*).

Legs *Tipula*-like; tibiae with spurs; empodia present.

Wings. Venation of a true *Tipula*; the contact between the fifth posterior cell and the discal nearly punctiform; second posterior cell petiolate; the rhomboid cell between the margin and the tip of the first vein small, but distinctly marked; the proximal ends of the submarginal, first posterior and discal cells are nearly equidistant from the root of the wing; praefurca rather short; the proximal edge of the stigma, within the marginal cell, shows a thickening which has been mistaken for a vein, and has been so figured by Jaennicke and Westwood. In all these characters *M. vulpinus* agrees with the figures in Jaennicke, Westwood und Macquart.

The species of *Macromastix* hitherto described are:

- ornatus* Jaemm., Neue Exot. Dipt. 12, Tab: 1, f. 2 (*Macrothorax*).
— Australia.
- costalis* Swederus, Act. Holm. 1787, p. 286 (*Tipula*); Synonym
Megistocera dispar Walk., Ent. Mag. 1835, p. 468; Schiner,
Novara p. 39; *Megistocera limbipennis* Macq., D. E. I,
1, p. 60, Tab. 6, f. 1; Suppl. I, p. 17, Tab. 2, f. 3; Suppl.
IV, p. 16; (?) *Megistocera pacifica* Erichs. Wiegman., Arch.
1842, p. 83. — Tasmania, Australia.
- dimidiata* Westw., Zool. Journ. 1830, V, p. 451; Ann. Soc. Ent.
Fr. 1835, p. 682 (*Megistocera*); Trans. Ent. Soc. Lond.
1881, p. 378; Tab. 18, f. 9 (id.). — Australia.
- vulpina* Hutton, Catal. N. Zeal. Dipt. p. 16 (*Megistocera*). —
N. Zealand.

There is a *Megistocera chilensis* Philippi, Verh. Zool. Bot. Ges.
1865, p. 617 from Chili, which may perhaps belong to the genus
Macromastix. I have not seen it. All the other species are from
Australia.

Postscript. In the Synopsis of all the described
Ctenophorae (see above, p. 166) I have accidentally omitted the
following genus, which must be placed on p. 168, before *Pselliophora*:

Prionota v. d. Wulp, Notes from the Leyden Museum, VII,
p. 1; 1884.

nigriceps v. d. Wulp, l. c. p. 2; Tijdschr. etc. XXVIII, p. 81,
Tab. 4, f. 3-4. — Java.

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Zeitschrift/Journal: [Berliner Entomologische Zeitschrift](#)

Jahr/Year: 1886

Band/Volume: [30](#)

Autor(en)/Author(s): Sacken C. R. Osten

Artikel/Article: [Studies on Tipulidae. Part. I. Review of the published genera of the Tipulidae longipalpi. 153-188](#)