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On the male genital organs of the Tipulidæ with short palpi, together with the explanation of Plates III. and IV.

The form of the external male genital organs of the *Tipulidæ with short palpi* is that of a *forceps*; they are not different in this respect from the majority of the insects of the other orders. This forceps serves to seize the tip of the abdomen of the female. In the cases of copulation which I have observed in the genera *Limnobia* and *Erioptera*, the abdomen of the ♀ was seized from below, a little before the ovipositor, so that this organ was stretched on the tergum of the ♂. But, besides the external forceps, there is, between its two halves, a *second internal forceps-like apparatus*. After having secured the female in the described manner, the male, with this second apparatus, seizes the orifice of the inner genital organs of the female and adjusts thereon for copulation. This second forceps seems to vary in structure in different species.

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I have been able to see it distinctly in *Arrhenica spinosa*: it is figured and described below.

My chief attention has been directed to the structure of the external forceps for the purpose of classification; everything remains to be done, as yet, in the study of the more complicated and delicate internal organs. In the description of the figures which follows, I simply relate what I have seen, without attempting any generalization.

Fig. 1, forceps of *L. defuncta* from below.

Fig. 2, the same, from above; *aa*, soft, fleshy lobes; *bb*, horny, falciform appendages, moveable with the lobes, and closely applied although not attached to them; they are fastened only by the base; *cc*, horny, projecting points of the internal organs.

Fig. 3, forceps of *Dicranomyia humidicola* from above; *aa* and *bb* as in fig. 2; *dd*, horny, square appendages, bearing each a pair of bristles; *e*, point of the anal style, visible between the two lobes.

Fig. 4, forceps of *Dicranomyia liberta* from above; *aa* and *bb*, like in fig. 2; *dd*, horny, rostriform appendages, with bristles; *e*, anal style.

Fig. 4a, anal style of *D. liberta*, seen from below.

Fig. 5, one-half of the forceps of *Dicranomyia gladiator* from above; *a* and *b*, as in fig. 2; *e*, anal style.

Fig. 6, forceps of *Limnobia solitaria* from above, half closed; *aa*, moveable, coriaceous halves, with appendages (*bb*); these appendages consist of two lamels, which are closely applied to each other and never divergent; the outside lamel is horny; the inside one seems to be coriaceous; *e*, is the anal style; *cc*, projecting internal organs; *ff*, are soft eminences, (perhaps rudiments of the large soft lobes of *Dicranomyia*?)

Fig. 7, represents the forceps of *Limnobia indigena* from above; the lamels *bb* are also double; in some species, as in *L. tristigma*, I could not distinguish whether the lamels were double.

Fig. 8, forceps of *Rhipidia domestica* from above, and open; *aa*, *bb*, *cc*, *dd* and *e*, as in the preceding figures.

Fig. 9, the same forceps, from below and closed; *e*, anal style.

Fig. 10, forceps of *Teucholabis complexa* from above; 10 a, one-half of the same, from below; *aa* and *bb*, horny appendages.

Fig. 11, forceps of *Antocha saxicola* from above; *aa*, double appendages, consisting of a horny and a soft point, closely joined.

Fig. 12, half of the forceps of *Elephantomyia canadensis* from below; *aa*, horny appendages.

Fig. 12a, forceps of *Dicranoptycha nigripes* from above; *y*, are short, black bristles; *zz*, indistinct, horny appendages. In this species I had for the first time a glimpse of the structure of the slender, horny, hook-shaped organ, figured farther below (fig. 27b), but occurring in most species. When *D. nigripes* opens the forceps this hook comes into a sort of erection and spreads outside of the forceps in the shape of fig. 12, b; *aa*, are slender and horny; *bb*, is a small forceps, moving independently of *aa*, and opening or closing at the point c.

Fig. 13, one-half of the forceps of *D. sobrina*.

Fig. 14, forceps of *Cryptolabis paradoxa* from above; 14 a, the same from below; *aa*, are horny appendages; they are small and indistinct, being closely applied to the fleshy part of the forceps; *b*, seems to be the rudiment of an anal style.

Fig. 15, tip of the abdomen of *Cryptolabis paradoxa*, female, from the side; fig. 15a, the same, from above; there are no visible horny lamels; the tips, *aa*, are beset with microscopic bristles.

Fig. 16, forceps of *Gonomyia blanda* from above and open.

Fig. 17, half of the forceps of *Gonomyia cognatella*, from above.

Fig. 18, forceps of *Gnophomyia tristissima*, from above, and half open; 18a, female ovipositor of the same species.

Fig. 19, half of the forceps of *Erioptera vespertina*, side view.

Fig. 20, forceps of *Erioptera armata* from above.

Fig. 21, the same, from the side. Its structure is somewhat complicated; besides the coriaceous parts *dd*, there are two pairs of horny appendages attached to them; they are invisible from above, except the tip of one of them, which projects at *f*. One of these appendages is seen at *h* in fig. 21; detached, it looks somewhat like fig. 21a, in which the portion *bbb* is closely applied to the inside of the lobe *d*, and the portion *c* branches off. The other pair of appendages (*ee* on fig. 21) is slender and curved; each of them is attached to one of the lobes *dd*.

Fig. 22, forceps of *Erioptera caloptera* Say, from below.

Fig. 23, forceps of *Erioptera venusta* from above.

Fig. 23a, the same from below; the horny appendages *aa*, seen from below, appear double, consisting of the horny part *bb*, and a membranaceous appendage *cc*; fig. 23b represents it detached; its margin *d* is horny, the rest is a thin membrane; these two appendages are not closely applied to each other, and have an interval between them, although they move simultaneously.

Fig. 24, forceps of *Limnophila luteipennis*, from above *aa*, two pairs of moveable falciform appendages; the outside ones are horny, the inside one seems to be of a softer consistence and are ciliated.

Fig. 25, forceps of *Limnophila aprilina* from above; structure almost like the preceding; the outside appendages have a longitudinal notch, (fig. 25b.)

Fig. 26, forceps of *Limnophila ultima* from below; outside, horny appendages are slightly hooked at the tip.

Fig. 27, forceps of *Limnophila rufibasis* from above, open; the appendages *aa* are large and strong, serrated inside; *bb* are also horny, and look like fig. 27a; the point *c* is directed upwards; 27b is a slender, horny organ, situated inside of the forceps, and concealed when it is closed; its structure is perhaps analogous to a similar organ in *Dicranoptycha* (fig. 12a); the same organ is more or less distinctly seen in almost all other species.

Fig. 28, forceps of *Limnophila montana* from above, closed; it is distinguished at once by the position of the appendages, which is peculiar to this species; *aa* are the tips of internal horny organs; they protrude, together with the soft part *f*, when the forceps are opened.

Fig. 28a, the same from the side; *a* is the same as in fig. 28.

Fig. 29, forceps of *Symplecta punctipennis* from above; *a* and *b* are horny.

Fig. 30, forceps of *Arrhenica spinosa* from above; *a* horny, *b* soft appendage; *cc* internal forceps, (fig. 30a represents it detached); at *d* is a joint, by means of which this forceps is opened or closed.

Fig. 31, forceps of *Eriocera fuliginosa* from above; *aa* are horny; *bb* soft; *c* is curved downwards, like fig. 27b.

Fig. 32, forceps of *Amalopsis inconstans*, from above and half open. It is difficult to convey an idea of this organ by a drawing, the points *f*, *g* and *h* being all curved and directed upwards; *aa* are horny; *bb* soft; *cc* coriaceous, hollow inside; *h* is figured separately, (32b); the point *f* is bifid, (32a).

Fig. 33, forceps of *Bittacomorpha clavipes* from below.

Fig. 33a, the same, from above.

Fig. 34, forceps of *Cladura flavoferruginea*, from the side; *a* is convex and seems to be hollow inside; the concavity can be seen at *b*; *cc* is the forceps. This figure is a very rough sketch, drawn from a dry specimen and may not, for this reason, be quite accurate.

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