ON UROTHRIPS PARADOXUS,

A NEW TYPE OF THYSANOPTEROUS INSECTS.

By Richard Siddoway Bagnall.

(Plate III.)

Dr. G. Horváth has kindly submitted to me a valuab lecollection of Thysanoptera from the Hungarian National Museum, Budapest, which contains many new and minute forms collected in North and Central Africa. One of the species, which I here describe, is of more than usual interest, being the type of a new family, and departing from all the known species of Thysanoptera in so many important features, as to necessitate an ultimate re-writing of the Ordinal characters.

There are only two specimens both of which I have mounted in Xylol Balsam, after clearing in Xylol. Unfortunately certain important parts, such as the mouth-organs, the sexual characters, and the legs (which are tucked up under the body) are indistinct, but as the specimens appear to be examples of each sex, I have not made a suggested attempt to remount one of them after masceration in Caustic Potash.

The species is Tubuliferous. One specimen has the abdomen more slender, and the long terminal hairs of the tube simple, whilst the other has the abdomen stouter and more sharply narrowed to the tube, and the terminal hairs whip-like in structure. In the first-named specimen the chitinized rod of the ninth abdominal segment, which characterizes the female *Tubulifera*, appears to be present though very small and indistinct, and I have, therefore, throughout this paper regarded that specimen to be the female, and the example with the whip-like terminal hairs to be the male.

As the base of tube, or tenth abdominal segment, is entire, or seemingly so, in both specimens, this determination of the sexes is quite possibly erroneous, though the specimens are undoubtedly the sexes of one species.

Although the short diagnosis of the genus at once characterizes both the family and species, I have followed this short description by a long and detailed description of the species, and at the end have enlarged upon the most important features, such as the antennæ,

the palpi, chaetotaxy, stigmata, and the ninth and eleventh abdominal segments.

It would seem that the discovery of this minute creature may considerably modify our ideas as regards the systematic position of the Order Thysanoptera, and perhaps help us to more accurately recognize to what other orders of Insects the *Thrips* are most nearly related.

In the following diagnosis of the genus, the characters which may be reasonably considered as of more than generic value are italicized, being discussed in their relation to the known *Tubulifera* towards the conclusion of this paper.

Order THYSANOPTERA.

Suborder TUBULIFERA Haliday.

Family *Urothripidae* mihi.

Genus Urothrips nov.

Form depressed. Head longer than broad, and one-half (0·5) as long again as the prothorax. Eyes small; ocelli absent. *Antennae seven-jointed*, slightly longer than head and set below the vertex, with second joint cyathiform, strongly constricted at base; third subglobose, and similarly constricted into a stem at base; fourth and fifth joints sub-quadrate, and apparently depressed; sixth elongate, depressed, linear, and slightly constricted at base; and the apical joint narrower and tapered to tip. Mouth-cone shorter than its breadth at base, scarcely reaching one-half (0·5) way across prosternum. *Maxillary and labial palpi each composed of a single joint.*

Fore-tarsus in both sexes apparently without a tooth. Wings absent. *Posterior pair of coxae most widely separated.*

Abdominal segments one to eight strongly transverse, and segments three to eight armed with a strong spine at each posterior angle. *Ninth abdominal segment elongate, much longer than any of the preceding.* Terminal hairs of tube extremely long, *whip-like in the one sex and simple in the other. Bristles and hairs, found on the antennae, head, thorax, legs, and abdomen of known* Tubulifera, *absent or obsolete.*

Eleven pairs of stigmata present.

Urothrips paradoxus n. sp.

Measurements. Total length of insect 1·05 mm. Head: length 0·15 mm., breadth 0·135 mm. Prothorax: length 0·1 mm., breadth 0·19 mm. Width of metathorax 0·23 mm. Width of second abdominal segment ♀ 0·235 mm., ♂ 0·25 mm. Length of ninth abdominal segment 0·115 mm. Length of tube 0·15 mm.

Coloration. The color of the head, prothorax, mesothorax, fore-legs, and intermediate and fore-coxæ is dark brown, with the fore-coxæ and the sides of the head, prothorax and mesothorax darker, and, excepting the fore-legs, irregularly splashed with crimson hypodermal pigmentation. Intermediate segments of the antennæ colorless, the basal and the sixth joint each tinged with yellow, and the apical joint of a light brown color. The metathorax and abdomen, as well as the hind legs, and the intermediate femora, tibiæ and tarsi, are pale lemon-yellow, the abdomen being shaded with a line of irregular darker markings down the centre and each side. The hypodermal pigmentation, already noticed in the head, prothorax and mesothorax, is very conspicuous in the abdomen, where we find a line, or series, of crimson splashes down each side from the metathorax to the ninth abdominal segment, and a line of similar, but smaller irregular markings down the centre from the second to the eighth segment.

Head. The head is only slightly, about one-eighth (0·125), longer than broad, and one-half (0·5) longer than the prothorax; it is broadly rounded before the eyes, and has the cheeks parallel, with a slight constriction before the base. From below the eyes to the base, in the centre, the dorsal surface is strongly reticulated, whilst the sides and the fore-part are roughly scabrous. The eyes are comparatively small, having the facets large, and massed together without apparent margin; and the ocelli are absent.

The antenna is only slightly longer than the head, set below the vertex, and having the basal joints well-separated. The first joint is short and apparently cylindrical; the second globose, and the third sub-globose, both these joints being strongly constricted at the base, and cup-shaped distally, thus forming a stem; the fourth joint is quadrate, as broad as the third at apex, and as long as broad; the fifth is as long as the fourth but narrower; the sixth is narrower again, threequarters (0·75) the length of the preceding, and slightly constricted at base, whilst the apical joint is of an elongated conical form, or pyriform, being narrower at its broadest than the penultimate, and equal to it in length. The second segment is peculiarly like the berry of the Yew (*Taxus baccata*)

and from the centre of the frontal face there is what one might call a raised pedestal to take the stem of the third antennal segment (Pl. III. fig. 6). The sense-organs, which are presumably present, are extremely difficult to see. In certain lights long, colorless bristles or filaments may be faintly detected springing from the sides of segments four, five and six. At the tip of the apical joint there is a bristle nearly as long as the joint itself, whilst, under high magnification, a comb-like series of hairs, all equal in length and set close together, may be detected stretching from the extreme tip for threequarters (0·75) the length of joint, and near the inner edge. The pits from which these setae spring touch each other. At the base of this joint, on the inner side and in the same line as the series just described, there is a single and longer bristle, and opposite, near the outer edge, are two moderately large seta-pits (Pl. III. figs. 4, 5).

The mouth-cone is broadly rounded and much shorter than its breadth at base, scarcely reaching half-way (0·5) across the prosternum (Pl. III. fig. 2). Owing to the dark pigmentation of the head and prothorax, the mouth-parts of the specimens under consideration are somewhat difficult to make out. In one specimen, however, the right maxillary palpus is discernible, and on a first examination I was under the impression that it was two-jointed as in all the known *Tubulifera*; but in reality it is composed of only a single joint, as, under the highest magnification the seeming segmentation of this palpus takes the form of three distinct seta-pits crossing it obliquely near the basal third, being the probable seats of a series of sensory filaments (Pl. III, fig. 7). A few touch-bristles (sensory filaments) are found at the tip of the maxillary palpus. The labial palpi are somewhat widely separated, the form of the palpus being also distinctive. It is apparently formed of a single joint, and is slightly constricted towards the apical third, the tip being globiform, and only thinly chitinized, having a soft and pulpy appearance (Pl. III. fig. 8).

Thorax. The thorax and appendages do not exhibit any striking peculiarity in structure, excepting that the hind-pair of coxæ are the most widely separated. The prothorax is transverse, one-third (0·33) broader than the breadth of the head, twice as wide near the base as long, and has the surface weakly scabrous. The episternum is not fused with the mesothorax, which latter is short, a little narrower than, and well-separated from, the prothorax by a deep constriction. It is widened to its juncture with the metathorax, and this lateral widening is smoothly continued to the basal third of the metathorax, which is then slightly constricted to the base of the abdomen. A very short, broad,

and extremely minute tooth, if one may so call it, is discernible at each hind angle of the prothorax in the female, and this I cannot detect in the male. Each pair of coxæ is widely separated, the space between the hind ones being the greatest. The outer edge of each fore-coxa projects slightly beyond the sides of the prothorax. The fore-leg (Pl. III. fig. 9) is enlarged; the femur is rounded at the outer angle and is very broad, and the tibia is also short and broad, whilst the tarsus in both sexes is apparently without a tooth. The surface of the fore-femur and tibia is somewhat strongly scabrous. The intermediate and hind-legs are moderately short and stout.

Abdomen. The abdomen is broadly jointed to the metathorax, and is about two-thirds (0·66) the length of the whole insect, being widest at the second segment, where it is a little wider than the metathorax, the segments gradually decreasing in width from the fourth segment to tube, being slightly more slender and more gradually narrowed in the female than in the male. The body-segments one to eight are strongly transverse, whilst each of the segments three to eight is armed with a strong, downwardly-directed spine, set in a protuberance, or wart, at each posterior angle, these spines overlapping (and laterally protecting) the segmentation.[1] The ninth segment is elongated, and narrowed from the basal third to base of tube, being a little less than twice as broad at base as at apex, and one-eighth (0·125) longer than its greatest breadth. There is an irregular series of longitudinal wrinkles from the first segment to the tube, whilst the dorsal plate of each segment is, under high magnification, sparsely and irregularly perforated, these very minute perforations being most likely seta-pits, a few having what appear to be extremely short and minute setæ, out of all proportion to the size of the pit from which it apparently spring. The tube is a little more than four-fifths (0·85) the length of the head, and nearly five times as long as broad; the sides being more or less parallel to the apical fifth, and then narrowed to the extreme apex. The tip of the tube, or, as Buffa has shown it to be, the eleventh abdominal segment, is encircled by six long hairs or bristles, the form of which differs considerably in the sexes. In the one sex (♀) each hair is tapered very gradually from the base to the extreme apex, and is at least three times the length of the tube (Pl. III.

[1] Near the base of each of these lateral spines on segments three to eight there appears to be at least two very minute papillæ. They are, however, extremely difficult to discern with entire satisfaction in the specimens under consideration, and are not shown in the figures.

fig. 11); and in the male the hair is shorter and whip-like in structure, being uniformly thick for about one-third (0·33) its length, that is for about the length of the tube, and then abruptly reduced and continued as a long, colorless filament for not quite twice the length of the basal part (Pl. III. fig. 12).

Habitat. German East Africa: Arusha, collected in October and November 1905 by Mr. C. Katona.

Pigmentation.

Perhaps because of the extremely dull coloring of most species of the Thysanoptera, the type and brightness of the coloration in *Urothrips* is at once striking. The colorless intermediate segments of the antennæ, too, are peculiar, whilst the strongly defined line of demarcation between the yellow pigmentation of the hind-part of the body and the brown of the fore-part, at the juncture of the meso- and metathorax, is also worthy of note.

The brown and yellow pigmentation is in the cuticle itself, but the brilliant and very striking crimson coloration is from pigment deposited in the hypodermis. It will be noticed (Pl. III. fig. 1) that this hypodermal pigmentation, which is of a very coarse, granular nature under high magnification, is thickest in the line of the trachea, being more generously deposited in the region of each stigma, and that it is not present in any of the limbs, though found in the head and thorax, as well as in the abdomen. I believe that in all probability the hypodermal pigmentation in *Urothrips* has some function to perform, that, in fact, it is an organ of more or less importance.

Chætotaxy.

All the known species of Thysanoptera have a number of more or less conspicuous hairs or bristles present, each of which, we may take it, penetrates the chitin, and, being connected with a special nerve, constitutes a peculiarly simple sense-organ. In certain orders of insects the arrangement and character of these setæ is evidently of considerable taxonomical importance, and we may regard the Thysanoptera as one of these orders.

In the Thysanoptera these hairs and bristles are found chiefly on the antennæ (apart from the sense-cones or sensoria), the head, the prothorax and legs, and the abdomen; and those on the prothorax and the hind segments of the body are apparently of the first im-

portance in classification. This is especially so in the sub-order *Terebrantia,* the number and arrangement of the bristles on the prothorax, or the absence of them, being used to some extent as generic characters.

In the suborder *Tubulifera* five important pairs of prothoracic bristles are recognized, whilst each segment of the abdomen bears a few setæ, which are small on the anterior segments, and increase in size and prominence towards the tube, the ninth segment always bearing a series of hairs around the hind-margin, which are often longer then the tube. At the tip of the tube there is invariably a circlet of long, slender hairs, which appear, however, to be of a different character to the above-mentioned setæ, and will be more particularly dealt with herein under the heading of «the eleventh abdominal segment».

The characters of the prothoracic and abdominal chætotaxy will ultimately prove, I believe, to be of undoubted taxonomical value in the *Tubulifera* as well as in the *Terebrantia.*

Duly considering the above facts, *Urothrips* presents a most interesting condition in being entirely without the above-mentioned setæ. Under high magnification, and in certain lights, however, seta-pits can be detected in the chitinous skeleton of the head, thorax and abdomen, though for the greater part these are irregularly placed, minute and of no importance. Under still higher magnification a minute black spot may be seen in the centre of more than one of these minute seta-pits, whilst what appears to be an extremely short and most minute hair, is seen to spring from one or two of the other pits. Whether these are the remnants of hairs, or poorly developed ones or wether the appearance is altogether deceptive, and only an optical illusion caused by certain lights, it is difficult to say. Knowing that the Tubuliferous Thysanoptera, without exception, possess more or less prominent spines on the hind-margin of the ninth abdominal segment, one would naturally expect to find corresponding seta-pits in *Urothrips.* But this is not the case, the only pits of any value being found in the prothorax, where the mid-lateral and posterior-marginal pairs are present, though not large, nor easily detected (Pl. III. fig. 1).

Maxillary and labial palpi.

The form and segmentation of the maxillary and labial palpi of the known Thysanoptera form useful characters in the division of the families. The labial palpus is always two-segmented in the *Tubulifera*

(Phloeothripidae), and *Thripidae*, and two-, four- or five-segmented in the *Aeolothripidae*, whilst the maxillary palpus is also two-segmented in the *Tubulifera*, but in the *Terebrantia* it is either two- or three-segmented in the *Thripidae*, and three- to seven-segmented in the *Aeolothripidae*, and in this latter family is geniculate in form. It is only recently that the Aeolothripid genus, *Orothrips* Moulton,[1] having the labial palpi five-segmented, and the maxillary palpi seven-segmented, was founded by Mr. Dudley Moulton, necessitating an extension of the family characters as given by both Uzel and Hinds.

The single-jointed maxillary and labial palpi of *Urothrips* (Pl. III. figs. 6, 7). is an important feature in that puzzling insect, and the oblique series of seta-pits near the base of the maxillary palpus is suggestive, possibly indicating that, in some ancestral forms, division had taken place at that point.

Antennæ.

The antennæ of the known *Tubulifera* are almost invariably eight-segmented, having the segments cylindrical, and usually longer than broad. The intermediate segments are, as a rule, decidedly longer than broad, more or less claviform, and furnished with simple sense-cones, all the antennal joints having a greater or less number of spines or hairs.

There are, however two known Tubuliferous genera, each with but a single species, in which the antennæ are only seven-segmented. They are *Kladothrips* Froggatt,[2] and *Allothrips* Hood,[3] but, with the exception or the number of joints, there is, in each case, no departure from, or modification of the type of antenna common to the *Phloethripidae*, and it is obvious that this reduction in the number of antennal joints is the result of the fusion, or union, of the two apical ones. The genus *Neothrips* Hood (closely allied to *Allothrips*) is an interesting connecting link, having the two apical joints apparently connate, but with the separating suture still visible.

It will at once be seen that the seven-segmented antennæ of *Urothrips* is of quite a different and distinctive type.

[1] A contribution to our Knowledge of the Thysanoptera of California. (U. S. Department of Agriculture, Bureau of Entomology. Technical Series, No. 12, Part III., I—VI., pp. 39—68., plates I—VI., April 5th 1907.)

[2] Australian Insects. Sydney 1907. p. 394. tab. 37, fig. 3—5.

[3] New Genera and Species of Illinois Thysanoptera. (Bulletin of the Illinois State Laboratory of Natural History, VIII., Art. II., pp. 361—379., figs. 1—9. Aug. 22. 1908.)

Reticulation.

A very conspicuous and regular network, which is, as a rule, heaviest upon the head and prothorax, is found in several species of Thysanoptera, being well exemplified in the genera *Parthenothrips* and *Heliothrips*, and when so strongly pronounced is useful in classification. This reticulated structure has not been noticed in the *Aeolothripidae* is found in a few genera of *Thripidae*, and is very rare in the *Tubulifera*. Hinds says that the has discovered it in an undescribed species of *Phloeothripidae*, whilst I have noticed it in two species (referable to the one genus) from the Hawaiian Islands. In *Urothrips* strong reticulation is very conspicuous at the back of the head (Pl. III. fig. 3).

Coxæ.

In the *Aeolothripidae*, *Thripidae* and *Phloeothripidae*, without exception, we find that the intermediate coxæ are much more widely separated than either the anterior or posterior pairs. This is therefore a very important character in the Thysanoptera, which is not, however, borne out in *Urothrips*, the hind pair of coxæ in that genus being the most widely separated.

Ninth abdominal segment.

The ninth abdominal segment of *Urothrips* is strongly characteristic. Instead of being a short segment it is longer than any of the preceding, being as long as the seventh and eighth segments together. As already stated it is without spines or prominent seta-pits, but on the under side of the ventral plate there appears to be an organ which I cannot make out, or understand, and which does not appear to have been previously noted in the Thysanoptera. It is found in the middle of the front margin, is present in both sexes, and looks like a short, broad carina formed by a strong thickening of the chitin (Pl. III. fig. 10*a*).

Eleventh abdominal segment.

Buffa has recently shown that the Thysanoptera possess in reality eleven abdominal segments, the eleventh segment in the *Tubulifera* being that part of the tube from which the long hairs encircle it at tip. In all the species I have had the opportunity of examining, each alternative hair is a short one. In some species the short hair in the mid-line, viewed dorsally, is slightly flattened, whilst Buffa describes

(in an unnamed African species) two bladelike process, which he calls «palettes», proceeding from a similar base as the ordinary hairs, one on each side of the ventral midline,[1] and a similar organ is present in *Microthrips* BAGNALL.

In *Urothrips* we find six long hairs, each springing from a somewhat stout basal-part, and having no shorter bristles between them. In the mid-line, on the dorsal as well as the ventral side, there is a minute stalk, produced into a kind of inflated structure bearing at its extremity an extremely minute hair (Pl. III. fig. 13 *x*), but whether this structure is flat and plate-like, globular, or even vesicular, I cannot say. The six terminal hairs are thereby divided at their bases into two groups of three each.

Sexual differences.

The sexual characters of *Urothrips*, apart from the genitalia, the structure of which I have been unable to distinguish, are also peculiar to the genus, and have already been touched upon. The chief difference lies in the form of the terminal hairs, which are whip-like in the male and simple in the female, whilst the latter sex possesses a very minute tooth at each posterior angle of the prothorax (Pl. III. fig. 2), which cannot be distinguished in the male.

Tracheal stigmata.[2]

In all the known Thysanoptera either three or four pairs of stigmata are present. They appear always at the anterior angles of the mesothorax, and on the sides of the first and eighth abdominal segments, whilst the fourth pair, which is invariable present in the *Tubulifera* and as a rule, in the *Terebrantia*, is to be found on the metathorax, near its juncture with the mesothorax and close behind the attachment of the hind wings, when present.

[1] Trentuna specie di Tisanotteri italiani. (Atti Soc. Tosc. di Sci. Nat., Mem., XXIII., pp. 77, plates V—VI., figs. 1—8. 1907.)

Alcune Notizie anatomiche sui Tisanotteri Tubuliferi. (Redia IV, fasc. 2°, p. 369—381., figs. 1—17., July 10th 1908.)

[2] KARL JORDAN, Anatomie und Biologie der Physapoda. (Zeitschrift für wissentschaftliche Zoologie. XLVII., 4., p. 541—620., tab. XXXVI—XXXVIII., Leipzig 1888.)

H. UZEL, Monographie der Ordnung Thysanoptera, Königgrätz 1895.

W. E. HINDS, Contribution to a monograph of the Insects of the order Thysanoptera inhabiting North America. (Proc. U. S. Nat. Mus. XXVI., p. 79—242., plates I—IX., No. 1310., Washington 1902.)

UZEL states that four pairs of spiracles are present in the *Terebrantia*, but HINDS points out that the last-named pair, the metathoracic (or meso-metathoracic) pair, are very small and in some species totally absent, whilst in others, where traces of stigma are to be found, they are vestigial, and really functionless.

The tracheal system in *Urothrips* is of the first importance, the species in question possessing no less than eleven pairs of stigmata, namely the pro-mesothoracic and meso-metathoracic pairs, and a pair on each of the abdominal segments one to nine. The abdominal stigmata in the segments one to eight are large and very distinct, and are somewhat remote from the edges of the segment in which they occur; but the stigmata on the ninth segment, though equally large, are much more difficult to distinguish, being placed laterally.

Phylogenetic considerations.

Provided that HINDS speculations as to the phylogeny of the Thysanoptera are correct, then *Urothrips*, possessing seven-jointed antennæ, and single-jointed maxillary and labial palpi, etc., would certainly appear to be a member of one of the most recently evolved groups, and, following the discussions and conclusions of previous authors, it would at once be regarded as a more advanced type than any member of the *Tubulifera* formerly known.

The presence of numerous pairs of stigmata in *Urothrips*, in place of the four pairs found in the previously known *Tubulifera*, and in most, if not all, the *Terebrantia*, would seem to suggest a primitive form rather than a comparatively recently evolved type. It is a striking fact that in the species of Thysanoptera that have been anatomically examined, the main tracheal trunk on each side of the abdomen runs out laterally in each of the abdominal segments one to eight, precisely as if to open into a stigma, though the stigmata are only present in the first and eighth body-segments. Surely this suggests that the intermediate set of stigmata had only been comparatively recently lost, which suggestion is supported by the fact that the stigmata present in the *Tubulifera* and *Terebrantia* are very small compared to those in *Urothrips*, and still further strengthened when it is remembered that the meso-metathoracic pair of stigmata is always present in the *Tubulifera*, but in the *Terebrantia* they are very small, often vestigial and functionless, and in some species totally absent.

In the above notes I have pointed out certain very interesting and characteristic features, touching slightly upon phylogeny, but, though fully recognizing the importance of *Urothrips*, I think it desirable to reserve full consideration of the systematic position of the Thysanoptera, and possible ancestry, hoping that more material may be brought to light in the near future, and so help us to come to some conclusion on those important questions.

The Groves, Winlaton-on-Tyne, Co. Durham, 6. III. 1909.

N. B. — Since sendig this memoir to press I have received from Dr. PIETRO BUFFA, Rome, a paper: Contribuzione alla conoscenza dei Tisanotteri. (Boll. del Laboratorio die Zoologia della R. Scuola Superiore d'Agric. in Portici, III, p. 194–196, fig. 1—3. Jan. 1909) in which he describes the two new genera *Amphibolothrips* and *Bebelothrips*, both of which, without doubt, are referable to the family *Urothripidae*. BUFFA figures the eleventh abdominal segment as possessing the minor intermediate hairs and in his prefatory note says: «Questi Tubuliferi sono molto interressanti perchè presentano un numero di articoli delle antenne minore del solito che è di 8.» I believe that a more critical examination of his specimens will further reveal the single-jointed palpi, the widely-separated posterior coxæ and the numerous pairs of stigmata — the chief charactere upon which I have erected the family, — but which are not mentioned by BUFFA. *Amphibolothrips* closely approaches *Urothrips* but has the æntennæ four-jointed.

19. IV. 1909.

EXPLANATION OF PLATE III.

Fig. 1. *Urothrips paradoxus* nov. gen. et n. sp. ♀, × 65.
s 1—11 = stigmata present in *Urothrips; sx* 1–4 = stigmata present in previously known species of Thysanoptera.
" 2. Dorsal view of head, and part of prothorax and left fore-coxa; head partly cut open near base to show position of mouth parts; ♀ × 130.
" 3. Dorsal reticulation of head; × 250.
" 4. Right antenna; × 130.
" 5. Apical antennal joint showing sense-hairs; × 400.
" 6. Second an third antennal joints showing segmentation; × 250.
" 7. Maxillary palpus; × 400.
" 8. Labial palpus; × 400.
" 9. Left fore-leg, showing coxa, trochanter, femur, tibia and tarsus; × 130.
" 10. End of abdomen; × 130.
a = chitinous thickening at base of ninth segment in both sexes; *s* = stigma.
" 11. Eleventh abdominal segment in the ♀, showing simple hairs; × 125.
" 12. Eleventh abdominal segment in the ♂, showing whiplike hairs; × 125.
" 13. Eleventh abdominal segment; × 250.
x = specialized dorsal (and ventral) bristle in both sexes.