

THE INDIAN CADDIS FLIES (TRICHOPTERA)

BY

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PART XI

(With 13 plates)

(Continued from page 422 of this volume)

SERICOSTOMATIDAE McLACHLAN—(Continued)

Goerodes Ulmer.

Goerodes Ulmer, Coll. Selys., fasc. 6, pp. 37-38, 1907.

Goerinella Ulmer, D. ent. Z., 75, pp. 68-70, 1915.

Crunobiodes Martynov, Ann. Mus. Zool. Acad. Sci. URSS., 28, p. 471, 1927.

Crunoeciella auct.

The genus is here based mainly upon characters furnished by the male genitalia. The species of *Goerodes*, in the male, show a considerable diversity in neuration, particularly in the anterior wing so that neuration should be considered as specific rather than of generic importance.

The insects are uniformly brown of varying shades. Basal joint of the ♂ antennae unbranched. Maxillary palpi ♂ generally two-jointed, shorter than the labial palpi, terminal joint, which is rather obscure, carrying a tuft of dark, much broadened scales. Spurs 2, 4, 4.

Genitalia ♂ :—All species in the genus conform in a production of the centre of the dorsal margin of the 9th segment in two pairs of processes, the outer usually appearing as asymmetric, sinuous and very stout spines, the inner varying in form; sometimes these processes are replaced by a plate or plates; the penis short and curved; inferior appendages always branched, the branches varying in number and form; they agree in all species in carrying a more or less erect branch, generally with a dilated apex, arising from the upper margin of the appendage towards the base, as seen from the side.

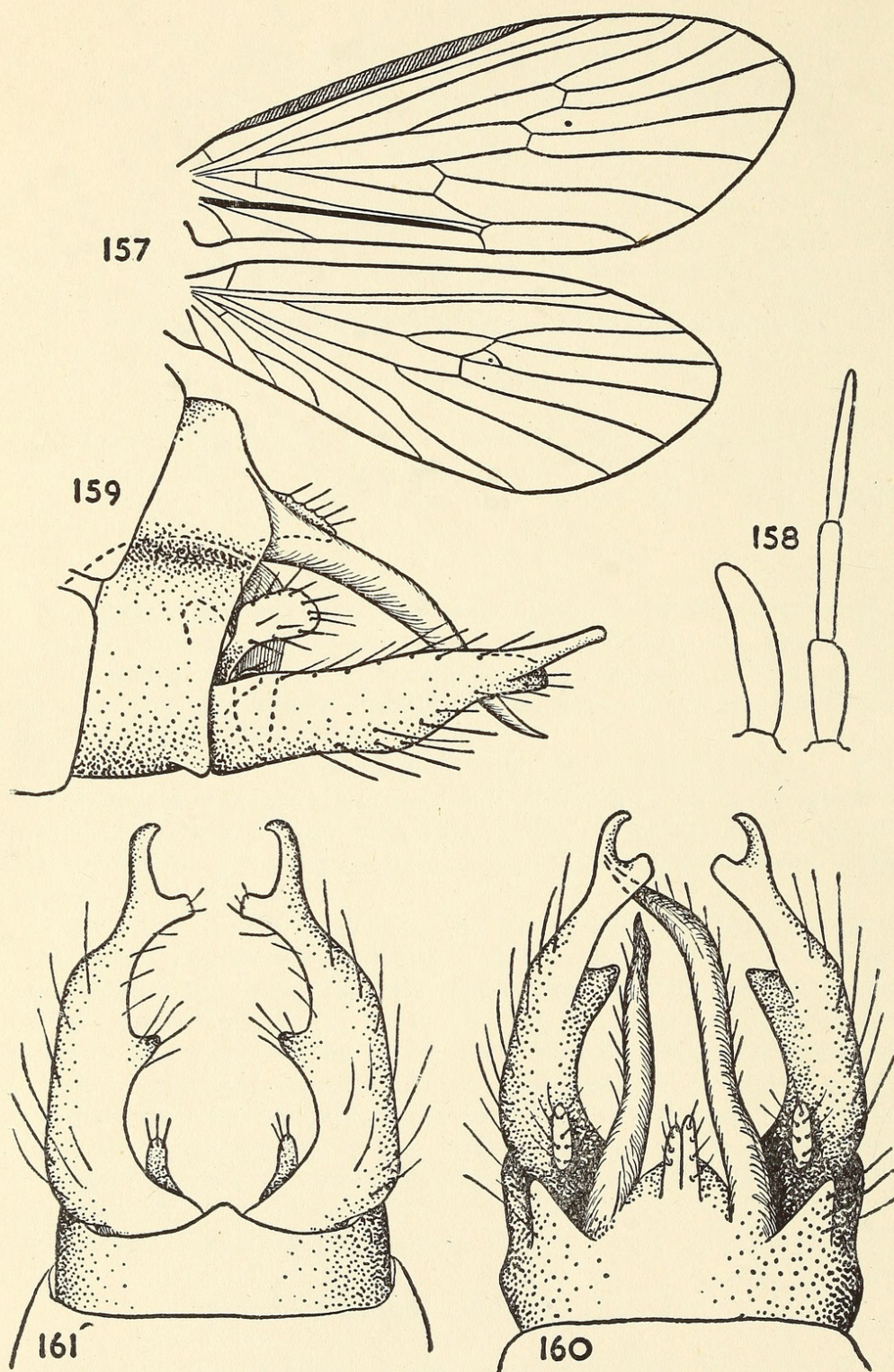
Genotype :—*Goerodes cornigera* Ulmer.

Goerodes ursina (Hagen) Fig 166.

Mormonia ursina Hag., Verh. Zool. Bot. Ges. Wien, 8, p. 484, 1858, *ibid.*, 9, p. 208, 1859.

Goerodes ursina Ulm., Genera Insect., fasc. 60a p. 106, 1907.

Banks in *Journ. Fed. Malay Mus.*, 16, p. 392, 1931, writes 'In the series of *G. ursina* Hagen there are no males.'



Figs. 157-161. *Goerodes khasiana* sp.n. ♂ 157, wings. 158, maxillary and labial palpi, lateral. 159, genitalia, lateral. 160, genitalia, dorsal. 161, ninth segment and inferior appendages, ventral.

In the collection of the British Museum, the species is represented by a single female, a co-type. This specimen is reddish brown in colour and I give here a figure of the neururation.

Having regard to the similarity in the neururation of nearly all females in this genus, it is improbable that it is correctly associated with its male.

Co-types ♀ in the collections of the British Museum and of the Museum of Comparative Zoology, Harvard College, Mass., U.S.A.

The following species is unknown to me. It is doubtful whether it can be recognized from its descriptions but it clearly belongs to the Lepidostomatinae.

Goerodes mustellina (Hagen)

Mormonia ursina Hagen, Synops. 1, Nr. 79, var? *minor*

Mormonia mustellina Hagen, Verh. Zool. Bot. Ges. Wien, 9, p. 209, 1859.

Goerodes mustellina Ulm., Gen. Insect., fasc. 6, p. 106, 1907.

‘Fusca; antennis flavidis, articulo basali, longo recto, subtus flavo barbato; palpis maxillaribus clavatis recurvis, flavo pilosis; capite thoraceque fuscis, flavo pilosis; pedibus luteis, anticis fuscis; alis fuscis, fusco hirtis (Mas).

Long. c. alis $6\frac{1}{2}$ mill. Exp. al. 11 mill. Hab. Rambodde, Nietner.’

Goerodes khasiana sp. n. Figs. 157-161.

Insect yellowish. In the ♂, anterior wings bearing dense hairs amongst which are elongate, white scales; costa folded over from nearly the base to a point opposite the distal end of the discoidal cell; post-costal fold short, terminating in a narrow cell; posterior wing of the type aberrant, with a small cell below the discoidal cell enclosing the corneous point; in other respects the neururation as usual. Antenna with the basal joint somewhat shorter than the width of the head with the oculi. Maxillary palpi single-jointed, broad.

Genitalia ♂:—Apical margin of the ninth tergite produced in two pairs of processes, the inner short and membranous, one process longer than the other, the outer long, sinuous, strongly chitinized and asymmetric; penis short and stout, elbowed abruptly downward; inferior appendages branched, the main branch with the inner margin irregular, excised as shown in the figure of the ventral aspect; from the side, stout at the base, terminating in a slender branch; a branch arising from near the upper margin towards the base, with a slender stem and greatly dilated apex which appears as a narrow wart from above; from beneath may be seen a short ventral branch to the appendage arising rather from the middle of its upper surface than the usual situation on the upper, inner margin.

Length of the anterior wing ♂ 7 mm.

Length of the basal joint of the antenna 0.72 mm.

Assam:—Khasi Hills, from the MacLachlan collection.

Type and paratypes ♂ in the collection of the British Museum.

Goerodes palnia sp. n. Figs. 162-165.

Insect pale fuscous. In the ♂, basal joint of the antenna as long as width of head with the oculi; a triangular wart arises between the bases; maxillary palpi single-jointed, bearing a tuft of broad scales; wings covered with pale hairs intermingled with scales; anterior, costal margin rounded and narrowly turned over onto the sub-costa for nearly its entire length; post-costal fold long; in the posterior wing, the fourth apical cellule extends slightly further inwards than the basal angle of the discoidal cell.

Genitalia ♂:—Ninth tergite produced in the centre of its apical margin in two pairs of processes, the outer forming strongly chitinized, sinuous, stout spines, somewhat asymmetric, seen from the side with wide bases, lower margins of which are convex, the inner, which are much smaller, are membranous, finger-shaped and fringed with widely spaced, long hairs; the ninth segment is produced above these processes in a small, triangular prominence; penis short and curved, apex curled over in a flattened tongue; inferior appendages branched but not two-jointed, the basal part is wide for about two-thirds of its length, then it is cut across to leave a shelf with the inner angle forming a triangular projection and the outer produced in a broad branch with a rounded apex; from the side, a second branch is seen to arise from the upper margin near the base; this branch is slender and rod-like; ninth sternite produced at the centre of its margin.

Length of the anterior wing ♂ 8 mm.

Palnis: Kodaikanal, 2. ix. 1921, Fletcher collection.

Type ♂ in the collection of the British Museum.

Goerodes piscina (Hagen).

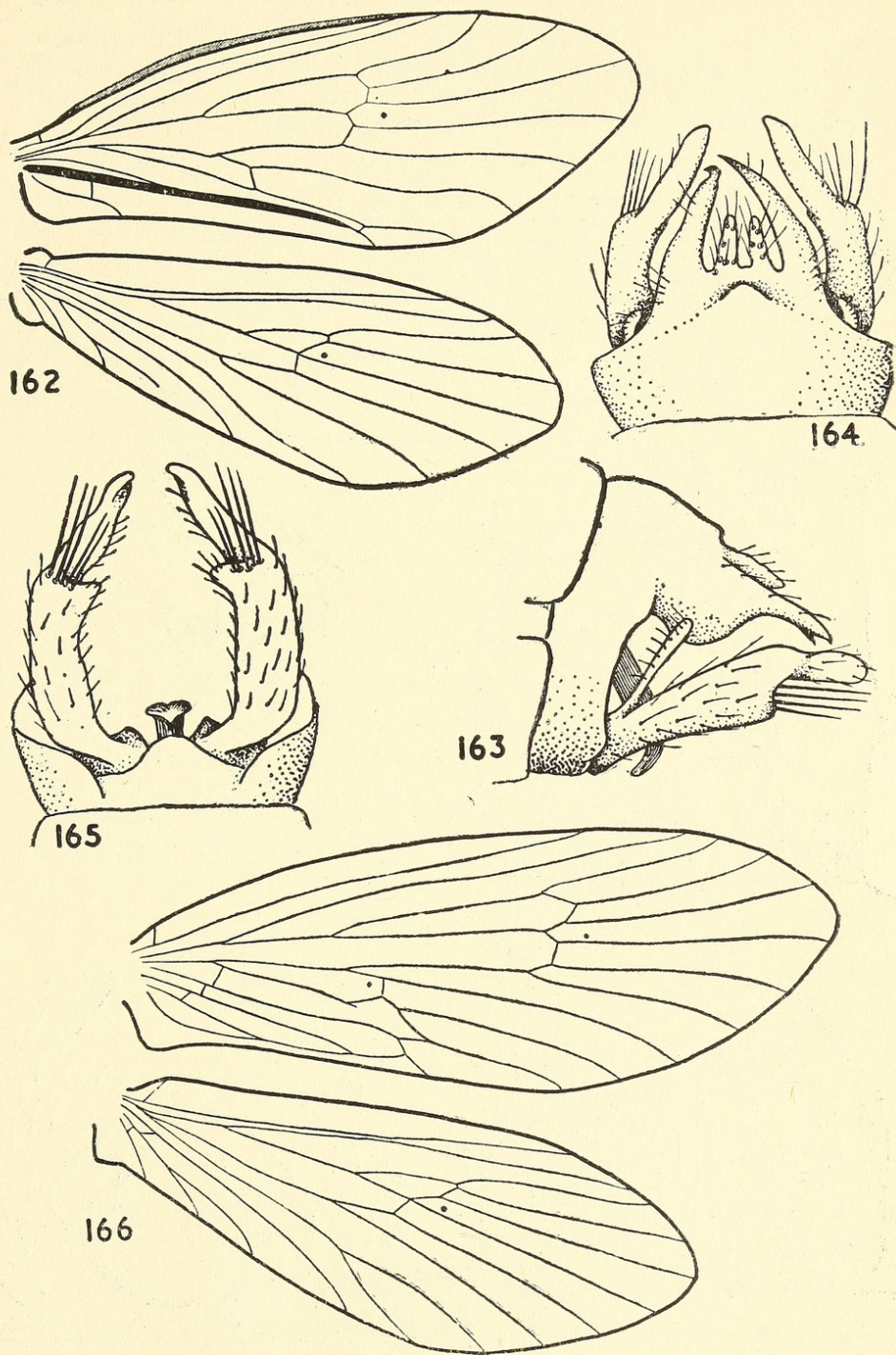
Mormonia piscina Hagen, Verh. zool.—bot. Ges. Wien, 9, pp. 208-9, 1859.

Goerodes piscina Ulmer, Gen. Insect., fasc. 60a, p. 106, 1907.

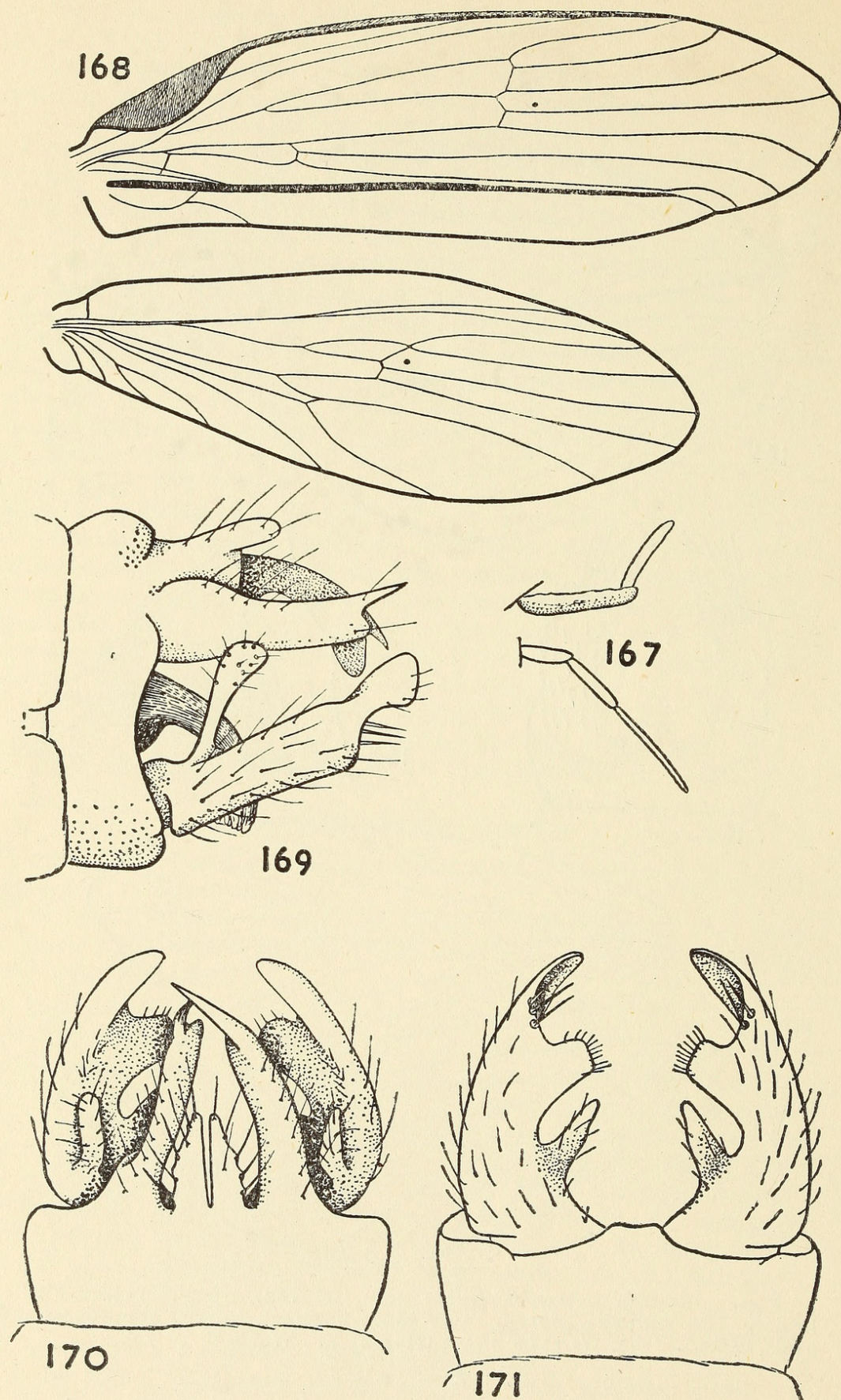
Goerinella piscina Ulmer, Deuts. ent Zeit., 1915, pp. 68-70, 75, figs. 44-7, 1915.

Insect brownish. Description of the ♂: basal joint of the antenna rather longer than the width of head with oculi; maxillary palpi two-jointed, basal joint longer and more strongly chitinized on the under than on the upper side; the terminal joint membranous, clothed with a mat of broad hairs and arising from before the apex of the first joint; labial palpi three-jointed, the second joint longer than the first and shorter than the third; wings, anterior, clothed with hairs and scales, costa doubled over the sub-costa rather deeply at the base, the fold narrowing towards the apex of the wing; post-costal fold very long; posterior wing, sub-costa much thickened and confluent with the radius at about midway, separated at the apex; a cross-vein between the cubitus and the medius forming a doubtful fork no. 5.

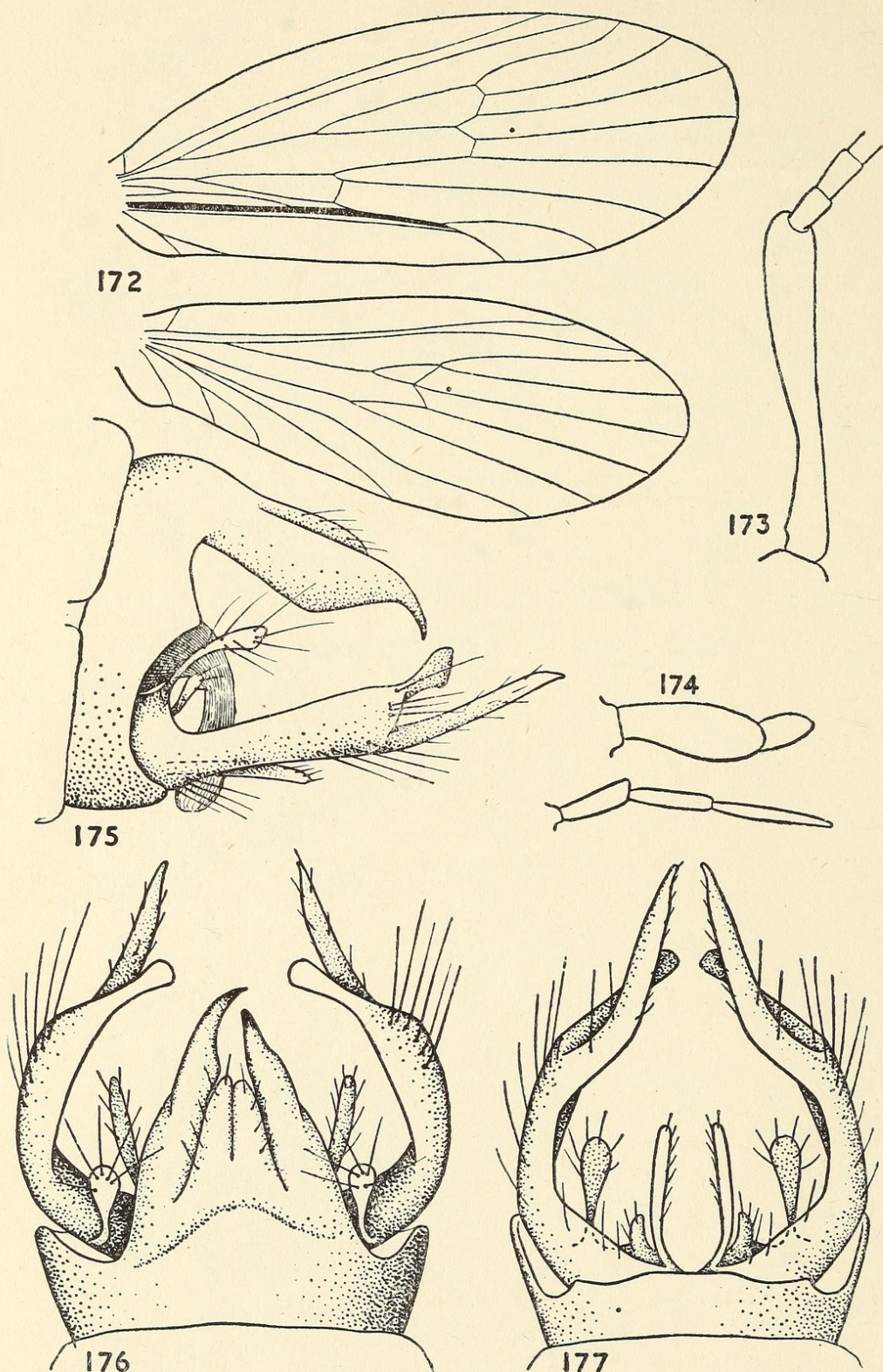
Genitalia ♂:—Dorsal margin of the ninth segment produced in the centre in two pairs of processes, the inner close together, small, finger-like, with strongly serrate outer margins, the outer



Figs. 162-166. *Goerodes palnia* sp.n. ♂ 162, wings. 163, genitalia, lateral. 164, genitalia, dorsal. 165, ninth segment, inferior appendages and penis, ventral. 166, *Goerodes ursina* (Hagen) ♀. Wings of co-type.



Figs. 167-171. *Goerodes piscina* (Hagen) ♂. 167, maxillary and labial palpi, lateral. 168, wings. 169, genitalia, lateral. 170, genitalia, dorsal. 171, ninth segment and inferior appendages, ventral.



Figs. 172-177. *Goerodes punda* sp.n. ♂. 172, wings. 173, base of antenna. 174, maxillary palpus from in front, labial palpus from side. 175, genitalia, lateral. 176, genitalia, dorsal. 177, ninth segment and inferior appendages, ventral.

long and stout, arising from very stout bases, as seen from the side, asymmetric, the apex of each process bifurcate, the upper fork acute, the lower blunt and rounded in the one, in the other, there is a truncate apex, the upper angle produced in a pointed finger; penis short, arching downward; inferior appendages single-jointed, and branched; from beneath, there are two branches arising on the inner margin, the lower straight and pointed, the upper wide and rounded, both directed inwardly and distally; above the second branch, the appendage is cut away on its inner margin leaving a narrow apex simulating a second joint at the base of which are two or three stout spines; from the side may be seen an additional branch arising from the upper margin towards the base, with a slender stem and much dilated apex curving somewhat distally.

Length of anterior wing ♂ 10 mm.

Length of the anterior wing ♀ 8 mm.

Ceylon.

Goerodes punda sp. n. Figs. 172-177.

Insect yellowish. In the ♂ anterior wings bearing a dense mass of small scales intermingled with hairs; costal margin rounded; discoidal cell about as long as its footstalk; all the apical cellules sessile; post-costal fold extending to a point nearly opposite the distal end of the discoidal cell; posterior wing with the neurotation regular. Basal joint of the antenna slightly longer than the width of head with the oculi. Maxillary palpi two-jointed, basal joint from beneath, very broad, nearly double the length of the terminal joint; both joints covered on the upper surfaces with broadened hairs.

Genitalia ♂:—Dorsal plate produced in two pairs of long processes, the outer broad at the bases, terminating in acute, strongly chitinated, sinuous spines, the inner shorter, set close together and parallel; penis short and curved; inferior appendages five-branched; a branch with a very slender stem and a dilated apex arising from the upper margin near the base, directed upward; a second slender branch at the extreme base of the ventral margin; the third branch is very small, transparent and concealed; it arises towards the base of the appendage between the first and second branches; the apex of the appendage is forked, the upper fork shorter than the lower and terminating in a clavate apex, the lower produced and acute.

Length of the anterior wing ♂ 7 mm.

Ceylon: Pundaluoya, Sept. 1897. ex MacLachlan coll.

Type ♂ in the collection of the British Museum.

Goerodina gen. n.

Spurs, 2, 4, 4. In the ♂, the basal joint of the antenna armed with two processes, both situated at the extreme base, one furcate, the other simple and very small. Maxillary palpi two-jointed, basal joint stout, long, slightly curved, with a small membranous

branch at its apex, terminal joint short. Wings clothed with hairs and scales; anterior with the post-costal fold short, situated near the lower margin of the wing. Inferior appendage branched at the apex and with an upright branch at the base, rather irregular in shape.

Genotype:—*G. serrata* sp. n.

***Goerodina dubitans* sp. n. Figs. 178-184.**

Insect brown. In the ♂, wings covered with hairs and scales, the latter very dense; in the anterior, the costa is not folded; post-costal fold short, terminating in a large cell; the fifth and sixth apical cellules are based upon a round, false cellule bare of hairs or scales and situated about midway between the base of the discoidal cell and the distal end of the post-costal fold; discoidal cell rather short. Basal joint of the antenna about one and a half times as long as the width of the head with the oculi, armed with two processes of which the basal is complicatedly furcate, the distal, short and simple; above these processes the joint is excavated, the excavation lined with a series of bars. Maxillary palpi membranous and two-jointed, the basal joint large with a rounded knob towards the apex, terminal joint short and thick.

Genitalia ♂:—The apical margin of the ninth tergite is produced in a large, triangular plate, apex slightly excised; penis short and downcurved; no apparent sheaths; inferior appendages with a slender branch arising from the centre of its upper surface at the base, directed upward, apex not dilated as is usual; apex of the appendage probably three-branched, outer branch rounded, lower finger shaped, apex slightly dilated, the third with a wide excision of its dilated apex; from the side, there is a rounded production of the base of the lower margin.

Length of the anterior wing ♂ 7 mm.

Length of the basal joint of the antenna 1.58 mm.

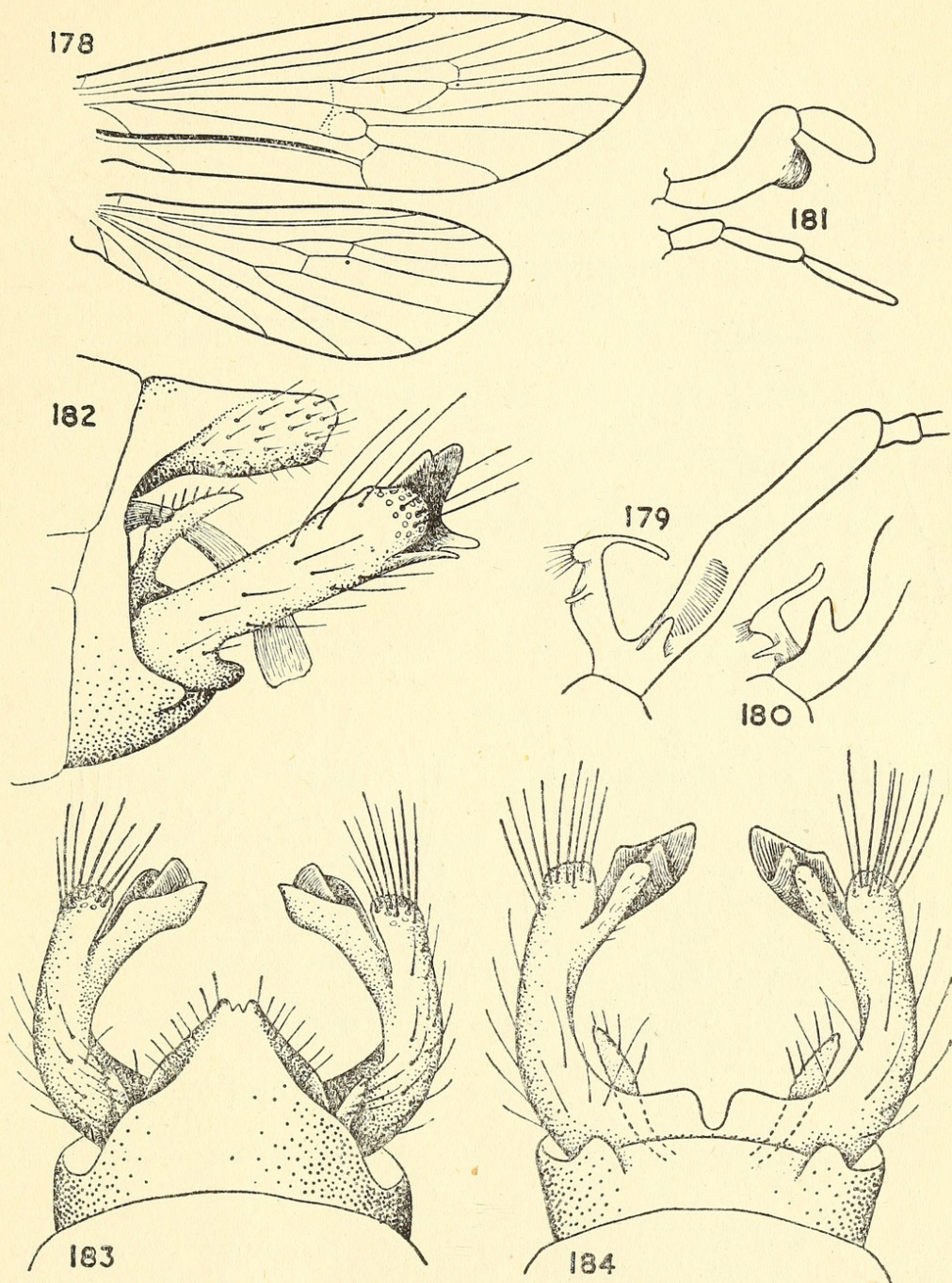
Assam: Khasi Hills, from the MacLachlan collection.

Type ♂ in the collection of the British Museum.

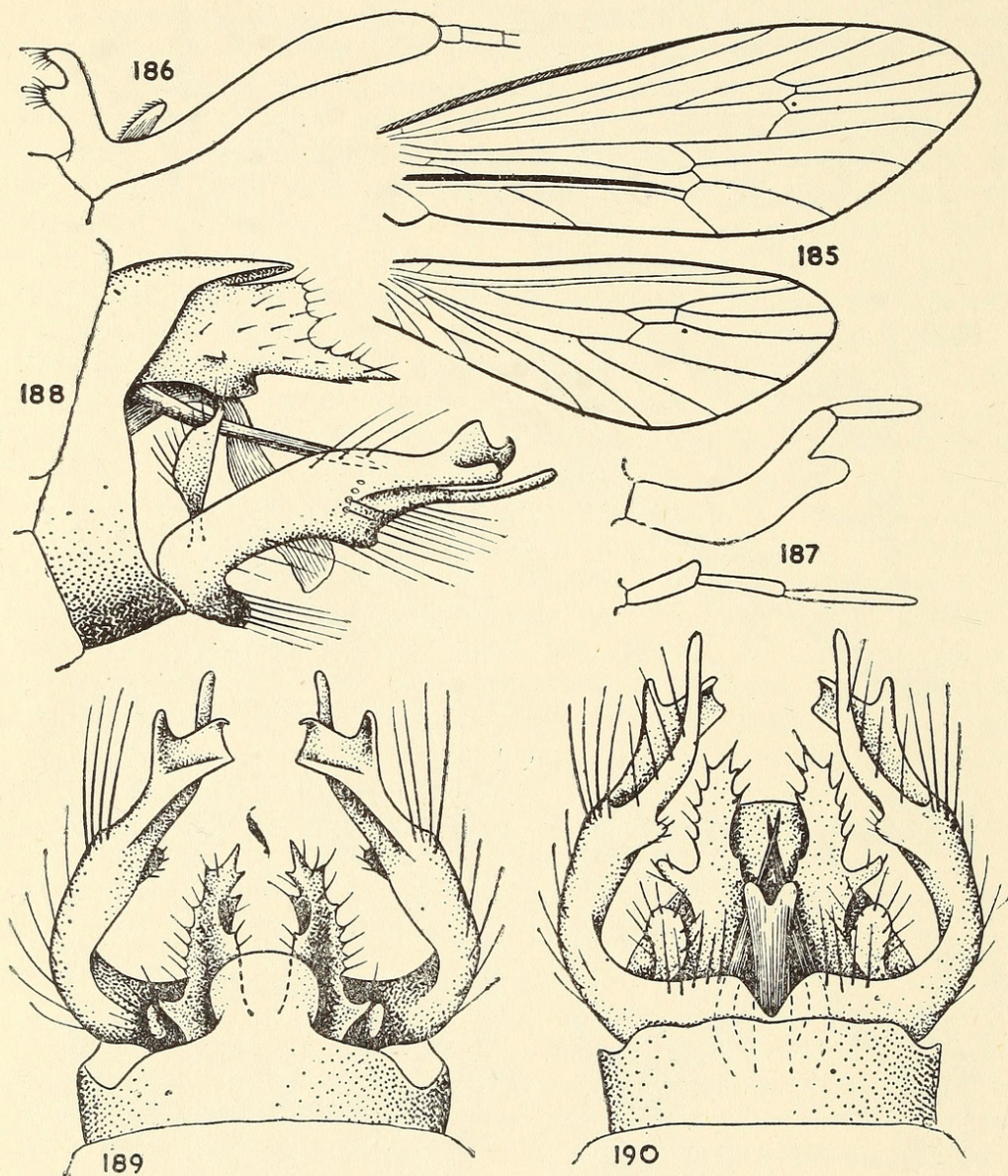
***Goerodina serrata* sp. n. Figs. 185-190.**

Insect brownish. In the ♂, anterior wings covered with hairs and scales; costa narrowly folded over from the base to a point opposite the base of the discoidal cell which is narrow; post-costal fold about half the length of the wing; three large cells in the post-costal area; in the posterior wing, apical cell no. 3 unusually broad. Antenna with the basal joint considerably longer than the width of the head with the oculi and furnished with a pair of processes at its base, the longer bifurcate towards the apex, where it is considerably dilated. Maxillary palpi membranous, covered with broad hairs, two-jointed, basal joint stout, long, slightly curved with a membranous branch towards its apex; second joint short and slender.

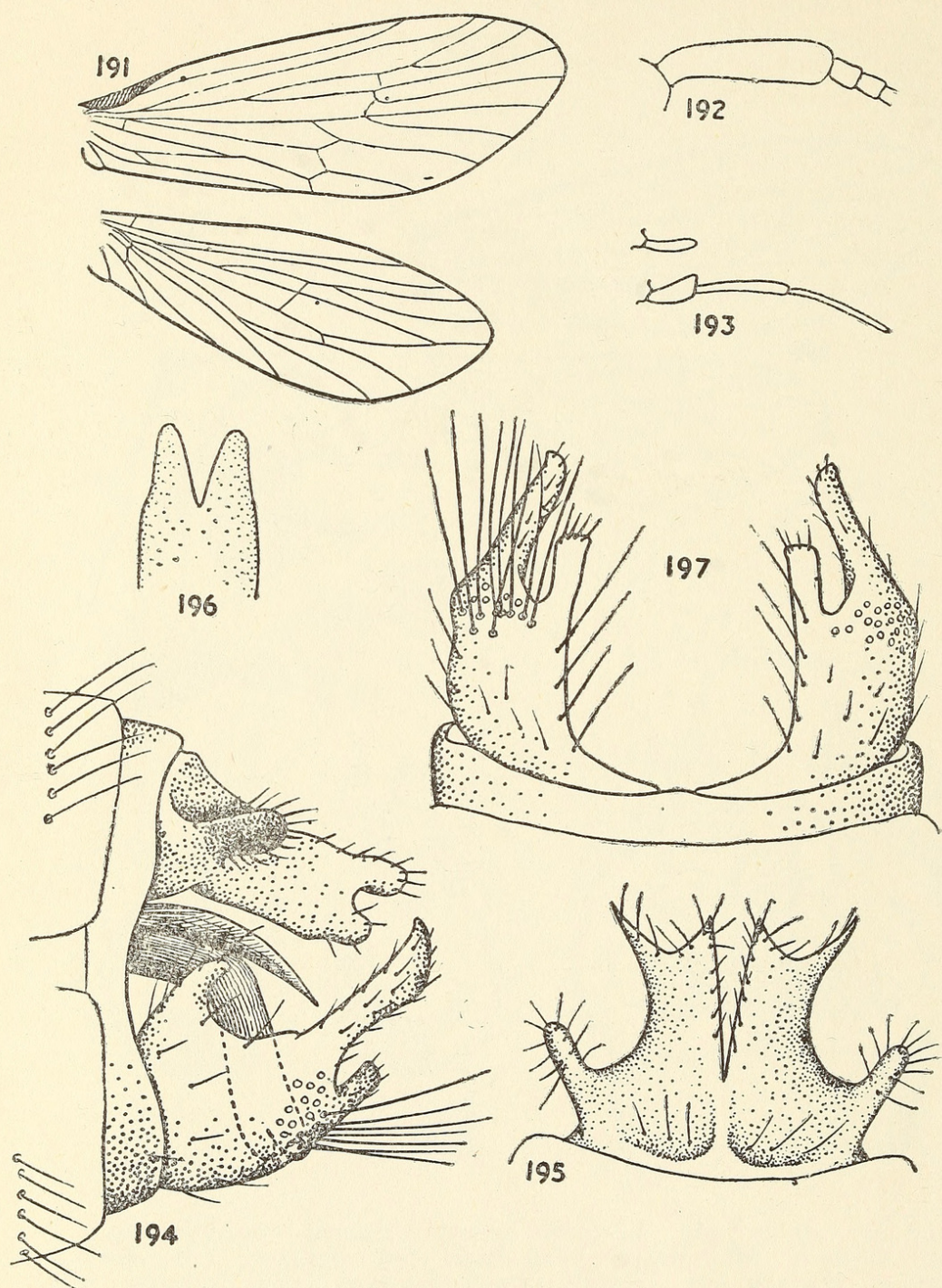
Genitalia ♂:—Apical margin of the ninth tergite produced in a large, rounded plate, beneath which is a pair of processes with



Figs. 178-184. *Goerodina dubitans* sp.n. ♂. 178, wings. 179, base of antenna, inner surface. 180, the same, from beneath. 181, maxillary and labial palpi, lateral. 182, genitalia, lateral. 183, genitalia, dorsal. 184, ninth segment and inferior appendages, ventral.



Figs. 185-190. *Goerodina serrata* sp.n. ♂, 185, wings. 186, base of antenna. 187, maxillary and labial palpi, lateral. 188, genitalia, lateral. 189, genitalia, dorsal, penis and sheaths omitted. 190, genitalia, ventral.



Figs. 191-197. *Paraphlegopteryx brunneus* sp.n. ♂. 191, wings. 192, base of antenna. 193, maxillary and labial palpi, lateral. 194, genitalia, lateral. 195, dorsal plate from above. 196, upper penis cover, (?), dorsal. 197, ninth segment and inferior appendages, ventral.

strongly serrated margins, with small, projecting branches on their outer margins near the base; from the side, the serrate process is broad at the base with a nearly right-angled excision of the upper margin leaving a narrow distal finger very acute at its apex; penis elbowed downward, apex deeply excised; sheaths very long, apices crossing; inferior appendages branched, main stem with an irregularly shaped apex as seen in the figure, a long, sinuous branch arising beneath it from rather nearer the apex than midway, this branch with a slight projection of its inner margin near the base; a basal branch arises from the upper surface of the appendage towards its base; this has the usual slender or constricted stem with a dilated apex but the apex is more elongated than is usual, seen from the side; there is a strong projection of the lower margin of the appendage at the base.

Length of the anterior wing ♂ 7 mm.

Length of the basal joint of the antenna 1.4 mm.

Assam: Khasi Hills, from the MacLachlan collection.

Type ♂ in the collection of the British Museum.

Paraphlegopteryx Ulmer.

Paraphlegopteryx Ulm., Notes Leyd. Mus., 29, pp. 5-6, 1907.

Spurs, 2, 4, 4. In the ♂, basal joint of the antenna about as long as the width of the head with the oculi, without processes. Maxillary palpi single-jointed, short and cylindrical. Wings clothed sometimes with hairs and scales, sometimes with hairs alone; no post-costal fold in the anterior; neuration in the posterior irregular, sometimes with a groove containing dense black spinules. Inferior appendages stout, sometimes furcate. No well-defined erect branch at the base.

In all the species, in the ♂, there is a large, shieldshaped, black spot on the metanotum.

Genotype: *P. tonkinensis* Ulmer.

Paraphlegopteryx brunneus sp. n. Figs. 191-197.

Insect brown; wings broad; anterior clothed with hairs only, the base of the costa turned over and bearing a dense fringe; no post-costal fold; discoidal cell long and narrow; fork No. 1 with a footstalk; posterior wing clothed with hair and scales, the latter collected in a band following the apical and posterior margin of the wing; subcosta thickened, fork No. I long and narrow with a short footstalk, discoidal cell long and narrow, media flowing into the lower branch of the radial sector; basal joint of the antenna rather shorter than the width of the head with the oculi; maxillary palpi with a single, short, cylindrical joint curving slightly upward and heavily fringed on its lower surface; spurs of the anterior tibiae long and distinct.

Genitalia ♂:— The tergites bear groups of long hairs; apical margin of the ninth straight; beyond it is a dorsal plate, deeply excised at its centre to leave a pair of processes with concave apical margins separated from the produced lateral angles of the

plate by rounded excisions and about twice their length; penis arching downwards, a divided plate (upper penis cover?) covering the apex; sheaths short and broad, lying over its base and concealed under the dorsal plate; inferior appendages single-jointed and three-branched, broad at the base; a short branch on the upper margin near the base, directed upwards; the appendage is then narrowed in a pair of branches of which the outer and upper is long, the inner short; from beneath, the appendages are widely separated and the apices of the inner branches are truncate.

Length of the anterior wing ♂ 10 mm.

Length of the basal joint of the antenna 0.89 mm.

N. E. Burma: Kambaiti, 6800 feet, 7. iv. 1934, R. Malaise.

Type ♂ in the collection of the Stockholm Museum.

Paraphlegopteryx compositus Mart. Figs. 198-204.

Paraphlegopteryx compositus Martynov, 1936, Rec. Ind. Mus., 38, p. 291.

Head dark ochraceous; oculi black; basal joint of antenna rather shorter than the head together with the oculi; maxillary palpi short and cylindrical, apparently single-jointed, sparsely clothed with long hairs; labial palpi, second joint longer than the first and shorter than the third; pronotum and mesonotum dark ochraceous, legs ochraceous. For further particulars, see generic description.

Genitalia ♂ :— Margin of the ninth dorsal segment evenly rounded; beyond it is a large dorsal plate with two triangular projections at the base and the apex produced in two large triangles with a narrow excision between; beneath this is a pair of flat, blade-like penis-sheaths covering a short, downwardly arching penis; inferior appendages three-branched, with a broad base which is produced to make a first branch; at the base of this branch, on the under surface is a rounded wart covered with short setae and seen from beneath, a second wart or minute process on the inner margin opposite it; the second branch arises at about midway, seen from the side, it is short and lies parallel with the first branch; the third branch is slender and arises towards the upper margin of the base of the appendage, curving upwards and tailwards.

Length of the anterior wing ♂ 9 mm.

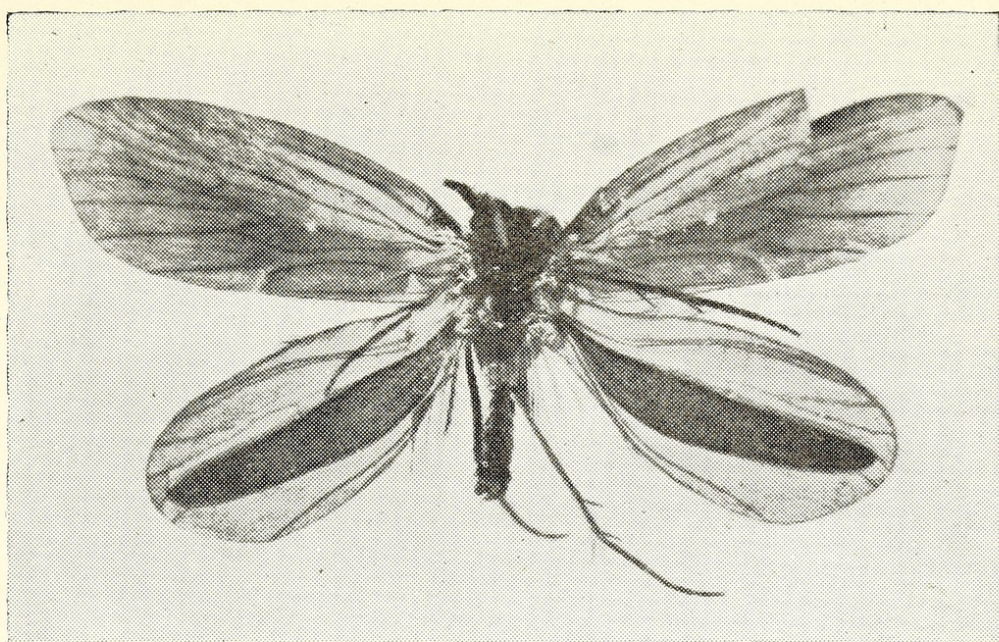
Kumaon: Muktesar, 7,500 feet, 14. ix. 1922, Fletcher coll.

The locality of the type is E. Himalayas, Darjeeling district.

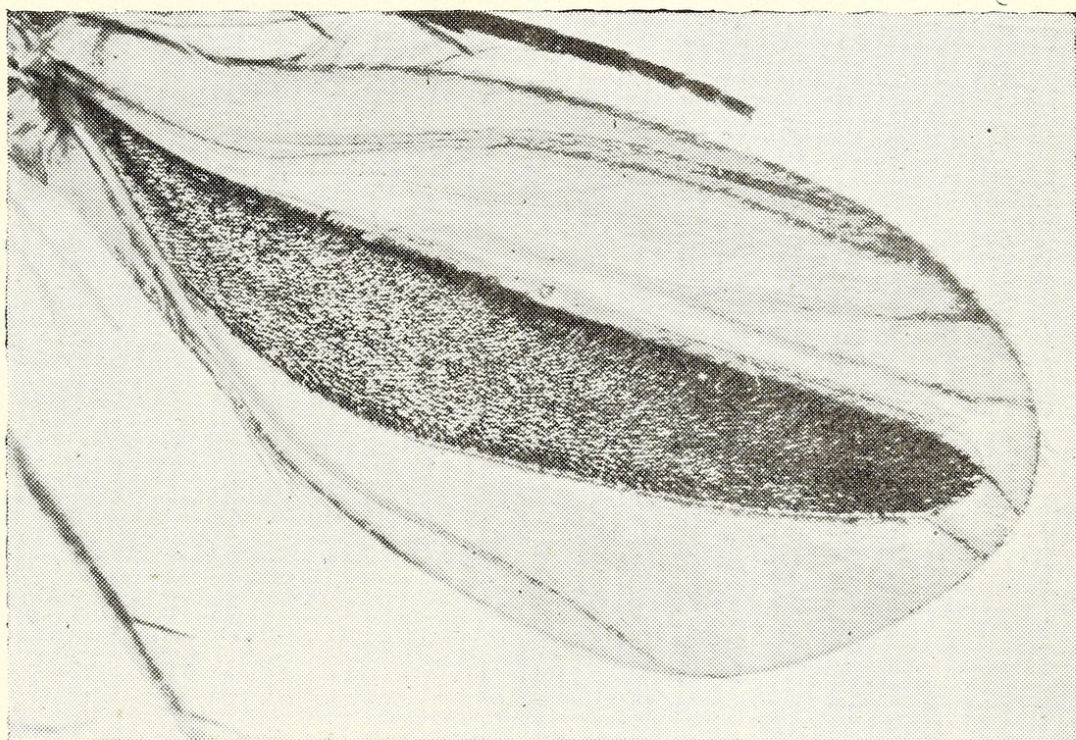
Paraphlegopteryx normalis sp. n. Figs. 206-209.

Head dark fuscous, nearly black; oculi black; antennae dark ochraceous, basal joint about as long as the breadth of the head including the oculi; palpi and legs dark ochraceous; wings fuscous, anterior with area between the costa and subcosta thickly beset with thickened hairs and scales in both wings; scales or thickened hairs sparingly seated on the nervures and more thickly along the posterior border of the posterior wing.

Genitalia ♂ : The eight tergite modified and produced in a large, rounded dome overshadowing the genitalia from above; the

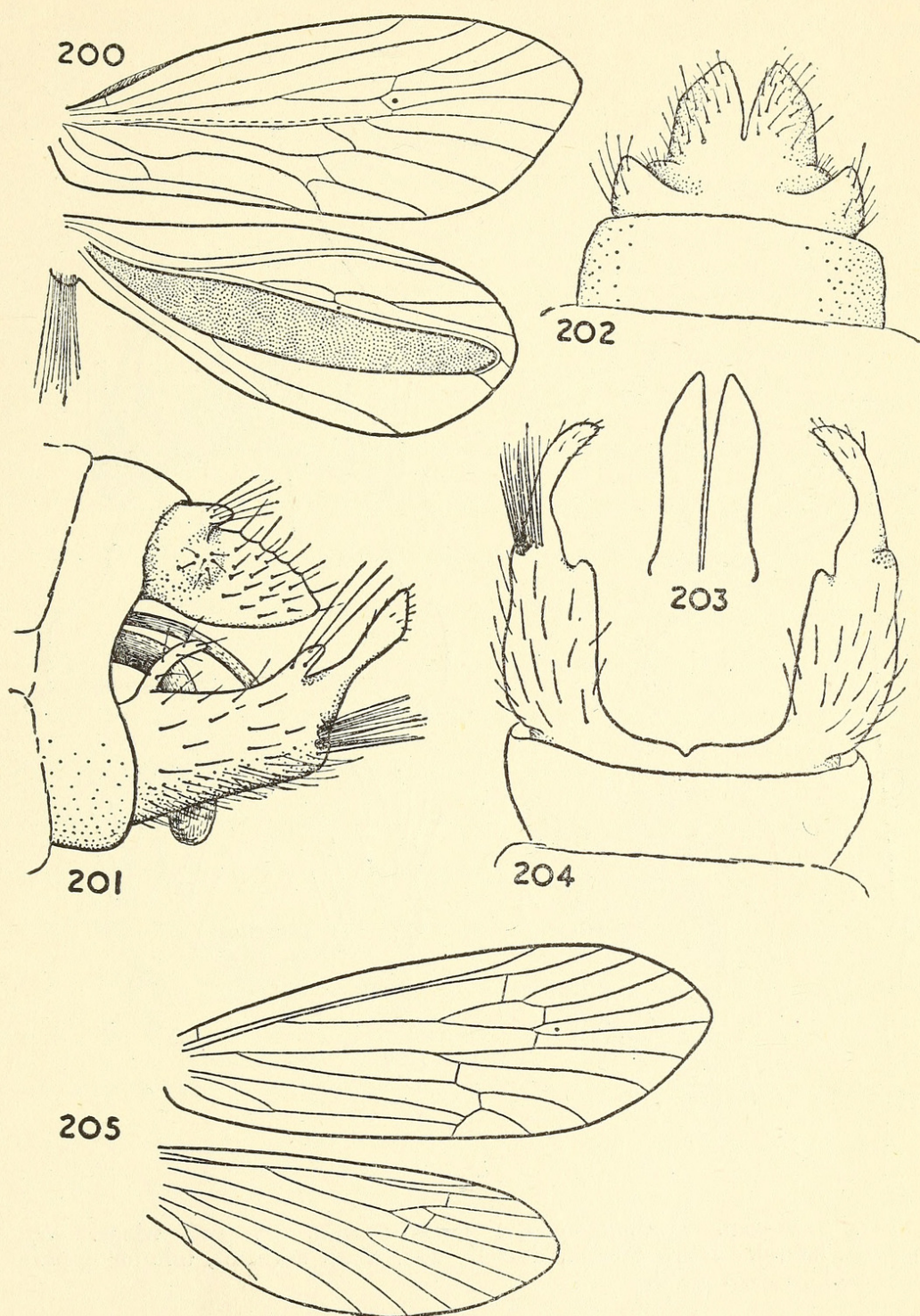


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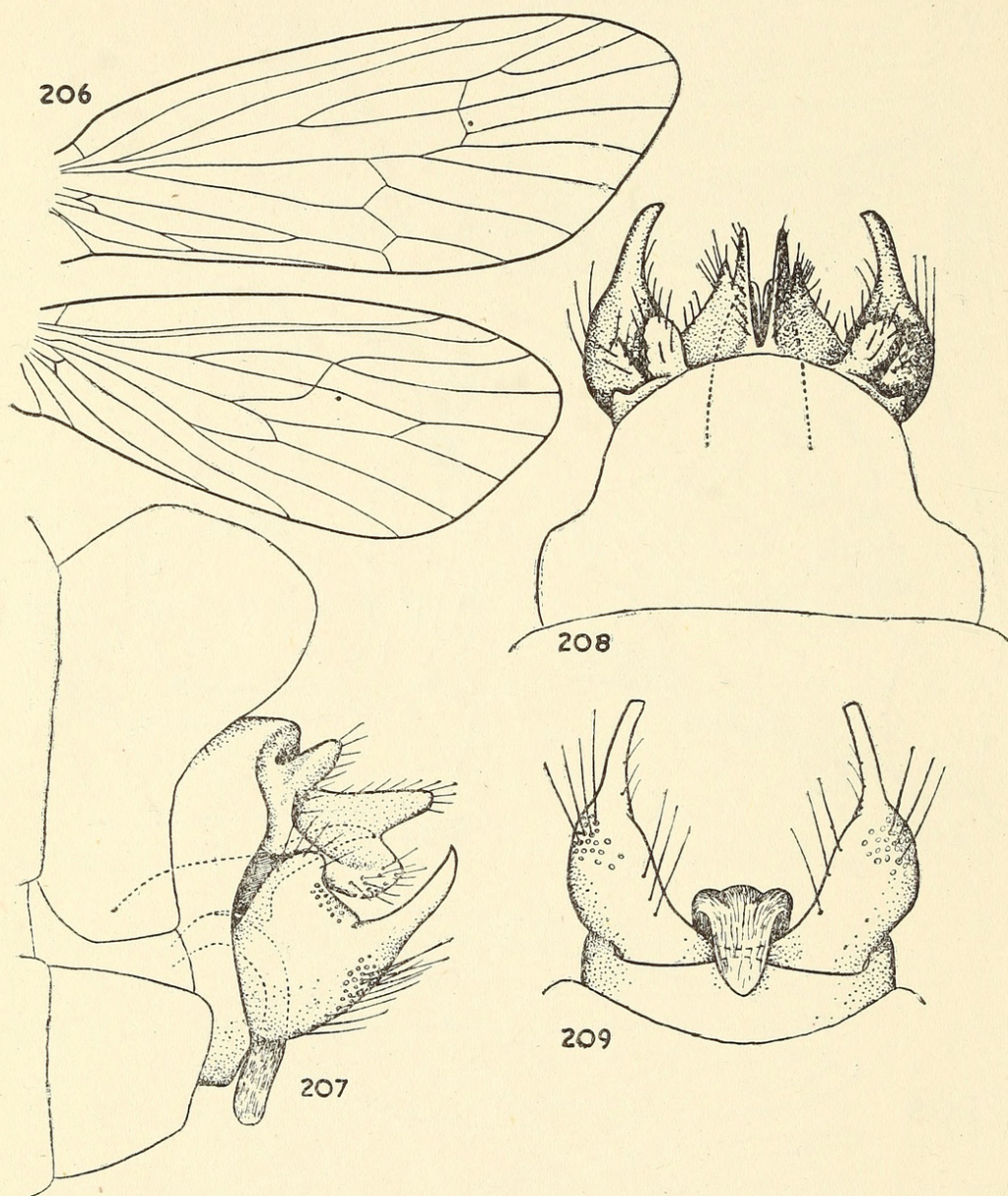


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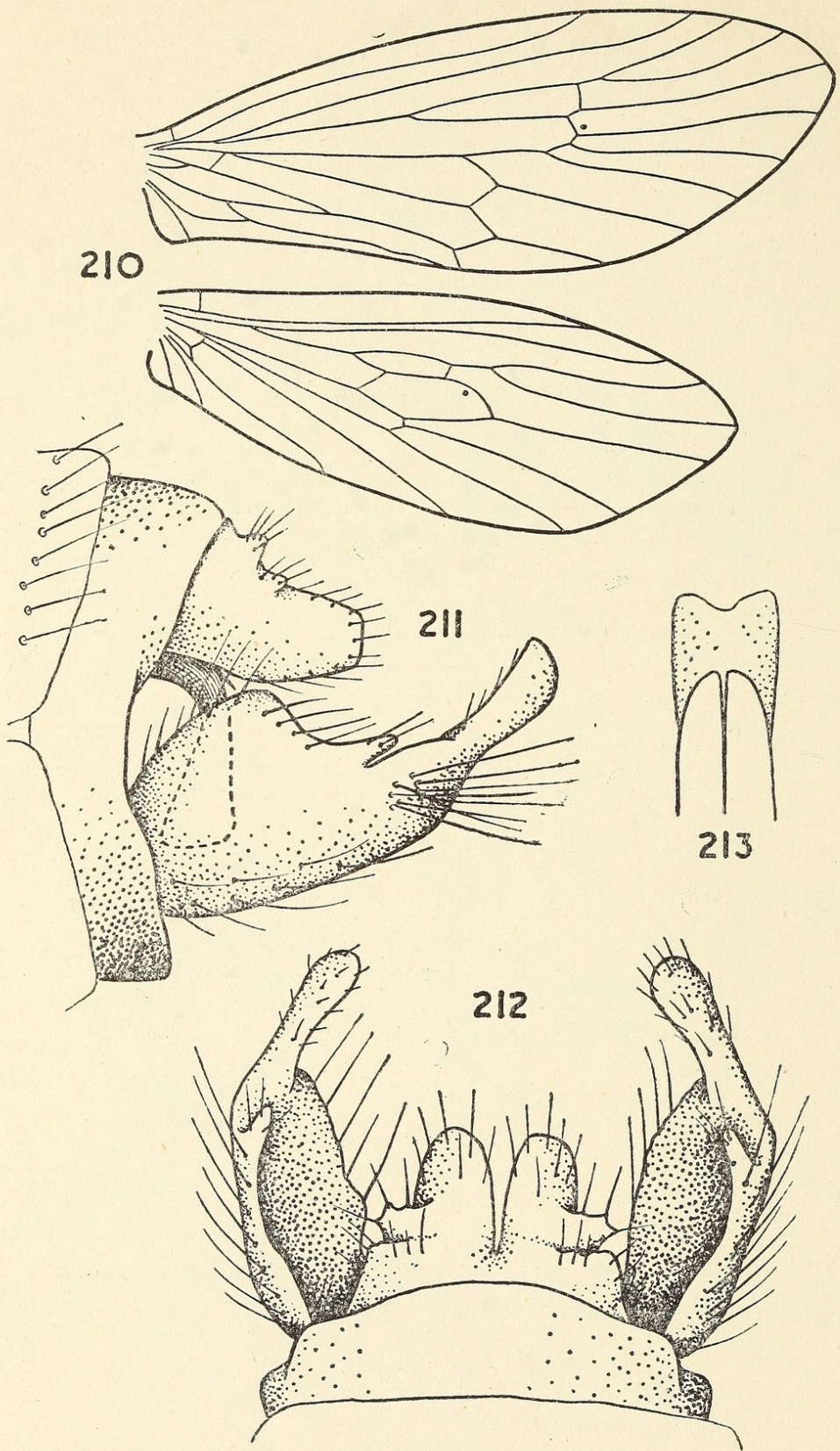
Figs. 198-199. *Paraphlegopteryx compositus* Mart. ♂. Example from Kumaon, and enlargement of posterior wing.



Figs. 200-205. *Paraphlegopteryx compositus* Mart. ♂. 200, wings. 201, genitalia, lateral. 202, ninth segment and dorsal plate, dorsal. 203, penis sheaths, dorsal. 204, inferior appendages, ventral. 205, *Ignasala fuscata* Navás. ♂. Wings (after Navás).



Figs. 206-209. *Paraphlegopteryx normalis* sp.n. ♂. 206, wings. 207, genitalia, lateral. 208, genitalia, dorsal. 209, ninth segment, inferior appendages and penis, ventral.



Figs. 210-213. *Paraphlegopteryx rufus* sp.n. ♂. 210, wings. 211, genitalia, lateral. 212, genitalia, dorsal. 213, penis and sheaths, dorsal.

ninth tergite is reduced beneath the dome and carries a dorsal plate with a pair of widely separated, narrow processes towards its basal margin, whilst its apical margin is produced at its centre in a pair of deep plates whose lateral margins are bent downwards and inwards to form deep hood; upper penis-cover lying close up under the hood; penis short and strongly arched; inferior appendages with broad, rounded bases, the narrow apices produced and pointed; from the side, the apical margin of the basal part is somewhat truncate, the produced apex arising from the lower apical angle.

Length of the anterior wing ♂ 8 mm.

Darjeeling.

Type ♂ in the collection of the Munich Museum.

Paraphlegopteryx rufus sp. n.

Insect reddish-brown; wings broad and rounded, clothed with hairs but without scales; anterior, discoidal cell long and narrow; posterior, neuration irregular; fork No. I in both wings with a footstalk; no folds or grooves in either wing; basal joint of the antenna of about the same length as the width of the head with the oculi; maxillary palpi single-jointed, short and cylindrical.

Genitalia ♂:— The apical margin of the ninth tergite slightly rounded; beyond it is the dorsal plate, from above produced in a pair of stout processes with rounded apices, separated from each other by a deep excision; towards the base of each process, on its outer margin, is an irregularly shaped projection; from the side, the plate is roughly rectangular; the whole plate with its processes sparsely clothed with long hairs; penis very short and curved; sheaths forming a pair of short, flat plates above its base; inferior appendages broad at the base which is ear-shaped from above, apical portion produced and directed inwards, apex clavate; lying along the upper margin as seen from the side, is a short branch directed distally.

Length of the anterior wing ♂ 10 mm.

N. E. Burma: Kambaiti, 12. vii. 1934, 6,300 feet, R. Malaise.

Type ♂ in the collection of the Stockholm Museum.

Ignasala Navás

Ignasala Navás, Revist. Ac. Cienc. Zaragoza, 15, p. 39, 1932.

Navás describes the genus as follows:—

Etim. En obsequio del P. Ignacio Sala, S. J., a quien tanto debe la entomología de Bombay.

Similis generi *Atomyia* Banks.

Caput antennis articulo primo longo, fere aequali latitudini capitis cum oculis.

Abdomen cercis inferioribus ♂ grandibus.

Alae elongate, parum dilatatae, maxima dilatatione in tertio apicali; venis axillaribus 1 et 2 modo solito dispositis; cellula discali clausa, alae posterioris parva, anterioris multo longiore; furcis apicalibus

ut in *Atomyia*, hoc est: in ♂: ala ant. 1, 2, 5, post. 1; in ♀ ala ant. 1, 2, 3, 5, al. post. 1, 2, 5.

Cetera ut in *Atomyia* Banks.

Se distingue de *Atomyia* por la mayor longitud del primer artejo de las antenas, así como de la celdilla discal del ala anterior y en la misma por la posición normal de las venas axilares 1 y 2, si bien presentan alguna anomalía en su terminación.

El tipo es la siguiente especie.

***Ignasala fuscata* Navás Fig. 205.**

Ignasala fuscata Navás Revist. Ac. Cienc. Zaragoza, 15, pp. 40-41 fig. 38, 1932.

Navás describes the species as follows:—

Caput fusum, nigro pilosum; oculis fuscis; palpis maxillaribus brevibus, fuscis, duobus articulis ultimis fulvis fulvoque pilosis; antennis articulo primi longo, longiore latitudine capitis, apicem versus leviter incrassato, fusco, piloso, apice fulvo, ceteris fulvis, fusco annulatis, in ♀ pallidioribus.

Thorax inferne fulvus, superne piceus, fusco pilosus.

Abdomen fuscum, inferne pallidius, appendicibus testaceis; cercis inferioribus ♂ grandibus, leviter ascendentibus, sensim angustatis, medio convergentibus, pilis fulvis, in medio apicali plerisque fuscis.

Alae angustae, membrana fusco tincta; reticulatione, pilis fimbriisque fortibus fuscis.

Ala anterior furcis apicalibus 2, 1, 5 longitudine decrescentibus, sessilibus; cellula discali angusta, plus quadruplo longiore latitudine.

Ala posterior cellula discali brevi, extrorsum dilatata, duplo longiore sua latitudine; furcis apicalibus 1, 2, longis sessilibus, 5 brevi, longiter pedunculata. (refers to ♀ wing)

Long. corp. ♂ 3.7 mm.; ♀ 3.6 mm.

Long. al. ant. ♂ 6.6 mm.; ♀ 6.5 mm.

Long. al. post. ♂ 5.5 mm.; ♀ 5.3 mm.

Patria: Khandala (Bombay) 12-24.v. 1927, 22-28. x. 1928.

Leg. P. Sala, S. J.

Navás gives figures and dimensions of the wings in both sexes. Having regard to the numerous species in the sub-family I am of opinion that the association of the ♂ with the ♀ is uncertain. I therefore reproduce here the figure of the ♂ wings only. Navás gives no figures of the all-important genitalia.

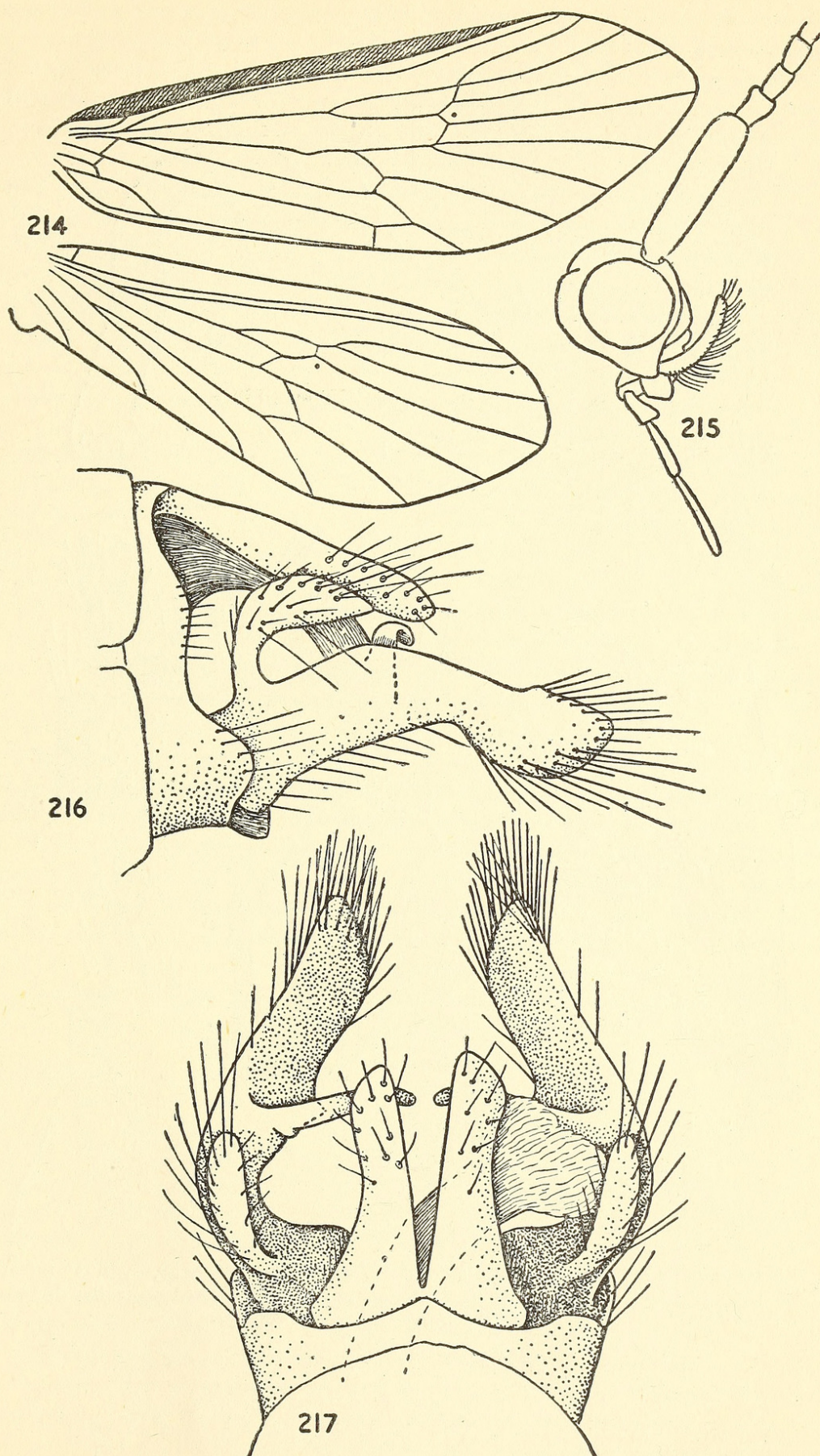
***Kodala* gen. n.**

Spurs, 2, 4, 4. In the ♂, basal joint of the antenna short, without processes. Maxillary palpi single-jointed. Wings clothed apparently with hairs only; costa folded over the wing for nearly its entire length; no post-costal fold. Inferior appendages single-jointed and branched.

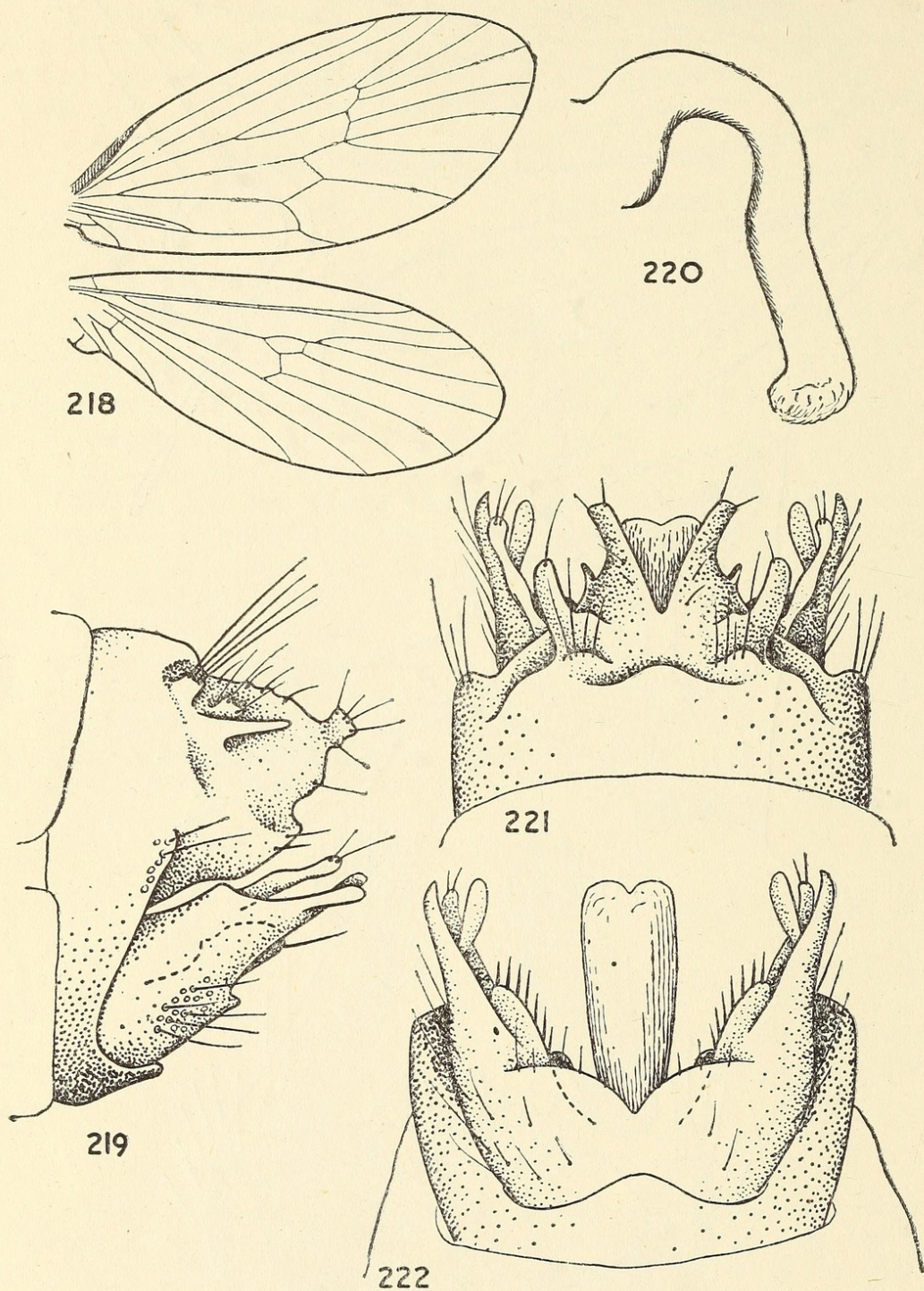
Genotype: *K. lanca* sp. n.

***Kodala lanca* sp. n. Figs. 214-217.**

Insect small and brownish; anterior wing with the costal border turned over, no fold in the post-costal area, wing almost entirely



Figs. 214-217. *Kodala lanca* sp.n. ♂. 214, wings. 215, head, lateral. 216, genitalia, lateral. 217, genitalia, dorsal.



Figs. 218-222. *Indocrunoecia heterolepidia* Mart. ♂. 218, wings (after Martynov). 219, genitalia, lateral. 220, penis, lateral. 221, genitalia, dorsal. 222, ninth segment, inferior appendages and penis, ventral.

denuded in the type and the vestiture consisting of hairs, no visible scales; antennae with the basal joint rather longer than the depth of the head from the side; maxillary palpi single-jointed; labial palpi three-jointed, basal joint the shortest.

Genitalia ♂ :—Dorsal plate larger and bifid; penis asymmetricaly directed to one side, apex dilated and membranous; inferior appendages single-jointed and branched, apex fringed with very long, stiff hairs; basal branch, from the side, elbowed and directed distally; middle branch bent inwards at right angles, arising from the centre of the inner surface.

Length of the anterior wing ♂ 6 mm.

Palnis: 7,000 feet, Kodaikanal, 15 Sept. 1921, Fletcher Coll.

Type ♂ in the collection of the British Museum.

Indocrunoecia Martynov.

Indocrunoecia Mart., Rec. Ind. Mus., 38, p. 293, 1936.

Spurs, 2, 4, 4. In the ♂, basal joint of the antenna short, without processes. Maxillary palpi two-jointed, basal joint long, terminal rather short. Wings clothed with hairs and scales, costa folded over the wing near the base; no post-costal fold. Inferior appendages branched, no erect branch at the base.

Genotype: *I. heterolepidia* Mart.

Indocrunoecia heterolepidia Martynov Figs. 218-222.

Indocrunoecia heterolepidia Mart., Rec. Ind. Mus., 38, pp. 293-295, figs. 66-67, 1936.

Insect light brown. In the ♂, basal joint of the antenna as long as the breadth of the head with the oculi, no processes at its base. Maxillary palpi two-jointed, basal joint long, second joint very small, if present at all. Anterior wing broad, egg-shaped, greyish yellow, clothed with hairs and elongate, whitish scales; discoidal cell long and narrow; no post-costal fold; in the posterior wing, fork No. I with a very short footstalk, otherwise neuration regular.

Genitalia ♂ :—The apical margin of the ninth tergite produced in a large dorsal plate deeply excised at the centre of its margin to leave two triangular processes with produced apices; lateral angles of the plate produced in slightly incurving, finger-like processes; from the side, the dorsal plate is very broad with an irregular lower apical margin; lateral angular projections slender, straight and directed distally; penis short and straight; inferior appendages three-branched at the apices, all the branches short, nearly equal in length with more or less slender stems and dilated apices; from beneath, there is a shelf-like plate projecting from about the centre of the inner surface; bases of the appendages fused together to form a pair of broad plates.

Length of the anterior wing ♂ 7 mm.

East Himalayas, Darjeeling District.

Type and paratypes in the collection of the Indian Museum, Calcutta.

(The end)



Mosely, Martin E. 1950. "The Indian caddis flies (Trichoptera). Part XI." *The journal of the Bombay Natural History Society* 48, 782–791.

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