XXXIV INDIAN PSYLLIDAE

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(Plates xxxiii—xxxv).

The following paper presents the descriptions of several new genera and species of *Psyllidae*, a family of Homoptera near to the *Aphididae*, which were sent to me for determination by the Indian Museum in Calcutta and the Museum of the Agricultural Research Institute in Pusa, Bengal. For the sake of convenience the two collections are treated separately, since only a few of the species are found in both. Several species of Indian *Psyllidae* have been described by Dr. Kieffer and Mr. Buckton, and at a later date the writer hopes to publish a key to all the Indian genera and species so far described. The types of new species from the Indian Museum are deposited in that place; the other types, however, are retained in the author's collection.

The illustrations, designed to show the most important characters, are drawn more or less to scale. Especially is this true of the figures of the forewings, in order to show the relative sizes of the insects; *Trioza gigantea*, *Kuwayama hirsuta* and *Phacopteron lentiginosum* are enlarged to only one-half the relative size of the others.

I.—COLLECTION OF THE INDIAN MUSEUM.

Genus **Phacopteron**, Buckton.

Insect large, robust; thorax strongly arched; head small, more or less retracted, narrower than thorax, with facial cones rather short, divergent, separate at base, subacute; eyes large, hemispherical; antennae slender. Prothorax long, almost vertical; propleurites at least moderately large, suture between them and pronotum not distinct; mesopleurum large; legs long; femora large; hind coxae very large, elongate, contiguous along inner margin, with spur short. Forewings large, more or less hyaline, somewhat rhomboidal in outline; radius and fourth furcal connected by a short cross-vein, making a third marginal cell. Usually gall-making.

Type of genus: *Phacopteron lentiginosum* (Buckt.).

This genus is unmistakably related closely to *Pachypsylla* in nearly all its characters except the venation, in which it is similar to *Ceriacremum*. Because of this similarity it has hitherto been grouped with the latter genus, but this relation is only in the wing venation, whereas all the rest of the anatomical characters, even the shape of the wing, point to its affinity with *Pachypsylla*. By some unaccountable error Enderlein, in his paper on the *Psyllidae*

of Kilimandjaro, separated this genus from Kieffer's *Phacosema* by the absence of the cubital petiole. Buckton's original description and accompanying figure clearly show that this is not true. As a matter of fact, these two species, *Phacopteron lentiginosum*, Buckt., and *Phacosema gallicolla*, Kieffer, are undoubtedly not only congeneric but also very closely related specifically Until I have further evidence, however, than Kieffer's description, I will not merge the two genera.

Phacopteron lentiginosum, Buckt.

(Pl. xxxiii, figs. A, B, F; Pl. xxxv, fig. A.)

Length of body 4·7 mm.; length of forewing 4·5 mm.; greatest width of wing 2 mm.; width of vertex between eyes ·45 mm.; with eyes ·9 mm. General colour brown, most of surface blotched with lighter brown, especially on vertex, pronotum and abdomen; venter lighter brown; legs concolorous; antennae brown, with tips of segments and entire terminal segment black; forewings maculated apically dark brown to black; veins spotted closely with black. Body very large, robust, sparsely and briefly pubescent.

Head small, retracted under pronotum, with eyes much narrower than thorax, about as broad as prothorax; vertex transversely rather flat but rounded down forward; post-ocelli strongly elevated; facial cones short, widely separate at base, divergent, porrect, subacute at tip; pubescence short; labrum small; eyes large, hemispherical, ocelli large; anterior ocellus between and a little above facial cones; antennae slender, long, almost as long as head and thorax, tip slightly clavate.

Thorax very large, broad, strongly arched; pronotum long, almost overhanging vertex; propleurites moderately large, with suture between them and pronotum scarcely visible. Dorsulum ascending, long; mesopleurites very large, conspicuous; scutum long; legs long, large; all femora somewhat enlarged, stout, with tibial groove deep, conspicuous; tibiae armed; tarsi large; hind coxae very large, elongate, with coxal spur small, blunt. Forewings large, hyaline, maculate, somewhat rhomboidal in shape, a little more than twice as long as broad, broadest just beyond first marginal cell; cubital petiole more than half as long as discoidal subcosta; radius straight, not parallel to margin, connected with arch of fourth furcal by short cross-vein, thence flexed sharply toward margin, terminating slightly before apex of wing; first marginal cell small, furcals subequal; second marginal cell quadrangular, broadest at margin; third marginal cell includes apex of wing.

Abdomen large, robust. *Male*—Genital segment rounded; claspers rather short, roundly acute at tip, curved forward; anal valve large, broadest near base. *Female*—Genital segment relatively small, acute at apex; dorsal and ventral plates subequal in length.

Redescribed from one male and three females from Dehra Dun, base of West Himalayas, and from Poona, W India, on *Garuga pinnata.* These specimens are paratypes of the specimens used by Mr. Buckton in his original description. This species produces galls on *Garuga pinnata*, Roxb.

Apsylla, gen. nov.

Body robust; thorax broad, strongly arched, shagreened; head small, short, more or less retracted; vertex rounded forward, shagreened; facial cones entirely wanting; eyes moderately large, hemispherical; anterior ocellus in front, or inferior; antennae ten-segmented, short, thick, with two very long setae at tip. Pronotum almost, or quite, vertical; pro-epimeron short; pro-episternum longer Legs short, all similar and of equal size and length, apparently not saltatory; hind coxae unusually small, not larger than mesocoxae and very similar in shape, with coxal spurs lateral, small and almost obsolete Wings hyaline, both pairs more nearly similar than usual; forewings weakly veined, especially on margin apically.

Type of genus: *Apsylla cistellata* (Buckt.).

This genus is very distinct from all others in several respects. The principal difference lies in the metacoxae and antennae. It is possible that *Pauropsylla udei*, Rubsaamen, a species which I have not seen, is related to this species.

Apsylla cistellata (Buckt.).

(Pl. xxxiii, figs. C, D, E, K; Pl. xxxv, fig. B.)

Length of body 3·1 mm.; length of forewing 3·4 mm.; greatest width 1·4 mm.; width of vertex between eyes ·5 mm.; with eyes ·78 mm. General colour black, male sometimes brown; antennae lighter; wings whitish-hyaline. Body short, relatively robust, surface shagreened.

Head small, short, deflexed, with eyes much narrower than thorax; vertex transversely rather flat, rounded down strongly forward, with post-ocellar area strongly elevated. Eyes large; anterior ocellus in front, barely visible from above; antennae, with terminal setae, about as long as width of head with eyes, basal segments scarcely thicker than succeeding, decreasing in length to tip; terminal setae about as long as four distal segments, black; labrum small.

Thorax strongly arched, broad; pronotum somewhat overhanging vertex, long; propleurites indistinct; mesopleurum large; femora all short, not enlarged; meso- and metacoxae similar in shape and size, metacoxal spur small, lateral; hind tibiae unarmed. Forewings hyaline, transparent, weakly veined, a little more than two and a half times as long as broad, broadest across first marginal cell; marginal veins very weak apically; first furcal very short,

almost obsolete; second arched; second marginal cell triangular, larger; radial cell short; cubital petiole almost twice as long as discoidal subcosta; clavus long, large. Hind wings veined less distinctly than forewings but very similarly, except radial cell wanting.

Abdomen short, thick. *Male*—Claspers curved forward, subacute, moderately long; anal valve erect, large, with short rounded lobe projecting caudad, truncate above, with anal opening distinct. *Female*—Genital segment short, large and subglobose at base, produced into two short, needle-like processes with a bivalve ovipositor between, exserted.

Redescribed from two pairs ("type material") from Dehra Dun, West Himalayas, and seven males and nine females from Bettiah, Champaran, Bengal, from galls on mango shoots; one male from Dehra Dun in mango gall. Buckton described this species as a *Psylla*, but, of course, it is widely different from the members of that genus.

Eurhinocola, gen. nov.

Body robust; head broad, more or less recessive over pronotum and pleurites, closely adpressed to prothorax; vertex somewhat roundly emarginate over base of antennae; facial cones short, truncate, transversely rectangular or nearly so, almost contiguous on inner margin, not continuing in plane of vertex as in *Euphyllura*, but distinctly separated therefrom; anterior ocellus on front margin of vertex; eyes small; antennae short. Thorax broad; propleurites more or less concealed by eyes; legs short. Wings more or less coriaceous, not hyaline, slightly rhomboidal in outline or elongate-ovate; venation somewhat similar to *Euphyllura*.

Type of genus: *Eurhinocola gravelyi*, Crawf.

This genus is closely related to *Euphyllura*, differing markedly in the cephalic characters chiefly. Many of the species heretofore included in the genus *Rhinocola* will fall into this genus, since *Rhinocola* must be removed to the subfamily Liviinae. *Rhinocola aceris*, L., the type of that genus, is closely related to *Livia* in the fundamental characters and, therefore, can not include most of the species heretofore placed therein. This matter is treated more in detail in another paper on Psyllidae which is at present in manuscript form.

Eurhinocola gravelyi, n. sp.

(Pl xxxiii, figs. G. H.; Pl. xxxiv, fig. E; Pl. xxxv, fig. I.)

Length of body 1·5 mm.; length of forewing 1·4 mm.; greatest width ·65 mm.; width of vertex between eyes ·30 mm.; with eyes ·46 mm. General colour brown to black, with abdomen and legs apically light brown to dirty white; wings yellow. Body very small, robust; surface shagreened.

Head almost as broad as thorax, closely adpressed to prothorax, scarcely deflexed; vertex a little broader than long, rather plane, with a shallow fovea discally on each side of median line, almost straight behind, anterior margin roundly emarginate above antennae; facial cones short, broad, transversely rectangular, somewhat deflexed from plane of vertex and distinctly separated therefrom by a deep suture (not as in *Euphyllura*), scarcely pubescent; anterior ocellus visible from above; eyes small, white, slightly recessive over pronotum; labrum visible from front. Antennae short, not longer than width of head, rather thick.

Thorax broad, robust, short; prothorax moderately long, rather flat transversely, concealed somewhat laterally by recessive eyes; propleurites mostly concealed by eyes; coxae small; legs short, relatively stout. Wings small, somewhat coriaceous and wrinkled, not transparent, a little more than twice as long as broad, very slightly rhomboidal in outline; first marginal cell elongate; cubital petiole twice as long as discoidal subcosta; pterostigmal vein almost obsolete. Hind wings smaller, hyaline.

Male—Abdomen constricted at base of genitalia; latter large; anal valve large, bilobed; claspers large, acute at tip, simple. *Female*—Genital segment as long as rest of abdomen, deflexed, acuminate; ventral valve shorter than dorsal, more acute.

Described from a considerable number of specimens of both sexes collected by F. H. Gravely from the "jungle between foot of Dawna Hills and Burmo-Siamese Frontier." I take pleasure in naming this species after the collector.

Type No. 3618/19.

Euphalerus vittatus, n. sp.

(Pl. xxxiii, figs. I, J, L, M; Pl. xxxv, fig. C.)

Length of body 2·2 mm.; length of forewing 2·2 mm.; greatest width ·9 mm.; width of vertex between eyes ·39 mm.; with eyes ·63 mm.; length from crown to tip of cones ·41 mm. General colour whitish and dark brown or black; dorsum and vertex whitish; a dark brown vitta extending from each eye over upper portion of pleurum and thence along upper half, or slightly less, of forewing to apex of latter; lower portion of pleura whitish; venter brown; abdomen more or less variegated. Body of medium size, not robust.

Head with eyes not as broad as thorax, quite long, descending; vertex broader than long, conspicuously vermiculous-punctate, flat, with a fovea on each side of median line posteriorly; anterior margin marked by an impressed line between vertex and facial cones; latter large, broad, rounded at tip, contiguous, about two-thirds as long as vertex, emarginate laterad in front of antennae, with short stiff white pubescence. Eyes large, hemispherical; ocelli large. Antennae slender, about as long as head to metanotum, whitish with segments black apically and two terminal

segments black; insertion large, between vertex and facial cones. Labrum narrowly visible from side.

Thorax slightly arched; pronotum vermiculous-punctate, rather long, sides parallel; propleurites narrow, typical for genus; coxa large. Dorsulum ascending, finely punctate, about as long as scutum. Forewings rather thick, not coriaceous, whitish except on black or brown vitta, about two and one-third times as long as broad, broadest across first marginal cell, very slightly rhomboidal in shape; first marginal cell large, long, larger than second; first cubital short; radius quite long; discoidal subcosta shorter than cubital petiole; pterostigma prominent; veins spotted with black.

Male—Genital segment small, rounded; anal valve simple, rather long, sides parallel; claspers short, small, with stiff spiny pubescence, acute at tip; penis long, slender, clavate at tip. *Female*—Genital segement short, small; dorsal plate slightly longer than ventral, both very acute.

Described from seven males and seven females from Calcutta, on *Cassia ? fistula* (N. Annandale). This is somewhat similar to an American species, *E. vermiculosus*, Crawf. (MS.).

Type No. 9738/18.

Euphalerus citri (Kuwayama).

(Pl. xxxiii, figs. N, O, P; Pl. xxxv, fig. D.)

Length of body 2·4 mm.; length of forewing 2·4 mm.; greatest width 1·0 mm.; width of vertex between eyes ·35 mm.; with eyes ·55 mm.; length of vertex to tip of cones ·32 mm. General colour brown, vertex slightly lighter; antennae black at tip; eyes darker, with black stripe from eye to tip of cone on side; forewings with a spotted macula of brown on the upper margin from a little below tip of clavus to tip of radius, and another on lower margin not quite merged into first; maculae not continuous but composed of smaller scattered spots.

Head narrower than thorax, descending; vertex flat, very finely pubescent, finely punctate, broader than long, with a fovea on each side in rear centre; anterior margin almost straight; facial cones broad at base, in same plane with vertex, convergent toward and rounded at apex, almost contiguous, finely pubescent. Antennal bases scarcely visible, as in other species; antennae short, not longer than head and pronotum combined, slender. Eyes large.

Thorax very finely pubescent; pronotum rather long, sides parallel; pleurites typical for genus. Forewings subhyaline, rather thickened as in other species, maculate, attenuate at base, broadest subapically, rounded at apex, about two and a third times as long as broad; first cubital long; second marginal cell larger than first; radius long; pterostigma very narrow, quite long.

Male—Genital segment rather conspicuous; anal valve elongate-pyriform or flask-shaped, attenuate above; claspers long,

slender, subacute at tip, simple. *Female*—Genital segment short, small, acute at tip; dorsal plate very slightly longer than ventral.

Described from one female from Adra, Manbhum District (J.T. Jenkins), November 12th, 1909. Seventeen specimens, both sexes, of this species were collected by Mr. Geo. Compere on citrus trees in the Philippine Islands. He states that he found the same insect in India on citrus trees in considerable numbers. The description of the male is based on these specimens.

Diceraopsylla, gen. nov.

Body robust; thorax strongly arched; body surface conspicuously shagreened; head with eyes not as broad as thorax; vertex more or less plane, concave transversely, slightly cleft in front; facial cones entirely wanting, with two rounded ridges on face extending from antennal bases to labrum; eyes not large; antennae slender, at least moderately long. Pronotum ascending; proepisternum large, protruding above, hindmost tergite of metanotum (post-scutellum) bifid; appearing as two blunt horns extending back; legs normal; wings membranous, hyaline, rounded at apex, with a pterostigma.

Type of genus: *Diceraopsylla brunettii*, Crawf.

This genus is somewhat similar to *Heteropsylla*, Crawf. (MS.) in the absence of facial cones, but differs not only from this but from all other genera in the bifid post-scutellum, for which the genus is named.

Diceraopsylla brunettii, n. sp.

(Pl. xxxiii, figs. Q, R, U; Pl. xxxv, fig. G.)

Length of body 2·5 mm.; length of forewing 3·8 mm.; greatest width 1·7 mm.; width of vertex between eyes ·35 mm.; with eyes ·68 mm. General colour black; face, legs, tip of abdomen brown; antennae brown, with segment tips and terminal segment black; wings somewhat maculate. Body rather small, very robust, surface conspicuously shagreened, including antennae and femora.

Head small, short, with eyes distinctly narrower than thorax; vertex with post-ocellar regions and ocular margins elevated, with a small fovea on each side of median line posteriorly; front margin rounded down, with anterior ocellus in front visible from above, somewhat cleft in front, as in *Rhinopsylla*. Antennae ten-segmented, slender, longer than head and thorax; I moderately large; III longest: IX and X short, thickened; labrum small.

Pronotum ascending, arched; episternum large, prominent; epimeron small, mostly concealed; dorsulum large; scutum long; post-scutellar processes fully as long as thick, rounded at tip. Legs normal; hind tibiae unarmed. Forewings rather large, with a macula over first furcal and several small black spots on the veins especially at the furcations, broadly rounded at the apex, about two and a half times as long as broad; first marginal cell usually

large; second marginal cell smaller than first; radius short, terminating far from apex of wing: pterostigma short, broad; cubital petiole almost as long as discoidal subcosta. Hind wings hyaline, scarcely veined.

Male—Abdomen slender; genital segment relatively large; scarcely rounded; claspers slender, arched, quite acute at tips; anal valve slender, rather long.

Described from two males from Darjeeling, East Himalayas, altitude 7000 ft. (E. Brunetti), May 29th, 1910.

Type No. 9733/18.

Psylla simlae, n. sp.

(Pl. xxxiii, figs. S, T; Pl. xxxv, fig. S.)

Length of body 2 mm.; length of forewing 2·5 mm.; greatest width 1 mm.; width of vertex between eyes ·41 mm.; with eyes ·67 mm. General colour brown, head, legs and antennae lighter brown. Body small.

Head rather large, with eyes about as broad as thorax, deflexed; vertex descending, almost flat, with a small fovea on each side of median line, lobes rather triangular in shape; facial cones large, almost as long as vertex, slightly declinate from plane of vertex, separated therefrom by a deeply impressed line, divergent, subacute at apex, briefly pubescent. Antennae slender, about as long as head and thorax, black at tip. Eyes recessive toward thorax.

Thorax somewhat arched; notum finely shagreened, except pronotum; latter rather short; propleurites long; epimeron small. Legs normal; hind tibiae with small spur at base. Forewings hyaline, a little more than twice as long as broad, with a black spot at tip of clavus; marginal cells subequal; radius long; pterostigma long, rather broad; cubital petiole about half as long as discoidal subcosta.

Female—Genital segment moderately short, plates subequal, rather acute.

Described from one female from Simla, West Himalayas, altitude 7000 ft. (N. Annandale).

Type No. 9701/18.

Rhinopsylla stylata, n. sp.

(Pl. xxxiii, fig. W; Pl. xxxiv, fig. F; Pl. xxxv, fig. H.)

Length of body 2·5 mm.; length of forewing 3 mm.; greatest width 1·2 mm.; width of vertex between eyes ·34 mm.; with eyes ·56 mm. General colour deep black; body moderately large, surface conspicuously reticulated or shagreened.

Head a little narrower than thorax, slightly deflexed; vertex excavated in centre between median line and elevated post-ocellar area, deeply emarginate on front margin, with anterior ocellus at

apex of emargination and visible from above; facial cones wanting, slightly swollen at base of antennae; labrum visible from front. Antennae slender, about three times as long as width of head; I and II large; III long, yellowish. Eyes large; rostrum long.

Prothorax moderately long; pleurites large, prominent; dorsulum deeply reticulated; hind coxae very large, with long spur; hind tibiae with small tooth at base. Wings hyaline, a little more than twice as long as broad, rather rounded at apex; marginal cells subequal; fourth furcal at apex of wing.

Female—Abdomen broad, suddenly narrowed before genital segment; latter slender, rather long, acuminate, valves subequal in length, acute at tip.

Described from one female from valley of River Sutlej, below Simla (W. Himalayas), May, 1910 (N. Annandale).

Type No. 9708/18.

Kuwayama hirsuta, n. sp.

(Pl. xxxiii, figs. V, Y; Pl. xxxv, fig. I.)

Length of body 2·7 mm.; length of forewing 5·6 mm.; greatest width 2·2 mm.; width of vertex between eyes ·52 mm.; with eyes ·96 mm. General colour light brown, with brown markings on dorsulum; venter of abdomen lighter; antennal segments black at tips. Body large, long, entire surface covered with long, light brownish pubescence.

Head large, with eyes about as broad as thorax, not deflexed; vertex sulcately impressed on each side of median line, each lobe rounded forward in front, post-ocellar areas elevated strongly; facial cones wanting, with a slight rounded swelling at base of antennae; anterior ocellus in front; eyes large, very prominent. Antennae slender, almost as long as entire body, not pubescent. Labrum small.

Thorax long, rather narrow, scarcely arched; pronotum moderately long, narrow transversely; propleurites large; episternum prominently bulging outward above. Dorsulum long, not arched; legs long; femora stout, with tibial groove long; hind coxae very large; hind tibiae with large spur at base. Forewings large, hyaline, transparent, acutely angled at apex, about two and a half times as long as broad, broadest across middle, with a brown spot near tip of clavus; first marginal cell unusually large, about three times as large as second; first cubital very short; fourth furcal terminating at tip of wing; radius short.

Male—Abdomen short, thick; genital segment short, somewhat retracted; claspers slender, arched, toothed at apex, anal valve broad at base, slender at tip.

Described from one male from Igatpuri, Western Ghats, Bombay Presidency, November 20th, 1909.

Type No. 9730/18.

Until further material is available, at least, this species is included in the genus *Kuwayama* which was erected for a Mexican

species and one from Southern California. In the tribe Triozini to which this belongs, the hind tibial spur in this species is rather remarkable.

Trioza gigantea, n. sp.

(Pl. xxxiii, figs. X, Z; Pl. xxxv, fig. J.)

Length of body 4 mm.; length of forewing 6·6 mm.; greatest width 2·6 mm.; width of vertex between eyes ·53 mm.; with eyes ·93 mm. General colour black on dorsum, light brown on venter; vertex, eyes and antennae black; facial cones brown; pronotum brown; dorsulum shining black; metanotum dark brown; fore tibiae dark brown. Body surface covered sparsely with long brown pubescence, which is not very prominent; body very large.

Head broad, about as broad as thorax, much broader than prothorax and dorsulum which appear somewhat as a neck; vertex roundly concave between eyes, descending, smooth, glossy; facial cones long, almost as long as vertex, vertical, divergent, acute at apex, pubescent. Eyes large, prominent; anterior ocellus in front; antennae very long, as long as body, moderately thick, densely hirsute, all segments long, except I, II and X.

Thorax arched; pronotum short, depressed below head and dorsulum; propleurites large; dorsulum strongly arched, narrow, overhanging pronotum. Legs long; femora rather thick; hind coxae very large; hind tibiae without tooth at base. Forewings large, hyaline, transparent, narrowly rounded at apex, two and a half times as long as broad; first marginal cell more than twice as large as second; first cubital shorter than first furcal; radius long, parallel with costa; veins setose, conspicuously so on basal portion of wing. Hind wings long, slender, hyaline.

Female—Abdomen long, large; genital segment short, subacute at tip; dorsal plate blunt at tip.

Described from one female from Darjeeling, East Himalayas, altitude 7000 ft. (E. Brunetti), May 26th, 1910.

Type No. 9734/18.

This is somewhat related to Kuwayama's *Stenopsylla nigricornis*, and probably does not belong in the genus *Trioza*. Until further evidence, however, is available, it will be included in the large genus.

Trioza hyalina, n. sp.

(Pl. xxxiv, figs. A, B; Pl. xxxv, fig. K.)

Length of body 1·9 mm.; length of forewing 2·9 mm.; greatest width 1·2 mm.; width of vertex between eyes ·33 mm.; with eyes ·47 mm. General colour lemon yellow, dorsulum brown-cephalad, antennae black at tip, eyes black. Body small.

Head narrower than thorax, small, deflexed; vertex impressed discally, bulging on each side of median line in front; facial cones almost as long as vertex, subvertical, divergent, acute at tip,

pubescent. Antennae about three times the width of head, slender. Eyes prominent; anterior ocellus slightly visible from above.

Thorax not broad; pronotum short, depressed below dorsulum; latter long, narrow. Wings proportionately rather large, hyaline, about two and a third times as long as broad, radial margin arched, rather rounded at apex; radius flexed; fourth furcal terminating at apex of wing.

Male—Genital segment rather large, anal valve long, sides concave cephalad, subparallel, truncate at tip; claspers long, stout at base, acute at tip. *Female*—Genital segment about half as long as rest of abdomen; dorsal valve slightly longer than ventral, both acute.

Described from three males and two females from Simla, West Himalayas, 7000 ft. (N. Annandale).

Type No. 9707/18.

Trioza analis, n. sp.

(Pl. xxxiv, figs. C, D; Pl. xxxv, fig. L.)

Length of body 2·4 mm.; length of forewing 3·4 mm.; greatest width 1·3 mm.; width of vertex between eyes ·30 mm.; with eyes ·57 mm. General colour black, with vertex, part of pronotum, abdomen ventrad, legs, basal half of antennae reddish brown.

Head not as broad as thorax, somewhat deflexed; vertex with a deep sulcus down median line and one on each side extending obliquely toward front margin of eye, pubescent; facial cones almost as long as vertex, slightly divergent, deflexed from plane of vertex, subacute at tip, pubescent. Antennae slender, about twice as long as width of head; eyes large.

Prothorax moderately long; propleurites large, prominent; dorsulum long. Legs rather short and stout. Wings hyaline, about two and a half times as long as broad, roundly acute at tip; first marginal cell smaller than second; radius rather short; clavus black at tip.

Female—Abdomen long, convergent to tip; genital segment very short, slightly longer than preceding segment; ventral valve very small, triangular in profile.

Described from two females from Simla, West Himalayas, 7000 ft. (N. Annandale).

Type No. 9702/18.

II.—PUSA COLLECTION.

Apsylla cistellata (Buckton).

Six specimens, both sexes, from Pusa, Bengal, on mango trees.

Pauropsylla depressa, n. sp.

(Pl. xxxiv, figs. G, H; Pl. xxxv, fig. N.)

Length of body 2·3 mm.; length of forewing 3·3 mm.; greatest width 1·7 mm.; width of vertex between eyes ·43 mm.; with eyes

·76 mm. General colour orange red; legs and antennae lighter to yellowish, latter black at tip; tarsi often more or less black. Body robust, moderately large.

Head short, deflexed, with eyes narrower than thorax; vertex somewhat pubescent, rather broad, posterior margin arcuate downward between eyes, median line not visible; anteriorly roundly bulging, surface smooth, with anterior ocellus in front visible from above; antennal insertions beneath and slightly swollen; facial cones entirely wanting. Eyes rather small; post-ocelli elevated. Labrum large, globose, visible from front. Antennae about one and a third times as long as width of head, slightly compressed at tip, terminal setae moderately long.

Thorax strongly arched, broad, glabrous; pronotum short, scarcely visible from above between head and dorsulum; latter rather large, ascending; mesopleurae very large and prominent. Legs long, slender, typical. Forewings large, hyaline, transparent, broadest subapically, rather square at apex, slightly more than twice as long as broad; marginal cells small, subequal; radial cell broad at base; cubital petiole very short.

Abdomen in both sexes usually broad and depressed, subcircular in outline from above. *Male*—Genital segment rather small; anal valve broadest at base; claspers as long as anal valve, truncate at tip. *Female*—Genital segment about half as long as rest of abdomen, acute at tip; usually bent down, and often (in dried specimens at least) lying along ventral surface of abdomen.

Described from one male and five females from Pusa, Bengal, in galls on leaves of *Ficus glomerata* ("gular").

Pauropsylla tuberculata, n. sp.

(Pl. xxxiv, figs. I, J, L; Pl. xxxv, fig. E.)

Length of body 1·8 mm.; length of forewing 2·1 mm.; greatest width 1·0 mm.; width of vertex between eyes ·38 mm.; with eyes ·68 mm. General colour red to dark reddish brown; dark form:—dorsulum posteriorly orange yellow, vertex above and between ocelli orange, remainder dark reddish brown, except connexivum of abdomen white; light form:—same as above but shades lighter; antennae black at tip. Body robust, rather small.

Head short, deflexed, with eyes fully as broad as thorax; vertex angularly emarginate behind, rounded down and forward, surface rather plane; anterior ocellus visible from above, near to labrum; post ocelli rather remote from eyes, not prominently elevated; labrum large, almost visible from above, easily from front; facial cones entirely wanting; antennae attached a little above anterior ocellus, a little longer than width of head; terminal setae half as long as antennae.

Thorax strongly arched, robust; pronotum short, ascending; pleurites mostly concealed by recessive eyes and occiput; dorsulum arched; mesopleurae large, anterior; post-scutellum pentangular.

Legs typical; hind coxae thick, long; hind femora constricted midway. Forewings relatively rather small, broadest and rather square at apex, attenuate at base, hyaline and transparent, a little less than twice as long as broad, basal margin black; first marginal cell very small, triangular; second large, rectangular; radius angulate midway and touching arch of fourth furcal; cubital petiole shorter than discoidal subcosta.

Abdomen robust, third and fourth tergites produced upward into two prominent humps. *Female*—Genital segment short, stout, acute at tip; dorsal valve a little longer than ventral.

Described from six females from Pusa, Bengal; two (darker forms) on "pumpkin," and four (lighter and slightly smaller forms) on *Alstonia scholaris*. While this is somewhat atypical of the genus, yet it seems to be closely allied thereto.

Euphalerus vittatus, Crawford.

Six specimens from Narainganj, Eastern Bengal and Assam, "on a bush."

Euphalerus citri (Kuwayama).

Seven specimens from Pusa, Bengal, on orange (*Citrus aurantium*), and on Lucerne.

Psyllopa punctipennis, n. sp.

(Pl. xxxiv, figs. K, O; Pl. xxxv, fig. U.)

Length of body 1·7 mm.; length of forewing 2·3 mm.; greatest width 1·0 mm.; width of vertex between eyes ·33 mm.; with eyes ·53 mm. General colour light brown; dorsulum and scutum with several dark brown longitudinal stripes; antennae black at tips of segments III to X; forewings with numerous brown or black dots and spots both on veins and membrane.

Head a little narrower than thorax, not much deflexed; vertex longer than half its width, with a slight foveal impression discally; facial cones about two-thirds as long as vertex, rather strongly divergent, narrowly rounded at tip; eyes large; antennae less than twice as long as width of head, slender.

Thorax not strongly arched; pronotum rather long; pleurites broad. Legs typical. Forewings hyaline, rounded at apex, relatively rather small, about two and a third times as long as broad; cubital petiole a little shorter than discoidal subcosta.

Male—Genital segment rather large; anal valve broad at base, truncate at apex; claspers rather blunt at tip. *Female*—Genital segment thick, about half as long as rest of abdomen, valves subequal, rather thickly pubescent.

Described from four males and four females from Pusa, Bengal, on indigo. This is probably the adult of Buckton's *Psylla isitis*, which he described from the nymph only. In order to avoid con-

fusion, however, in case they should not be identical, I have given it another name. The forewing of this species bears a close resemblance to *Aphalara multipunctata*, Kuwayama (Japanese).

Psyllopa obscura, n. sp.

(Pl. xxxiv, fig. S; Pl. xxxv, fig. M.)

Length of body 2·1 mm.; length of forewing 3·6 mm.; greatest width 1·5 mm.; width of vertex between eyes ·44 mm.; with eyes ·68 mm. General color orange yellow throughout; antennae black on apical half. Body rather large, robust.

Head about as broad as thorax, deflexed; vertex moderately large, typical; facial cones a little more than half as long as vertex, thick at base, roundly acute at apex, much deflexed from plane of vertex; eyes large; antennae fully twice as long as width of head, slender.

Thorax broad, arched; pronotum rather long; legs moderately long. Forewings hyaline, two and a third times as long as broad, rounded at apex; pterostigma moderately large; cubital petiole shorter than discoidal subcosta.

Female—Genital segment thick at base, as long as abdomen, subacute at apex; dorsal valve a little longer than ventral.

Described from one female from Pusa, Bengal, taken on mango leaves.

Tenaphalara elongata, n. sp.

(Pl. xxxiv, figs. M, N, P, Q; Pl. xxxv, fig. O.)

Length of body 3·1 mm.; length of forewing 3·4 mm.; greatest width 1·0 mm.; width of vertex between eyes ·28 mm.; with eyes ·56 mm. General colour greenish yellow throughout; antennal joints V to X black at tip. Body slender, very long.

Head moderately long, not deflexed, as wide as thorax; vertex rather broad, rounded down and forward uniformly, rather plane, long behind eyes; facial cones entirely wanting; eyes small; postocelli not elevated; anterior ocellus visible from above; antennae half as long as body, slender, terminal setae short; labrum small, subacute apically.

Thorax long, slender, cylindrical, not arched; pronotum rather long; pleurites large, sutures often indistinct; dorsulum small. Legs rather short; hind tibiae short, not longer than femora, with a small tooth at base. Forewings long, slender, hyaline, transparent, acute at tip, three and a half times as long as broad; venation suggests *Carsidara*; second marginal cell larger than first; fourth furcal near apex of wing; pterostigma open; with a callus (appears as a pseudo-vein) extending from tip of pterostigma to radius and from radius to base of second marginal cell; cubital petiole longer than discoidal subcosta; veins and apical portion of membrane yellowish.

Abdomen elongate, slender. *Male*—Anal valve long, constricted at base, sides subparallel; claspers long, slender, subacute at tip, not toothed. *Female*—Dorsal genital valve irregular in outline, constricted near tip, acute; ventral valve usually as long as dorsal, broad basally (viewed from beneath), divided and very acute at tip.

Described from seventeen males and females from Pusa, Bengal, on "Silk Cotton." This is very similar to the Japanese species *Tenaphalara acutipennis*, Kuwayama, differing only in a few minor characters.

Homotoma distincta, n. sp.

(Pl. xxxiv, figs. T, U; Pl. xxxv, fig. P.)

Length of body 1·7 mm.; length of forewing 2·8 mm.; greatest width 1·1 mm.; width of vertex between eyes ·37 mm.; with eyes ·59 mm. General colour light yellow, glossy; antennae brown to black. Body rather small.

Head short, somewhat deflexed, with eyes not quite as broad as thorax, deeply cleft in front between antennae; vertex glossy, sparsely pubescent, descending from each side to median line; anterior ocellus not visible from above; facial cones inferior, not visible from above, short, widely divergent, slightly pubescent. Antennae thick, more than twice as long as width of head, thickly pubescent; I stout, III as long as IV—VI; terminal setae short. Eyes large; labrum small.

Thorax somewhat arched; pronotum short, depressed below dorsulum. Legs rather stout, short; hind tibiae without tooth at base. Forewings hyaline, transparent, acute at apex, about two and a half times as long as broad; first marginal cell wanting; second very large, including apex of wing; cubital petiole and base of second cubital very close to discoidal subcosta and base of radius but not joined thereto; radius short, black.

Female—Genital segment about as long as rest of abdomen, stout; dorsal valve a little longer than ventral, both rather acute.

Described from one female from Pusa, Bengal, taken "on the wing." This is very close to *Homotoma radiatum*, Kuwayama (Japan), but seems to be quite distinct in several respects.

Allotrioza minuta, n. sp.

(Pl. xxxiv, fig. R; Pl. xxxv, fig. F.)

Length of body 1·2 mm.; length of forewing 1·8 mm.; greatest width ·75 mm.; width of vertex between eyes ·20 mm.; with eyes ·34 mm. General colour of male brown to dark brown, legs, facial cones and antennae light greenish yellow; female brown on vertex and dorsum of thorax and abdomen; ventral portion, legs, facial cones and antennae light greenish yellow; antennae black at tip in both sexes.

Head scarcely or only slightly deflexed, relatively rather large; vertex with a foveal impression on each side of median line somewhat posteriorly, emarginate on anterior margin over front ocellus and full on each side of emargination; facial cones very small, whitish, acute at tip, not strongly divergent, subhorizontal, scarcely pubescent. Antennae short, only a little longer than width of head.

Thorax scarcely arched, pronotum relatively rather long, on same level as vertex and dorsulum; latter moderately long; legs typical. Forewings small, hyaline, narrowly rounded at apex, about two and two-thirds times as long as broad; radius short.

Male—Genital segment rather large; anal valve moderately broad, truncate above, slightly constricted near apex; claspers stout, not toothed at tip. *Female*—Genital segment about half as long as abdomen, valves of equal length, pubescent near apex.

Described from three males and two females from Hazaribagh, Bengal, "on leaves."

Trioza urticae, Linn.

Two females from Keonthal, Punjab, on nettle (*Urtica* sp.). This is quite typical of the European form of the same species.

Trioza fletcheri, n. sp.

(Pl. xxxiv, fig. V; Pl. xxxv, fig. Q.)

Length of body 1·7 mm.; length of forewing 2·8 mm.; greatest width 1·2 mm.; width of vertex between eyes ·26 mm.; with eyes ·46 mm. General colour flavous yellow; antennae black at tip Body rather small.

Head narrower than thorax, deflexed; vertex moderately long, with a prominent longitudinal sulcate impression on each side of median line; facial cones small, about half as long as vertex, only slightly divergent, subvertical, acute at tip. Antennae a little longer than width of head. Thorax somewhat arched, typical. Legs moderately long, slender. Forewings hyaline, more than two and a half times as long as broad, subacute at apex; radius short; marginal cells subequal.

Female—Genital segment about as long as abdomen, stout, valves subequal, rather acute.

Described from three females from Pusa, Bengal, on *Gmellina arborea*. This species is named for Mr. T. B. Fletcher, Imperial Entomologist in Pusa.

Trioza fletcheri minor, n. var.

(Pl. xxxv, fig. R).

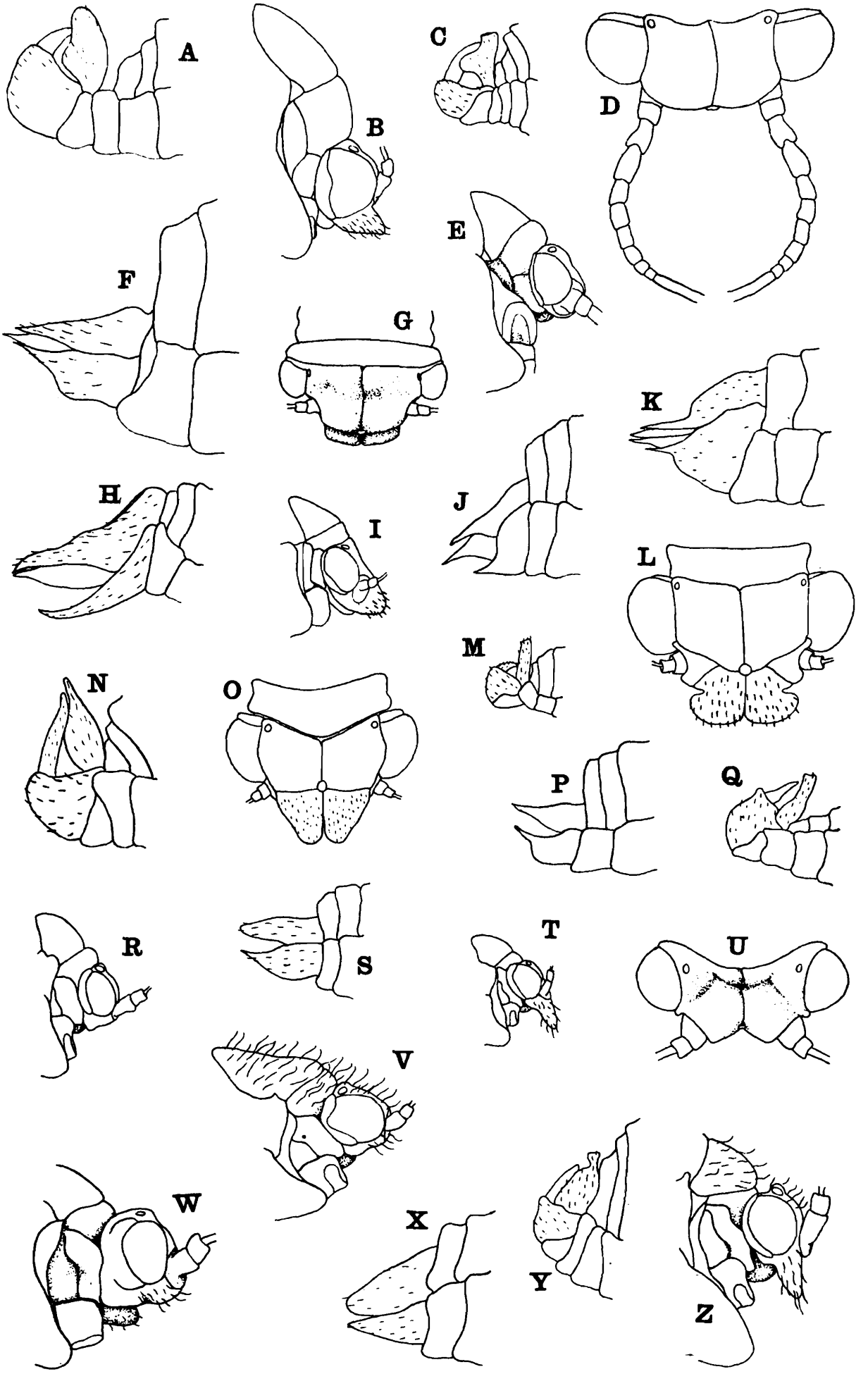
Similar to the species in most respects but uniformly smaller throughout; facial cones scarcely one-third as long as vertex and

less divergent. *Male*—Genital segment typical; anal valve subtriangular in profile; claspers long, blunt and black at tip.

Described from two males and two females from Pusa, Bengal, on *Terminalia arjuna.*

EXPLANATION OF PLATE XXXIII.

A. *Phacopteron lentiginosum.*
B. Same, profile of head.
C, D, E. *Apsylla cistellata.*
F. *Phacopteron lentiginosum.*
G, H. *Eurhinocola gravelyi.*
I, J *Euphalerus vittatus.*
K. *Apsylla cistellata.*
L, M. *Euphalerus vittatus.*
N, O, P. *Euphalerus citri.*
Q, R. *Diceraopsylla brunettii.*
S, T. *Psylla simlae.*
U. *Diceraopsylla brunettii.*
V. *Kuwayama hirsuta.*
W *Rhynopsylla stylata.*
X. *Trioza gigantea.*
Y. *Kuwayama hirsuta.*
Z. *Trioza gigantea.*



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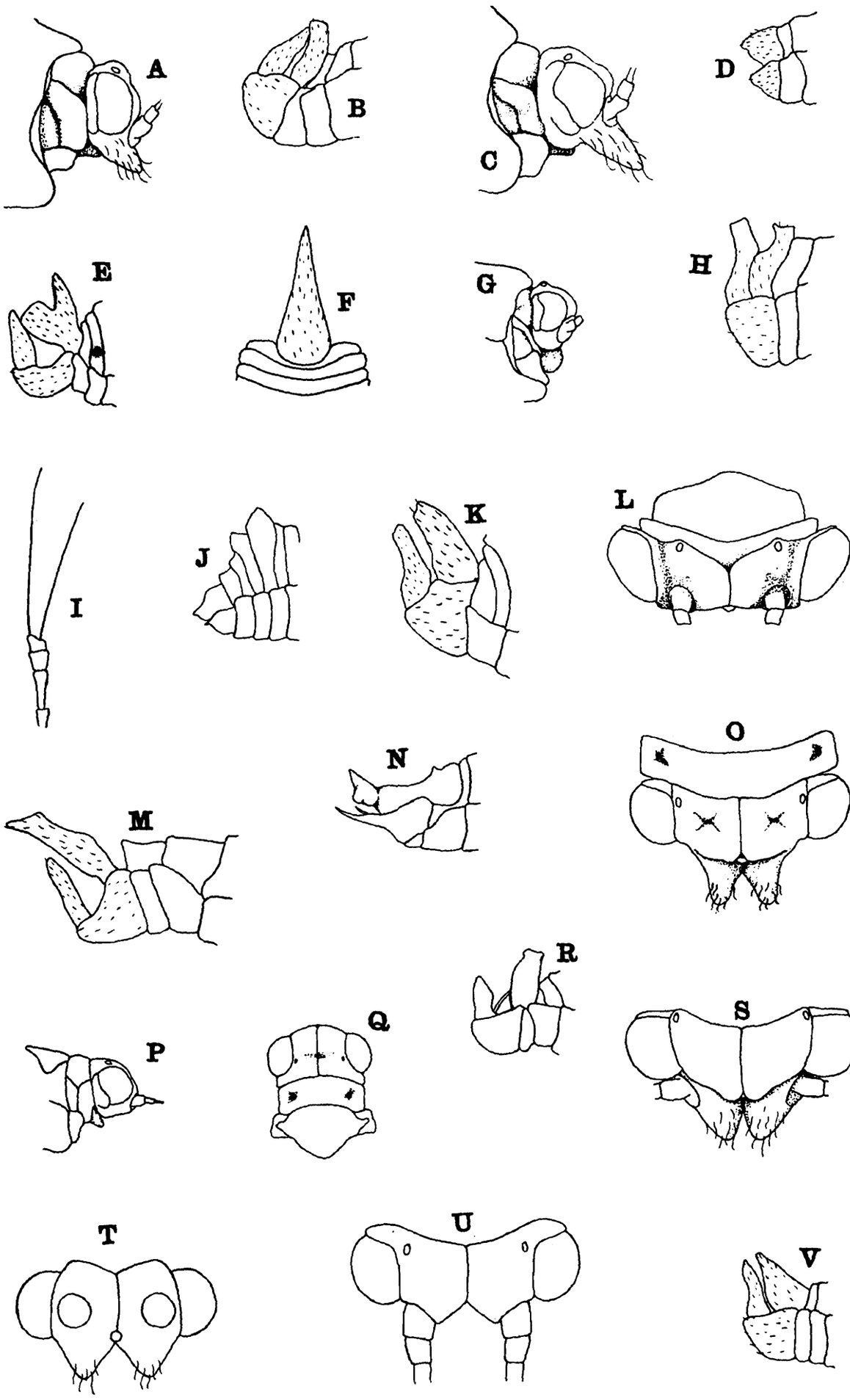
EXPLANATION OF PLATE XXXIV

A, B. *Trioza hyalina.*
C. D. *Trioza analis.*
E. *Eurhinocola gravelyi.*
F. *Rhynopsylla stylata.*
G, H. *Pauropsylla depressa.*
I, J *Pauropsylla tuberculata.*
K. *Psyllopa punctipennis.*
L. *Pauropsylla tuberculata.*
M, N. *Tenaphalara elongata.*
O. *Psyllopa punctipennis.*
P, Q. *Tenaphalara elongata.*
R. *Allotrioza minuta.*
S. *Psyllopa obscura.*
T, U. *Homotoma distincta.*
V *Trioza fletcheri.*



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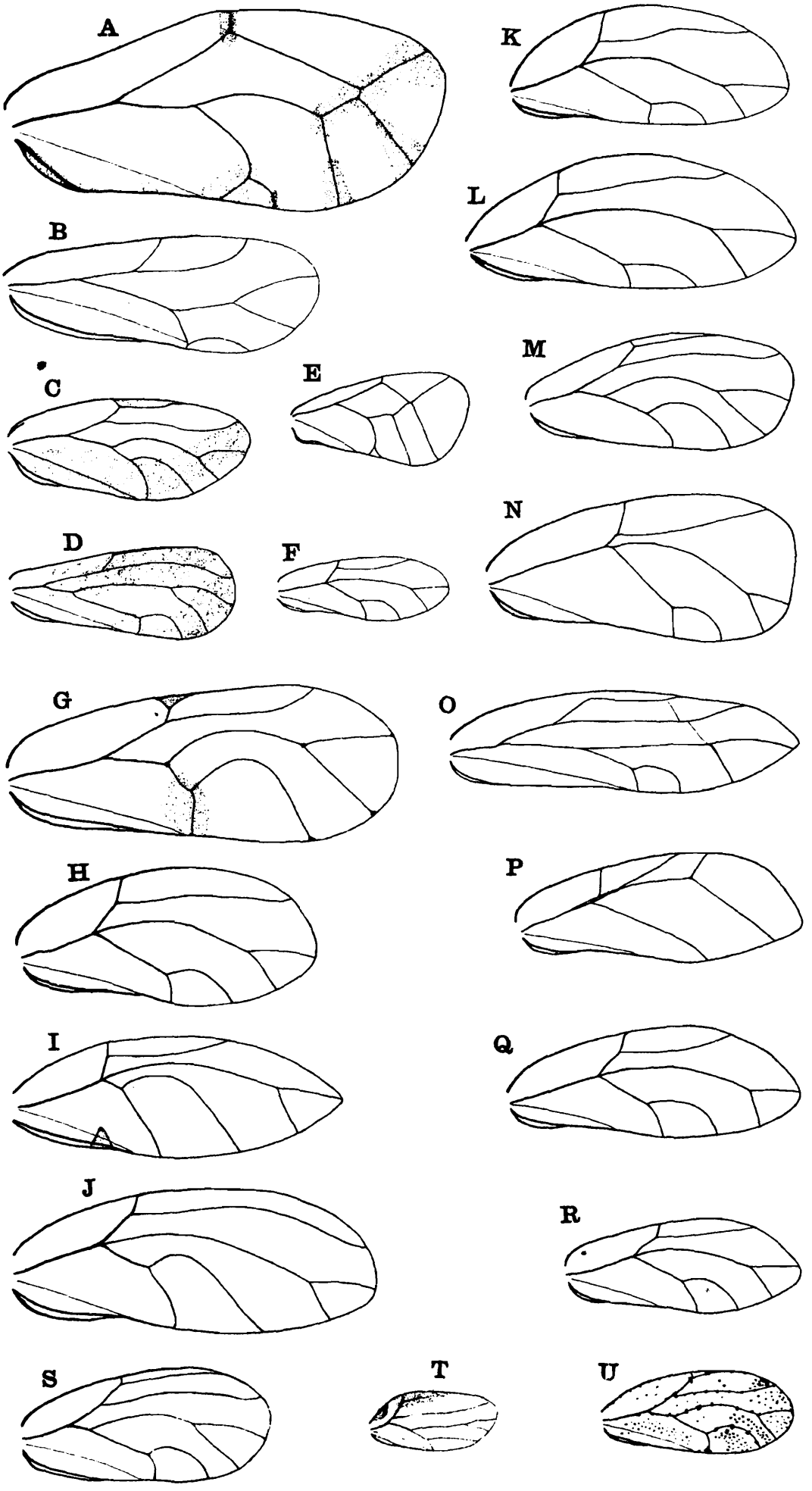
Reg No. 1780 E 12.—E.—425.

EXPLANATION OF PLATE XXXV

(Forewings.)

A. *Phacopteron lentiginosum.*
B. *Apsylla cistellata.*
C. *Euphalerus vittatus.*
D. *Euphalerus citri.*
E. *Pauropsylla tuberculata.*
F. *Allotrioza minuta.*
G. *Diceraopsylla brunettii.*
H. *Rhynopsylla stylata.*
I. *Kuwayama hirsuta.*
J *Trioza gigantea.*
K. *Trioza hyalina.*
L. *Trioza analis.*
M. *Psyllopa obscura.*
N. *Pauropsylla depressa.*
O. *Tenaphalara elongata.*
P. *Homotoma distincta.*
Q. *Trioza fletcheri.*
R. *Trioza fletcheri minor.*
S. *Psylla simlae.*
T. *Eurhinocola gravelyi.*
U. *Psyllopa punctipennis.*



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INDIAN PSYLLIDAE.

XXXV DESCRIPTIONS OF SOME NEW SPECIES OF FRESHWATER FISHES FROM NORTH INDIA

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(Plates xxxviii—xli).

Sub-Order **MALACOPTERYGII.**

Fam. CLUPEIDAE.

Clupea suhia, sp. nov.

(Pl. xxxviii, fig. 1.)

Body strongly compressed, its depth contained 3 times and length of head $3\frac{1}{5}$ times in the length. Height of head $1\frac{1}{5}$ times in the length of head. Diameter of eye $3\frac{1}{3}$ times in length of head, $\frac{3}{5}$ in the snout and less than one in the inter-orbital distance. Eyes with broad adipose lids. Dorsal 13; there are 26 scales in front of the dorsal fin which is almost directly above the ventral; anterior root of dorsal equidistant from end of snout and base of caudal. Pectoral 13; has two appendants and is shorter than the distance between pectoral and ventral by one scale. Anal 22; the caudal is deeply divided, length of its middle rays is less than $\frac{3}{4}$ of the diameter of eye. Scales 80 in longitudinal series and 26 in transverse series. The serrated ventral outline has 28 scutes of which 18 are in front and 9 behind the ventral fin. The height of the caudal peduncle is contained $1\frac{1}{2}$ times in its length.

Colour.—The species is strikingly blotched, a feature which at once distinguishes it from other freshwater *Clupea*; the back is intensly black, the sides are silvery and on the upper part, running from the upper corner of the gill cleft to the root of the caudal, there is a longitudinal series of large black blotches. In *Clupea ilisha*, only in immature specimens, somewhat similar markings, but quite indistinct in appearance, are noticed; but in *Clupea chapra*, which the new species resembles more than any other, only one black spot is found above the opercle. The blotches give the new species a superficial resemblance to *Clupea variagata*, which is very different from this fish. The edges of the fins are grey.

One specimen from the river Gandak in Saran, Bihar, collected by Mr. Mackenzie of Siripur. Length 155 mm. Local name Suhia.

Sub-Order **OSTARIOPHYSI.**

Fam. CYPRINIDAE.

Sub-fam. *CYPRININAE.*

Labeo almorae, sp. nov.

(Pl. xxxviii, figs. 2, 2*a*, 2*b*.)

Body compressed, its depth $3\frac{4}{5}$ times and length of head $4\frac{2}{3}$ times in the length. Snout broadly rounded, on the top studded with numerous pores and tubercles and with a deep depression in the middle. Length of snout greater than the post-orbital length, the latter contained $1\frac{1}{4}$ times in the length of the former. Eye $5\frac{1}{7}$ and length of snout $2\frac{1}{4}$ in the length of head. The inter-orbital width is nearly half the length of the head. Eyes perfectly lateral. Dorsal II 10; equally distant from anterior-orbital border and the base of caudal fin; upper edge deeply concave; the longest ray nearly as long as head. Anal II 5; not reaching root of caudal. Pectoral $\frac{3}{4}$ of the length of head, not reaching the ventral. Caudal deeply immarginate. Scales—lateral line 45, lateral transverse $\frac{10}{14}$, 6 between lateral line and ventral fin, and 24 round caudal peduncle.

Colour.—Dark brown except in abdominal region which is dull white and silvery.

One specimen measuring about 180 mm. from Almora, Western Himalayas.

Labeo kunki, sp. nov.

(Pl. xxxviii, fig. 3.)

Depth of body $3\frac{3}{5}$ times, length of head $4\frac{1}{4}$ times in the length. Snout slightly convex, $1\frac{3}{5}$ times the diameter of eye and longer than the post-orbital length. There is a deep groove on each side of the snout. The diameter of eye $3\frac{1}{2}$ times in the length of head and twice in inter-orbital distance. There are two maxillary barbels concealed under the fold of skin at the corner of the mouth and are nearly as long as diameter of eye. Both upper and lower lips are lobulated. Dorsal II 10: the longest ray being slightly longer than the length of head; free edge concave. Pectoral as long as head. Scales 41 in the lateral line, in lateral transverse $\frac{7}{6}$ and 6 between the lateral line and the ventral fin; 9 round caudal peduncle.

Colour in spirit greyish brown with lower half lighter, back deep brown, a black blotch on each side of caudal peduncle, beginning from the 38th scale in the lateral line and roundly spreading over about 7 scales.

One specimen, length 100 mm., from the river Gandak, Saran, Bihar, collected by Mr. Mackenzie of Siripur. Local name Kunki.

Labeo rilli, sp. nov.

(Pl. xxxviii, fig. 4.)

Depth of body 4 times, length of head $4\frac{1}{2}$ times in the length. Snout shorter than the post-orbital length, the latter $1\frac{1}{3}$ to $1\frac{1}{2}$ times the length of the former. There is a narrow groove on either side of snout and a slight depression above. Diameter of eye slightly shorter than length of snout and contained $3\frac{1}{2}$ times in the length of head. The inter-orbital length is $1\frac{1}{4}$ to $1\frac{1}{2}$ in the diameter of eye. Two minute maxillary barbels. Lips fleshy, lower lip finely lobulated. Chin slightly corrugated with concentric curves. Dorsal II 10; its origin being equidistant between the post-orbital line and the anterior root of the base of anal; length of the longest ray slightly longer than length of head; free edge concave. Anal II 5. Length of pectoral somewhat less than length of head. Scales 44-46 in lateral line, $\frac{9}{8\frac{1}{2}}$ in the lateral transverse and 6 between lateral line and ventral fin; there are no scales on the chest. Caudal deeply divided, both lobes being equal.

Colour in spirit.—A dark brown dorsal band on the middle of the back from nape of the neck to the caudal peduncle; the upper two-thirds of the sides is brown, lower third with abdomen silvery white. There is a large black blotch on each side of the caudal peduncle, commencing on the forty-first scale on the lateral line and spreading roundly over about sixteen scales.

Four specimens from the river Gandak, Saran, collected by Mr. M. Mackenzie. Total length from 85 to 100 mm. Local name Rilli.

Labeo tezpurensis, sp. nov.

(Pl. xxxix, figs. 1, 1*a*, 1*b*.)

Depth of body 4 times, length of head $3\frac{1}{5}$ to $3\frac{5}{6}$ times in the length. Snout broadly rounded with a deep groove on each side. Four barbels; two rostrals are minute and are placed at the posterior ends of the grooves of the snout; maxillary nearly double the length of rostral and half the diameter of eye. Eye nearer end of snout than posterior border of head, perfectly lateral, $3\frac{2}{3}$ to $3\frac{3}{5}$ times in length of head. Dorsal II 10—11; equally distant from nostril and from root of caudal; upper edge distinctly concave. Anal II 5, not reaching root of caudal. Pectoral $1\frac{1}{5}$ in the length of head, not reaching ventral. Scales—41-42 in the lateral line and $\frac{8}{8}$ in the lateral transverse, 6 between lateral line and ventral fin.

Colour in spirit dark brown above, silvery or dull white beneath; fins yellowish white, a faint grey blotch in middle of caudal peduncle.

Three specimens from the Belsiri River, Tezpur, Assam, measuring 75 to 85 mm.

Nuria danrica (H. B.) var. **grahami**, var. nov.

(Pl. xxxix, fig. 3.)

Depth of body 4 times, length of head $4\frac{2}{3}$ times in the length. Snout short, being $\frac{5}{6}$ of the diameter of the eye which is contained $3\frac{1}{3}$ times in the length of head, and $1\frac{1}{3}$ times in the inter-orbital length. Barbels four, both the pairs very short; the upper two, which are flattened and blunt, are as long as the diameter of eye or a little longer. The lower ones, which are generally found to be very long (reaching the anal and ventral) in all other known species and varieties, are exceptionally short, being only twice as long as the diameter of the eye. This is a very distinctive character of the new variety. Mouth narrow. Dorsal II 6; situated above the space between the ventral and anal fins; there are 15 scales in front. Pectoral 10; rather broad and blunt, reaching the base of the ventral. Ventral I 7; the outermost ray, which is articulated and is very much prolonged beyond the membrane, reaches the base of the anal and is twice as long as the membranous portion. Anal III 5. Scales—lateral line incomplete, 30.

Colour in spirit.—Upper half brownish grey, a broad black longitudinal stripe from below the eye to the base of the caudal just beneath the middle line.

One specimen from Kalinadi, Meerut (U. P.), measuring 50 mm. in length, collected by Captain J D. Graham, I.M.S.

Amblypharyngodon saranensis, sp. nov.

(Pl. xxxix, fig. 2.)

Depth of body 3 times, length of head 4 to $4\frac{1}{5}$ times in the length. Diameter of eye $3\frac{1}{2}$ times in the length of the head, equal to the length of snout and also to the inter-orbital length. The opening of the mouth is somewhat superior, the cleft being directed outward and upward. The lower jaw slightly longer with a knob at the symphysis, which fits in the groove of the upper jaw. Dorsal II 7; third ray the longest. Pectoral 14—15; two thirds the length of head. Ventral 8; reaching cloacal opening and overlapping the same. Scales in lateral line 81 to 92, incomplete, with 16 to 18 perforted scales, in lateral transverse series $\frac{1}{11}$ and between the lateral line and ventral fin 12.

Colour.—Golden yellow with a broad dark band from above the gill cleft to the caudal peduncle.

Two specimens from the Jharai river, Saran, measuring about 78 mm., collected by Mr. M. Mackenzie.

Barilius bonarensis, sp. nov.

(Pl. xxxix, figs. 4, 4*a*, 4*b*.)

Depth of body $4\frac{1}{2}$ to $4\frac{2}{3}$ times, length of head $4\frac{2}{3}$ times in the length. Snout rather pointed, slightly projecting beyond mouth,

not longer than eye, which is contained $3\frac{3}{4}$ to $3\frac{4}{5}$ times in length of head. Inter-orbital width equal to diameter of eye or a little greater. Mouth extending to below anterior one-third of eye; a pair of rostral barbels, rather long—nearly half the length of head. Dorsal II 7; above space between ventral and anals, with last two rays of dorsal over the first two of anal; originating midway between posterior border of eye and root of caudal; the longest ray $\frac{3}{4}$ or $\frac{4}{5}$ of the length of the head. Pectoral acutely pointed, a little shorter than head, not reaching ventral; the latter much shorter not reaching vent. Caudal widely forked. Scales—lateral line 47, lateral transverse $\frac{8\frac{1}{2}}{4\frac{1}{2}}$ and between lateral line and ventral $2\frac{1}{2}$.

Colour.—Upper one-third dark brown, below silvery; pectoral, ventral and anal fins reddish yellow, dorsal and caudal sprinkled with grey.

Three specimens, measuring 100, 110 and 115 mm., from Bonar, Gharwal, (U.P.), Western Himalayas.

Danio naganensis, sp. nov.

(Pl. xl, figs. 1, 1*a*, 1*b*.)

Depth of body 4 times, length of head 4 to $4\frac{1}{3}$ times in the length. Diameter of eye 3 in the length of head, $\frac{2}{3}$ to 1 in the length of snout, 1 to $1\frac{1}{3}$ in the inter-orbital length. Barbels four, both pairs close together near the angles of the jaws; maxillary pair the smaller, being half the length of the pair in front, the latter half the diameter of the eye. Dorsal 10; 20 scales in front. Anal II 12; pectoral 13; ventral 8. Scales—40-42 in the lateral line which runs close to the ventral border after descending from the gill cleft; in the transverse series $8\frac{1}{2}$ above the lateral line and $3\frac{1}{2}$ below, $2\frac{1}{2}$ between the lateral line and the ventral fin.

Colour in spirit.—A black mark on the back of head and on the back, upper half of the side greenish brown, lower half of the side and fins dull white. There is a black spot behind the upper corner of the gill cleft, a steel grey longitudinal band in the middle of the side which runs quite close to the root of the caudal growing broader as it passes backwards, and a thin dull silvery band just above the steel grey band with traces of a faint one below: these two silver lines are almost in juxtaposition with the steel grey band.

Six specimens, measuring 42—62 mm., from Lungting River, Naga Hills, Manipur.

Sub-fam. *COBITIDINAE.*

Botia lohachata, sp. nov.

(Pl. xl, figs. 2, 2*a*, 2*b*.)

Depth of body 4 times, length of head $3\frac{3}{4}$ times in the length. Snout $2\frac{1}{5}$ times in the length of head and twice as long as eye;

diameter of latter contained 4 times in the length of head and 1½ times in the inter-orbital width. Lip in fleshy band, interrupted in the lower median line. Barbels eight; of the two rostral pairs, the upper pair is slightly the longer, 1½ times the diameter of the eye; maxillary pair the longest and mandibular pair the shortest. One pair of bifid and curved spines just in front of the eye (not below). Dorsal I 9; its anterior origin being equidistant from end of snout and root of caudal, free edge of the fin convex. Anal I 5; its tip touching the caudal. Pectoral 14, ventral 8 and caudal 20, the latter deeply bilobed. Scales minute and deciduous, the lateral line is straight, it runs through the middle line and is complete.

Colour in spirit.—A triangular black marking over the snout and a round black blotch in the inter-orbital space behind which on the back there are four black loops, on each side there are four broad black transverse bands descending from the dorsal loops already mentioned. In the centre of each area bounded by these transverse bands there is a round black blotch. The pectoral, ventral, and anal fins are white. The dorsal has one black spot on the upper third and the caudal has two dark bands.

One specimen measuring 40 mm., from the Gandak river, in Saran, Bihar, collected by Mr. M. Mackenzie. Local name Lohachat.

Lepidocephalichthys annandalei, sp. nov.

(Pl. xl, figs. 3, 3*a*, 3*b*.)

Depth of body 5½ to 6 times, length of head 4 to 4½ times in the length. Snout 3 to 3½ times in the length of head and 1⅓—1½ times as long as the diameter of eye, the latter contained 4½ to 5 times in the length of head and equal to the inter-orbital width. Mouth inferior. Barbels eight, all small. Dorsal I 7; the anterior origin equidistant from the anterior margin of the eye and the root of the caudal. Anal II 5. Pectoral 7—8, with a slight padding or cushion-like thickness over two of the outer rays. Caudal 16—18; notched in the middle, in some cases the margin of the fin is lunate by considerable shortening of the middle rays. Body variegated with collections of brown and grey spots arranged in patches; the dorsal is faintly banded and the caudal is obliquely banded with three faint grey bars on each side of the middle line. There are two intensely black spots encircled in white rings in the caudal fin, one of these is placed slightly above the middle line near the middle notch at the outer margin of the caudal fin, and the other at the base of the caudal fin slightly above the middle line. The intensely black spot in the middle of the outer margin of the caudal fin and its notched or concavely lunate outside border are very distinctive and constant characters.

Seven specimens measuring from 33 to 42 mm., three from the river Mahananda at Siliguri collected by Dr. N. Annandale,

and four specimens from the river Tista near Jalpaiguri collected by Dr. Annandale and Mr. S. W Kemp.

Nemachilus manipurensis, sp. nov.

(Pl. xl, figs. 4, 4*a*, 4*b*; and Pl. xli, figs. 1, 1*a*, 1*b*.)

Depth of body $5\frac{1}{2}$ times, length of head $4\frac{1}{2}$ times in the length. Snout shorter than the post-orbital part of head, nearly $2\frac{1}{2}$ times as long as eye; diameter of latter contained 6 times in the length of head and $2\frac{1}{2}$ times in the inter-orbital width. Breadth of head $1\frac{1}{3}$ times its length, and depth of head $1\frac{1}{3}$ times its breadth. Lip—a fleshy band interrupted in lower median line. Barbels six, outer rostral $3\frac{1}{2}$ times and maxillary 3 times the diameter of eye. Dorsal I 7; its anterior origin being nearly equidistant from base of nostril and root of caudal, free edge of fin convex. Anal I 5. Pectoral extending $\frac{3}{4}$ distance from its base to the base of ventral. Ventral 8, extending nearly $\frac{3}{4}$ distance from its base to the root of anal. Caudal slightly notched in the middle making the outer margin look bilobed. Caudal peduncle rather broad, nearly $1\frac{1}{2}$ times as long as deep and contained $1\frac{1}{2}$ times in the length of head. Scales minute all over the body, lateral line incomplete; the openings of a series of muciferous glands beginning from the end of the snout, continue below the eye and become continuous with those of the lateral line.

Colour.—Uniform steel grey on the upper two-thirds, below yellowish white; ventral and anal fins and lower part of pectoral yellow. Dorsal and caudal fins banded with 4 or 5 transverse wavy bands made up of minute black spots. Upper side of pectoral greyish yellow.

In the males there is a secondary sexual character in the form of a round flat cartiligenous flap in front of the eye, somewhat similar to the structure found in *Nemachilus mackenziei*, Chaudhuri (Rec. Ind. Mus., V, 183), pl. xli, fig. 2.

Three specimens, two males and one female, from Manipur, Assam, measuring from 50 to 82 mm.

Fam. SILURIDAE

Olyra kempi, sp. nov.

(Pl. xli, figs. 4, 4*a*, 4*b*.)

Depth of body 9 to 10 times, length of head 5 to 6 times in the length. Head very much depressed and snout spathulate; eyes subcutaneous, diameter of eye $4\frac{1}{2}$ to 5 times in the length of head, $1\frac{1}{2}$ to 2 in the length of snout and 2 in the inter-orbital space. Barbels eight, the maxillary reaching almost to the end of pectoral, outer mandibular half of maxillary; nasal and inner mandibular about half the length of head. Upper jaw slightly longer. Dorsal 7; first ray short, rest slender but high. Adipose dorsal long and

low, terminates in a raised knob-like end just above the termination of the anal fin. Pectoral I 4–6; serrated spine with about 15 serrations on each side, slightly shorter than the rays, the anterior fourth of the spine free from any serration and is pointed. Ventral 6; slightly in advance of the rayed dorsal. Anal 17—18, the rays subequal. Caudal 15—16, deeply lobed, some of the superior rays of the upper lobe considerably longer than those of the lower lobe. Numerous gland openings in the head and chest, also conspicuous glandular opening along the lateral line.

Colour in spirit.—There are two longitudinal pale brown bands on each side of the lateral line, the position of which is noticeable by a dark brown band. The rest of the body is coloured brown; abdomen, anal, pectoral, ventral and dorsal fins dull white, adipose deep brown.

Five specimens from Mangaldai (Assam-Bhutan Frontier), collected by Mr. S. W Kemp. The largest measures 54 mm. without caudal.

Owing to the discovery of this species the generic description has to be modified a little as the caudal fin in this species, unlike others of the genus, is deeply lobed. It also extends the range of the genus from the Khasi Hills and certain parts of Burma further northwards to the base of the Eastern Himalayas.

Pseudeutropius atherinoides (Bloch) var. **walkeri**, var. nov.

(Pl. xli, fig. 3.)

Depth of body $4\frac{1}{2}$ in the length, length of head $4\frac{5}{6}$. Snout equal to the diameter of eye and shorter than the postorbital length, eyes subcutaneous, the diameter of which is $3\frac{1}{4}$ in the length of head and about $1\frac{1}{4}$ in the inter-orbital length. Barbels eight, nasals slightly longer than length of head, maxillary pair reach the root of ventral, outer mandibular reach half of pectoral and inner mandibular root of pectoral. Dorsal I 6; dorsal spine strong, finely serrated anteriorly and coarsely serrated posteriorly, longest ray as long as head, length of spine two-thirds of the same. Pectoral II 6; the spine is a jointed double structure, outer terminates in a point, inner in a bent (denticulate), outer surface of jointed spine is serrated, inner side of same denticulated with 12 denticulations and equal to dorsal spine in length. Ventral 7 and anal 37. Caudal lobed. A narrow spiral corrugation on chest.

Colour in spirit.—A black blotch on the nape of neck and a black ring enclosing basal process of dorsal spine, a narrow white stripe joins these two black markings; three longitudinal brown stripes on each side; fins dull white; a large black blotch behind gill cleft concealing a thin membrane which bulges out opposite osseous air bladder, thus suggesting the presence of a sounding apparatus.

Two specimens from Siripur Saran, Bihar. Total length with caudal 70 mm.

EXPLANATION OF PLATE XXXVIII.

Fig. 1.—*Clupia suhia*, sp. nov., × $\frac{7}{9}$.

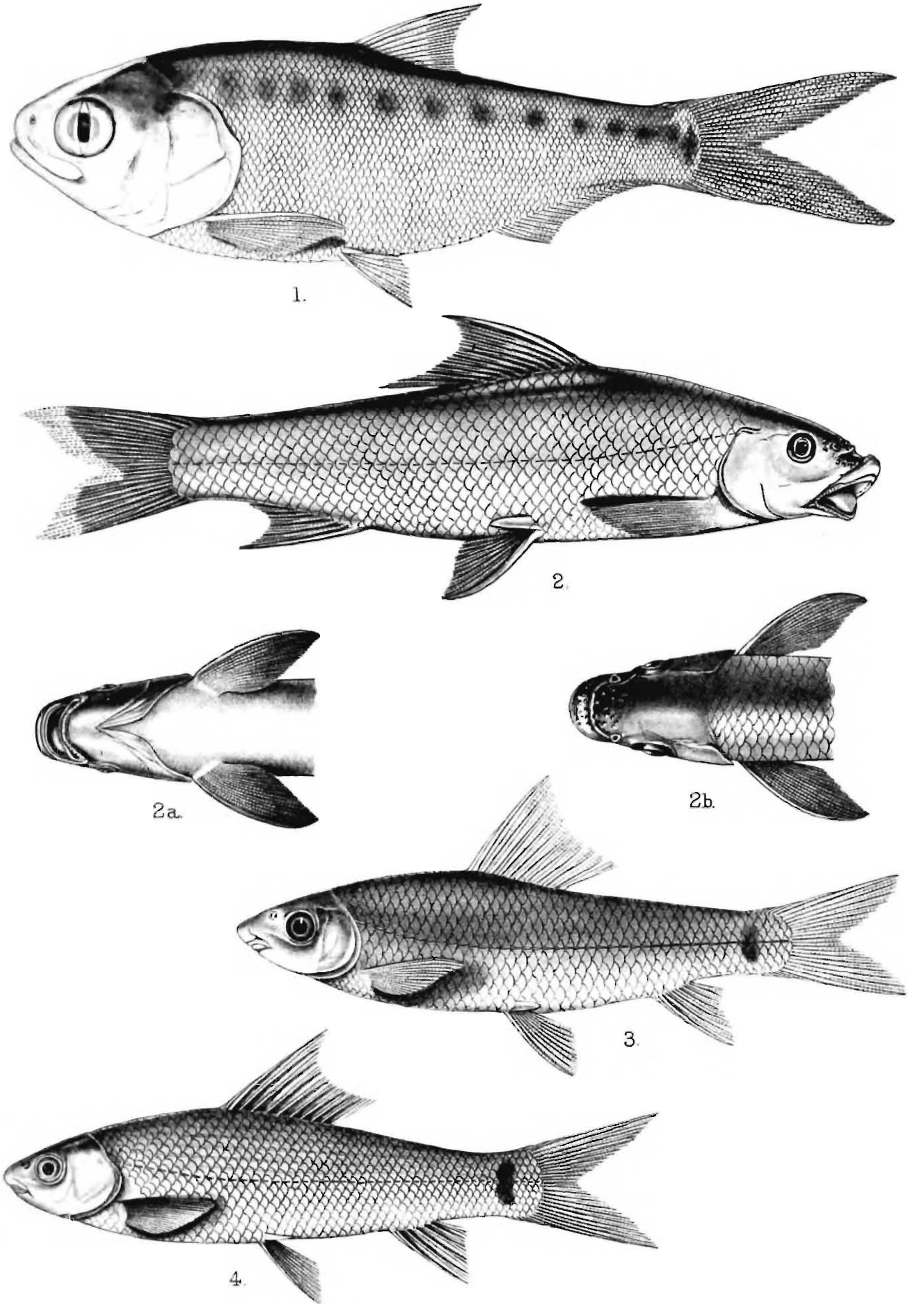
„ 2.—*Labeo almorae*, sp. nov., × $\frac{7}{9}$.

„ 2*a*.— „ „ ventral view of mouth parts, × $\frac{7}{9}$.

„ 2*b*.— „ „ dorsal view of head, × $\frac{7}{9}$.

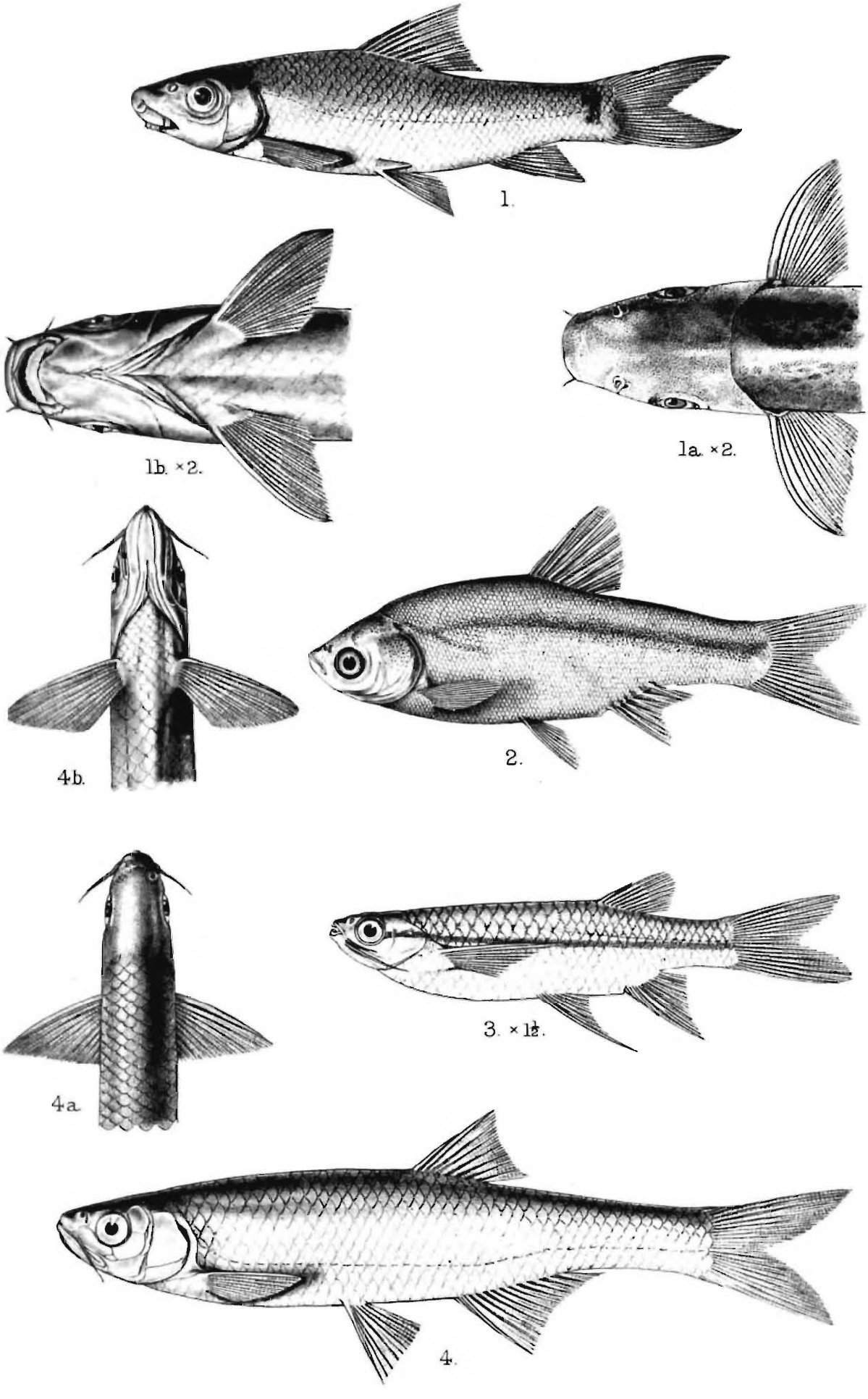
„ 3.— „ *kunki*, × $\frac{7}{9}$.

„ 4.— „ *rilli*, × $\frac{7}{9}$.


1.
2.
2a.
2b.
3.
4.

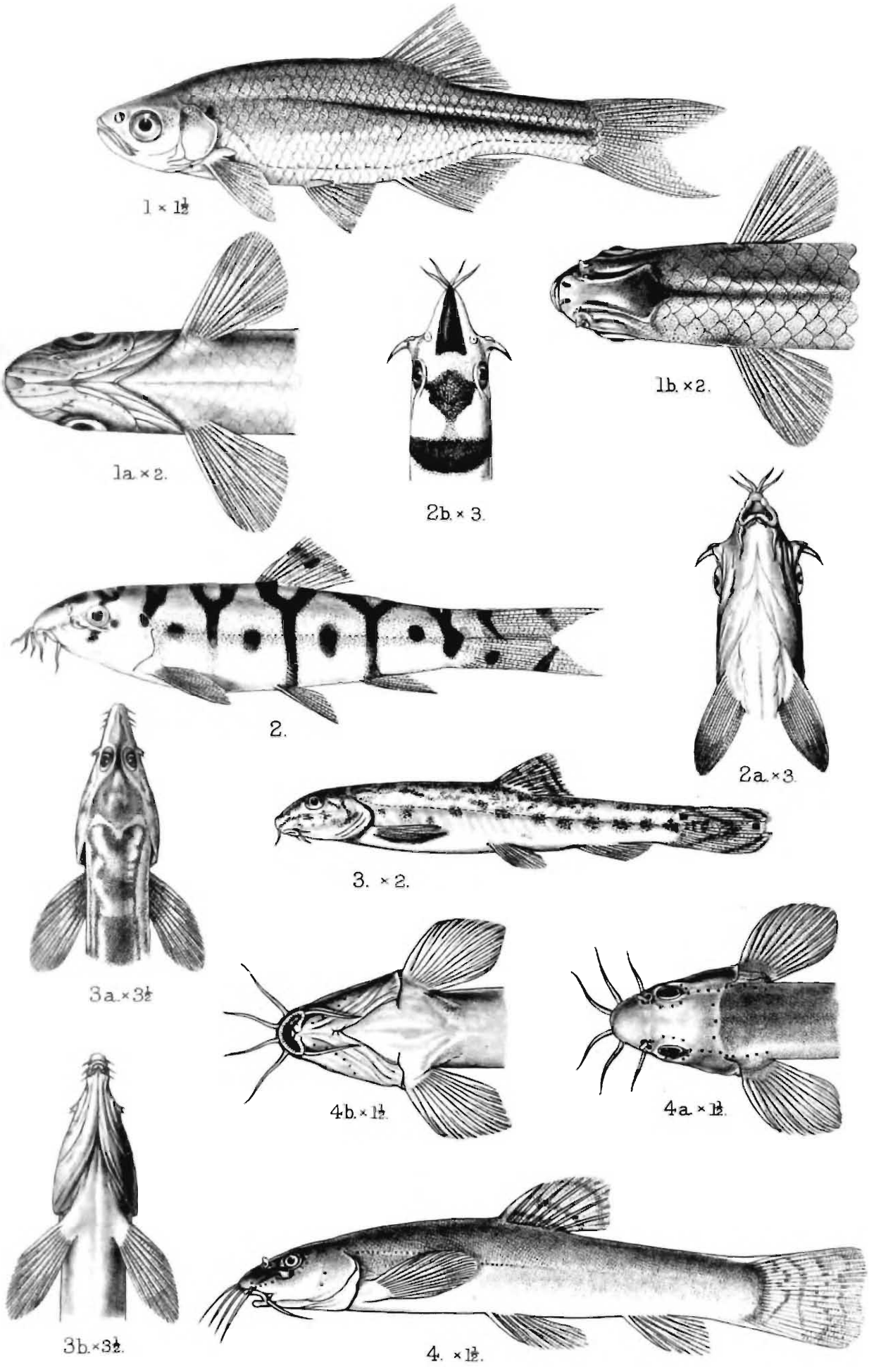
EXPLANATION OF PLATE XXXIX.

Fig. 1.—*Labeo tezpurensis*, sp. nov.,
,, 1*a*.— ,, ,, dorsal view of head, × 2.
,, 1*b*.— ,, ,, ventral view of mouth parts, × 2.
,, 2.—*Amblypharyngodon saranensis*, sp. nov.
,, 3.—*Nuria danrica* (H.B.) var. *grahami*, var. nov., × 1½.
,, 4.—*Barilius bonarensis*, sp. nov.
,, 4*a*.— ,, ,, dorsal view of head.
,, 4*b*.— ,, ,, ventral view of mouth parts.


1.
1b. ×2.
1a. ×2.
4b.
2.
4a.
3. ×1½.
4.

EXPLANATION OF PLATE XL.

Fig. 1.—*Danio naganensis*, sp. nov.
,, 1*a*.— ,, ,, ventral view of head and neck, × 2.
,, 1*b*.— ,, ,, dorsal view of head, × 2.
,, 2.—*Botia lohachata*, sp. nov., × 2.
,, 2*a*.— ,, ,, ventral view of head and mouth, × 3.
,, 2*b*.— ,, ,, dorsal view of head, × 3.
,, 3.—*Lepidocephalichthys annandalei*, sp. nov., × 2.
,, 3*a*.— ,, ,, dorsal view of head, × 3½.
,, 3*b*.— ,, ,, ventral view of head, × 3½.
,, 4.—*Nemachilus manipurensis*, sp. nov., ♂, × 1½.
,, 4*a*.— ,, ,, dorsal view of head, × 1½.
,, 4*b*.— ,, ,, ventral view of head, × 1½.


1 × 1½
1a. × 2.
1b. × 2.
2b. × 3.
2.
2a. × 3.
3. × 2.
3a. × 3½
4b. × 1½
4a. × 1½
3b. × 3½
4. × 1½

EXPLANATION OF PLATE XLI.

Fig. 1.—*Nemachilus manipurensis*, sp. nov., ♂, × 1½. ♀

„ 1*a*.— „ „ dorsal view of head, × 2.

„ 1*b*.— „ „ ventral view of head and chest, × 2.

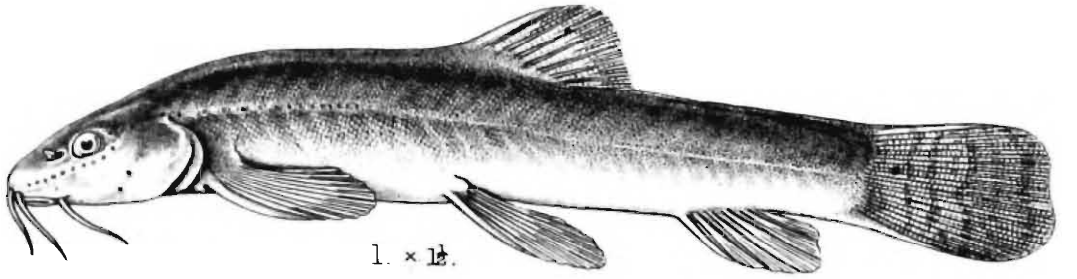
„ 2.— „ *mackenziei*, Chaudhuri, ♂ ♂.

„ 3.—*Pseudeutropius atherinoides* (Bloch) var. *walkeri*, var. nov.

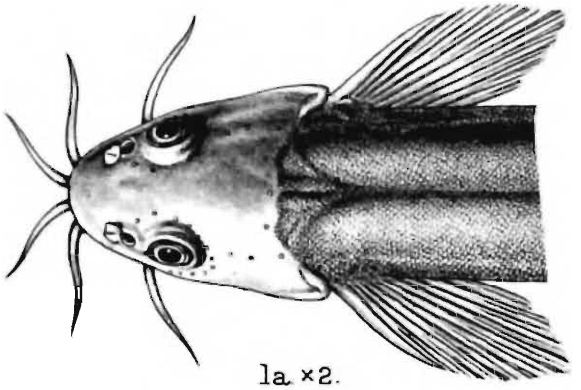
„ 4.—*Olyra kempi*, sp. nov., × 2.

„ 4*a*.— „ „ dorsal view of head, × 2.

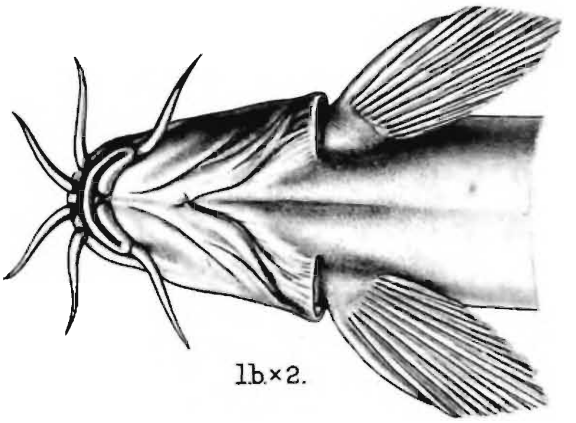
„ 4*b*.— „ „ ventral view of head, × 2.



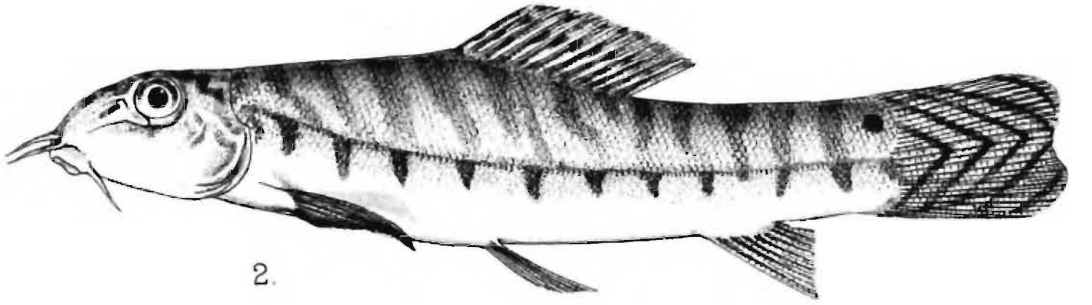
1. × ½.



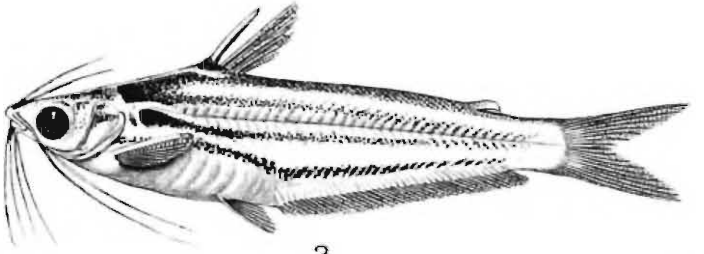
1a. ×2.



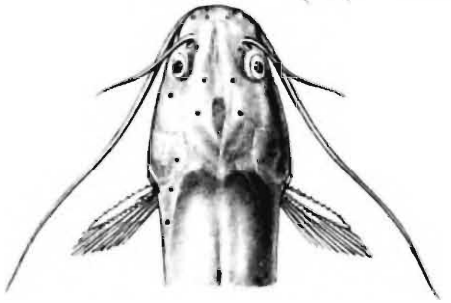
1b. ×2.



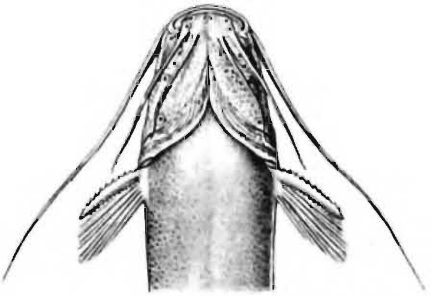
2.



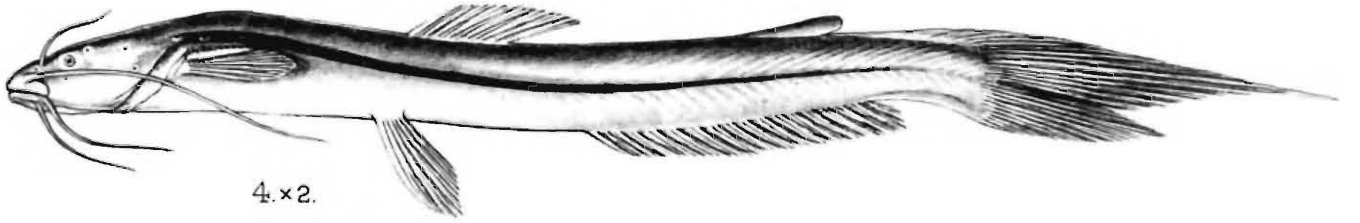
3.



4a. ×2.



4b. ×2.



4. ×2.

XXXVI. NEW ORIENTAL DIPTERA, I

By E. BRUNETTI.

(Plate xxxvii).

Descriptions of sixty-eight new species of oriental diptera are given in the present paper, and those of four new genera. Four previously known species are redescribed and four European species introduced to the Oriental fauna. The Indian Museum possesses all the types of the new species except one or two in my own collection. A number of the types of new species obtained by Dr. A. D. Imms have been very kindly presented by him to the Museum collection.

New material in the Indian Museum in *Syrphidae* and *Acalyptrata* will form the subject of two subsequent papers.

CHIRONOMIDAE.

Ceratopogon lignicola, mihi, sp. nov.

♂. Western Himalayas. Long. $1\frac{2}{3}$ mm.

Head.—Black. Eyes distinctly separated above, reniform. Antennae blackish with very long dense black hair (which in certain lights appears paler), except on the ultimate two joints, these latter bearing only a little short greyish pubescence.

Thorax.—Black, with very long black stiff hairs laterally and on the posterior part and scutellum. Anterior half of dorsum with closely placed semi-recumbent very short bright yellow hairs. Hind border of scutellum with a row of long stiff bristles.

Abdomen.—Blackish, with long blackish hairs (which give greyish reflections, viewed from certain angles). Genital organs moderately large, concolorous, pubescent; each clasper with a very long strong dorsal bristly hair, posteriorly directed.

Legs.—Blackish, with long brownish hair on femora and tibiae; knees brownish yellow; tips of tibiae and of tarsal joints more or less brownish yellow. Fore metatarsi a little longer than 2nd joint.

Wings.—The 3rd longitudinal vein ends a little before middle of wing; "intercalary" (*Kieffer*)* vein, simple, ending opposite tip of upper branch of 5th vein; anterior cross vein oblique; 4th longitudinal vein forked a short distance beyond anterior cross vein, the branches gently divergent throughout their length; 5th vein forked widely at or just beyond middle of vein, upper branch in a line with basal part except for the very gentle curve the whole vein takes; 6th vein close to and parallel to the

* I temporarily follow Kieffer in the use of this term, not having studied Chironomidae sufficiently to speak with decision, but there is no vein of this name accepted amongst dipterologists.

5th, its lower branch, nearly attaining wing margin, though becoming very faint towards its tip; 7th vein half as long as 6th, close to and parallel to the hind border of the wing.

Whole surface of wing with short dark hairs. A patch of black hairs at tips of 1st and 3rd longitudinal veins, the intermediate space on the costa covered with whitish hairs. Halteres pale lemon yellow.

Described from 3 ♂ ♂ The specimens were bred from larvae found under dead bark of a Sal tree (*Shorea robusta*), at Thano, Dehra Dun, 9-ii-12, Siwalik Forest Division, United Provinces, at about 1500 feet (*Imms*).

Type in Indian Museum, cotypes in the Forest Zoology collection.

BIBIONIDAE.

Plecia impostor, mihi, sp. nov.

♂ ♀ Western Himalayas. Long. 4—5 mm.

This species is conspicuous by the extraordinary resemblance it has to *Pleciomyia melanaspis*, Wied. The whole insect is black with the exception of the hinder part of the thoracic dorsum, which is of the same ferruginous red colour which appears in the same part in *melanaspis* and, as in that well-known species, without being sharply demarcated. The antennae differ from all other oriental species by having only nine joints; the two scapal joints normal, 1st flagellar joint narrowed at base, a little longer than the remaining five annular subequal joints, in addition to which there is a small apical conical joint. The 3rd longitudinal vein forks at or just beyond one third of the distance between the anterior cross vein and the tip of the 3rd vein. The 4th vein forks distinctly proximad of the fork of the 3rd vein rather broadly, but the degree of divergence of the prongs is variable. Wings blackish.

Described from 3 ♂ ♂ and 3 ♀ ♀, from Airadeo (6880 ft.), 31-v-12 (*type* ♂ and ♀); and Bhowali, 25-vi-12, both places in the Kumaon District. [*Imms*].

Type ♂ and ♀ in the Indian Museum, presented by Dr. A. D. Imms; cotype ♂ ♀ in the Forest Zoology collection.

N.B.—In my paper on New Oriental Nemocera (Rec. Ind. Mus., iv. 259) there were some inaccuracies respecting the antennae in this genus. These inaccuracies are corrected in my volume on Nemocera for the "Fauna of British India" series, now in the press. *Plecia fulvicollis*, *atra* and *indica* have 12 joints to the antenna, *P. tergorata* and *obscura* only 10. *Pleciomyia melanaspis* has twelve.

PARAPLECIOMYIA, mihi, gen. nov.

Differs from *Pleciomyia*, Brun., by the 4th longitudinal vein forking some distance beyond the anterior cross vein, approximately opposite the fork of the 3rd vein

N.B.—It seems permissible to establish a new genus on the character given, which makes it intermediate between *Pleciomyia* and *Plecia*, although quite distinct from both.

Parapleciomyia carbonaria, mihi, sp. nov.

♂ ♀ Western Himalayas. Long. 6 mm.

Body wholly black, including legs, genitalia and halteres. Wings blackish as in *Pleciomyia melanaspis*, a little darker on the fore border; stigma black, distinct. Venation in accordance with generic diagnosis.

Described from a single pair, the ♂ taken near Bhowali, 11-v-12, the ♀ at Sat-Tal, near Kumaon, 9-v-12, both in the Indian Museum, presented by Dr. A. D. Imms.

Bibio aequalis, mihi, sp. nov.

♂ Shanghai. Long. 5 mm.

Black, hardly shining. *Thorax and abdomen* (dorsum, sides and belly) with rather thick and long yellowish grey hair, almost as copious as in *B. laniger*, Mg. Eyes with rather long yellowish pubescence, and yellow hairs below the head. Coxae blackish, a little shining; femora, tibiae and tarsi dark mahogany brown. Terminal spines on fore tibiae exactly equal in length, bright reddish brown.

Wings nearly clear; stigma very distinct, rather large, clear cut, black; 4th longitudinal vein forking at the posterior cross vein, and just before tip of 2nd longitudinal vein.

Described from two males in my collection captured by me 16-iv-06 at Shanghai.

TIPULIDAE.

Dicranomyia bicinctipes, mihi, sp. nov.

♂ Lower Burma. Long. 5 mm.

Head.—Brownish yellow, antennae and palpi dark brown.

Thorax.—Rather more arched than usual, brownish yellow, with a pale median line from about the middle of the dorsum, carried continuously posteriorly across the scutellum to the rear of the metanotum. Sides and under side of thorax pale whitish yellow; a brown stripe between and across the anterior coxae.

Abdomen.—Dark brown, the posterior part of many of the segments paler. Belly wholly whitish yellow, genitalia brown, normally structured, apparently.

Legs.—Pale brownish yellow; tips of femora and two narrow rings on the tibiae black, these latter situated just before the first third and second third respectively; tarsi snow white; tibiae becoming white towards and at their tips.

Wings.—Cuneiform, pale grey, iridescent, stigma large, oval, black, well defined; discal cell absent. Upper branch of 4th

longitudinal vein forked at one-third of its length, the veinlets parallel; posterior cross vein in a line with the base of the 3rd posterior cell. Halteres dirty yellow, tips darker.

Described from 3 ♂ ♂ in the Indian Museum from Thingannyinaung to Sukli, Dawna Hills (900—2100 ft.), 23—27-xi-11 *Gravely*].

Mongomioides albogeniculata, mihi, sp. nov.

♂ Lower Burma. Long. 5 mm.

Head.—Brownish yellow, as are also the antennae and palpi.

The *thorax* and *abdomen* brown, the latter the darker, being in one specimen nearly blackish; the posterior margins of the segments faintly pale in one specimen.

Sides of thorax yellowish white; under side of abdomen yellowish, sometimes whiter towards the base.

Scutellum and metanotum brownish yellow.

Legs mainly dark brown; coxae and base of femora whitish yellow, femora tips and base of tibiae rather broadly snow white. Apical part of tibiae (about one-third to one-half), and all the tarsi, snow white.

Wings pale grey, unmarked, halteres blackish.

Described from two ♂ ♂ in the Indian Museum, labelled 3rd camp to Misty Hollow, Dawna Hills (400—2400 ft.), 22—30-xi-11 [*Gravely*].

STRATIOMYIDAE.

MONACANTHOMYIA, mihi, gen. nov.

Allied to *Pachygaster*, Mg., from which it differs by the extraordinary formation of the scutellum, which is produced upwards so as to form a very large conical base, from which it is continued upwards in the form of a long strong spine with blunted tip.

Monacanthomyia annandalei, mihi, sp. nov.

♀ Darjiling District. Long. 2 mm.

Head.—Vertex triangular, elevated, the three ocelli distinct, reddish. Frons between one-fourth and one-fifth width of head, nearly linear, shining black, with (seen from above) two small nearly contiguous, oval, silvery grey dusted spots a little above the antennae. Eyes with very small uniform facets. Face shining black, lower eye orbits silver dusted. Proboscis short, narrowed at base, pointed at tip, yellow, microscopically pubescent. Antennae yellow, third joint very large, round, with a rather long apical thickened bristle. Back of head blackish, lower posterior eye orbits with silvery reflections and a few very short snow-white hairs.

Thorax.—Shining black, with microscopic grey hair, with which on the dorsum is intermixed (or possibly wholly replaced by ?) yellow hairs, all microscopic. Scutellum shining black, with microscopic whitish and a few yellow hairs.

Abdomen.—Shining black, with microscopic snow-white hairs. Belly similar, genitalia very minute.

Legs.—Basal half of coxae and a broad band occupying nearly all the femora except base and tips, black or blackish brown, remainder of coxae and femora yellowish; tibiae and tarsi white.

Wings.—Very pale grey, highly iridescent; stigma yellow; basal half of costa and 1st longitudinal vein much blacker than the remainder of the veins. Halteres, stem yellowish, clubs milk white, rather large.

Described from a perfect ♂ in the Indian Museum, captured by Dr. Annandale at Kurseong (4700 ft.), 15-iv-11, on a window in a bedroom.

Pachygaster nigrofemorata, mihi, sp. nov.

♀ Madras. Long. 3 mm.

Head.—Frons shining black, with very sparse short white hairs on the upper part; ocellar triangle roughened; two small round white hair spots contiguous to the eyes (one on each side), placed just above the level of the antennae. From these spots, along the inner margins of the eyes, a very thin line of snow-white hairs. Underside of head shining black; proboscis dark brownish yellow. Antennae brownish yellow, 3rd joint divided by five annulations into six apparent parts, of which the two basal ones are the broadest; style black, as long as the 3rd joint itself, composed of at least two segments, of which the 1st is very minute, the tip of the 2nd being curved. Back of head shining black, bare.

Thorax.—Shining black, with a moderate amount of very short golden yellow hairs; pleurae similar, but the hairs whitish. Scutellum shining black with golden yellow hairs.

Abdomen.—Shining black, with short sparse whitish hairs; belly shining black, bare.

Legs.—Yellow, except the femora, which are wholly black but for the very narrowly yellow tips. Extreme tips of tarsi a little brown. Femora with soft hairs, tibiae and tarsi minutely pubescent.

Wings.—Clear, stigma and veins on anterior part of wing yellowish; halteres milk white.

Described from a unique ♀ taken by Dr. Annandale at the south end of Lake Chilka, N. E. Madras, 4-iii-10. *Type* in Indian Museum.

Acanthina auricollis, mihi, sp. nov.

♂ ♀ Assam. Long. 9 mm.

Head.—Eyes in ♂ not absolutely contiguous, the intervening space extremely narrow, black; vertex dull brownish yellow with

pale yellow hairs. Eyes black, with short thick pubescence, posterior orbit with grey hairs. Occiput black. Facial protuberance conspicuous, brownish yellow, bearing the concolorous antennae, of which the 3rd joint bears several faintly marked annulations, the style black. In the ♀ the frons is narrow, almost linear, of a deep orange yellow colour, the hind borders of the eyes are very thick and of the same colour, the pubescence of the eyes is pale yellow.

Thorax.—Shining blue black, with concolorous hairs. Three wide stripes, composed of short yellowish grey hairs, lie crossing one another on the dorsum, one being median and transverse, carried over the sides in front of the wings, the other two form the letter X, the anterior ends lying just inside the shoulders, the posterior ends attain the posterior angles of the dorsum. Pleurae blue black with grey hairs below the shoulders, the continuation of the median transverse grey stripe reaching to the middle coxae. *Shoulders and anterior margin of dorsum with conspicuous thick bright golden yellow hair.* Scutellum blue black, shining, with similar hair, posterior margin with short grey hair, the four spines dark brownish yellow or black.

Abdomen.—Shining blue black, with microscopic black spines, each set in a raised black socket, giving the abdomen a roughened appearance. A little pale grey pubescence towards the sides and at the tip. Belly similar to dorsum, but the pale hairs cover the whole surface. Genitalia small, two short telescopic cylindrical joints in ♂, two short filaments in ♀

Legs —Femora black, tibiae dark brown, tarsi reddish or brownish yellow in the ♂, black in ♀ Femora with whitish grey hair below, remainder of legs microscopically pubescent.

Wings.—Broadly speaking, the anterior and distal halves moderately dark brown, the costal cell always quite clear; the proximal half of the posterior part of the wing more or less pale grey or clear. Stigma and veins dark brown The discal cell may be all clear or the upper part (even to the half or more) may be darkened. Halteres chrome yellow.

Described from 3 ♂♂ and a ♀ in the Indian Museum. The ♂♂ were labelled *Acanthina auricollis*, Big., which is a *nomen nudum* and are from Sadiya (*type*) and Kohima, Assam; the ♀ is a more recent specimen from Karkur Ghat, Nilgiri Hills, South India (1500 ft.), taken in May 1911 by Mr. H. L. Andrewes.

N.B.—As a synonym to *azurea*, Gerst., Van der Wulp gives Walker's *Clitellaria obesa* (Proc. Linn. Soc. Lond., v, 232, 1861), but Walker himself described the year previously a *Clitellaria obesa* from Mexico, Trans. Ent. Soc. Lond. (2) v, 270). That this latter is a good species is evident by its inclusion in Aldrich's Cat. N. Amer. Dipt. and in Kertesz's Cat. of Dipt.

Although in my paper on Oriental Stratiomyidae I distinguished *azurea* and *auricollis*, Big., by the presence or absence of a cross (former by silver grey hair stripes) on the thoracic dorsum, this is unsatisfactory, as *auricollis* also possesses a similar cross.

As Gerstaecker does not mention any gold hair on the anterior margin of the thorax in *azurea*, it is presumably absent, but with this exception the present species might, allowing for a moderate amount of variation, be identical with *azurea*.

The genus *Acanthina*, Wied., although the name is preoccupied, has been recognized for too many years to be supplanted, as some authors desire, by *Artemita*, Walk.

Evasa ? flavipes, Big.

A ♀ in my collection, taken by me at Darjiling, 22—30-vi-12, is almost certainly this species, the only discrepancy from the description being that Bigot's species has the anterior part of the wings broadly darkened, whereas in the present specimen they are only a little darkened on the distal part of the wing beyond the very black distinct stigma, the proximal half and the costal cell being quite clear. The only other described species with all yellow legs is *bipars*, Walk., which has the disc of the abdomen, hind border of the scutellum and a line on each side of the thorax yellow. In the present specimen a narrow rather pale ridge runs from the wing base nearly to the shoulders.

Negritomyia maculipennis, Macq.

(*Redescription.*)

♀ Ceylon. Long. 11 mm.

Head.—Black, with a little short whitish pubescence. Eyes black, shortly pubescent. Antennae blackish, inner side of 3rd joint pale, style closely pubescent. Frons at vertex about one-fifth the width of the head, widening at level of antennae to nearly one-third. An indistinct whitish mark above each antenna. Palpi black, with short yellow pubescence. Back of head black; posterior orbit of eyes with narrow silvery white pubescence.

Thorax.—Black, moderately shining, with very short black hairs; covered with microscopic grey hairs except along a broad median line, and on two large spaces towards each side of the dorsum, i.e., one behind the shoulder and one above each wing. Sides of thorax shining black, with microscopic grey pubescence below shoulders and some short snow-white hairs above the fore coxae. There is also a rather wide, perpendicular side stripe of similar pubescence above the middle coxae, joining the dorsal pubescence in front of the wing. Side spines short, strong, black. Scutellum black, with short black hairs and concolorous grey pubescence and two broadly separated strong, short, black spines on hind margin.

Abdomen.—Black, with grey pubescence forming a broad dorsal line on hinder half and a sub-triangular spot towards each side of each segment. Belly shining black, practically bare.

Legs.—Black, with very minute whitish pubescence. Basal fifth of anterior femora and basal fourth of hind pair, also major portion (from the base) of all the tarsi pale yellowish white.

Wings.—Sub-hyaline; stigma dark brown, roughly oval, very distinct. Tip of wing, from outer side of discal cell, thence in a straight line to the costa, and extending hindwards, until filling the 2nd posterior cell, distinctly brown, the colour filtering more or less into the 3rd posterior cell. Halteres, stem yellow, clubs dark brown.

Redescribed from a single perfect ♀ in my collection from Kandy, Ceylon, viii-08 [*Green*].

N.B.—Macquart's description is quite correct, but a fuller one is not out of place as the species of this genus appear closely allied. Very near *N.* (*Clitellaria*) *responsalis*, Walk., from Papua; the agreement in the pale inner side of the 3rd antennal joint and the pattern of the thorax being exact. Walker describes the thorax as "covered with cinereous tomentum, except a dorsal stripe and two spots on each side." The discrepancy is in the legs and wings. In Walker's species the "femora are livid, except towards the tips, posterior tibiae and tarsi whitish, with black tips." He also distinctly notes that the wings are "without any blackish tinge."

Clitellaria bistriata, mihi, sp. nov.

♂ Western Himalayas. Long. 8—9 mm.

Head.—Vertex wholly occupied by the ocellar tubercle, black, shortly black pubescent; occiput blackish, the orbit bare, but a little whitish grey hair on lower part. Eyes closely contiguous, with dense dark brown hair. Frontal triangle black, a little whitish grey hair on its uppermost part. Antennae black, normal, under side of head with whitish hair.

Thorax.—Black, with minute black pubescence. The anterior margin covered with, also two moderately wide dorsal stripes extending from the anterior margin to the scutellum, composed of very short golden-brown hairs; these hairs also appearing on, behind and below the shoulders. At the extreme lower anterior corner of the dorsum is a reddish brown, bare, prominent but very small callus. Scutellum rather broad, black, with microscopic black pubescence, some longer black hairs above and ragged dirty grey hair on under side. The scutellum furnished with two slightly curved, moderately long, obtusely pointed spines, placed one at each extreme posterior corner. Some greyish hair on posterior corners of lower part of thorax.

Abdomen.—Black, microscopically pubescent, with some very short greyish pubescence towards the sides, rather more extensive on first two segments, on posterior margin of penultimate segment and covering most of the last segment. Belly black, with very short greyish pubescence.

Legs.—Black, with microscopic pubescence, and some very short greyish white hair on under side of anterior femora; the pubescence on the lower side of the tarsi dark brown.

Wings.—Anterior part deep brown, becoming a little lighter on posterior two-thirds, but still dark brown. Stigma small, blackish brown, veins deep black; halteres black, stem yellowish.

Described from a unique ♂ from Bhowali, Kumaon District (5700 ft.), captured by Dr. A. D. Imms and now in the Indian Museum.

Ptecticus cyaneus, mihi, sp. nov.

♀ Assam. Long. 14 mm.

Head.—Frons almost linear, brilliantly shining violet and blue, with short soft black hairs; ocelli placed much below the vertex, small pale yellowish brown, ocellar triangle very slightly elevated; the slight protuberance above the antennae pale whitish yellow. Face blackish, with black hairs, lower part of head reddish brown, prominent. Back of head black, with a fringe of white hairs. Antennae with 1st and 2nd joints black, shining, 3rd joint and the overlapping inner side of the 2nd joint coffee brown, arista black, apical.

Thorax.—Dorsum and scutellum brilliantly shining violet, with rather copious brownish grey hairs. Thorax below dorsum brilliantly shining peacock green, with short whitish hairs. A small brownish yellow spot on the shoulders is connected with the wings by a very narrow brownish yellow ridge delimiting the dorsal and ventral surfaces.

Abdomen.—Brilliantly shining violet, with pale grey hairs; belly similar.

Legs.—Femora black, with short white hairs; a little brownish yellow at base; the knees of similar colour, and the coxae with a mark or two of the same shade. Tibiae black, more or less yellowish on apical part, the whole surface with short pale yellow hairs, tarsi dark, with pale hairs. Under side of hind tarsi with short very dark golden brown pubescence.

Wings.—Grey; stigma ill defined; this region of the wing brownish; veins dark brown; halteres yellowish.

Described from one ♀ in the Indian Museum from Ukhral Manipur, Assam (6400 ft.), taken by the Rev. W. Pettigrew.

Microchrysa calopa, mihi, sp. nov.

M. calopus, Big. nom. nud.

♀ Assam and Chota Nagpur. Long. 3 mm.

Head.—Frons broad, bright metallic green on vertex, changing insensibly to brilliant violet blue just above antennae; very short pale yellow pubescence. Face metallic green; oral opening brown. Eyes dark brown, the upper corners rounded off, thus widening the vertex considerably. Antennae pale yellow, tip of 3rd joint which has a slight reddish tinge, shortly pubescent; 1st and 2nd joints with one or two microscopic hairs. Back of head dark.

Thorax.—Dorsum brilliant metallic green, with very short pale yellow pubescence. Belly similarly coloured and pubescent,

sharply delimited from the dorsum by a narrow yellow side ridge at the level of the wings. Posterior calli yellowish. Scutellum and metanotum brilliant green, the former with pale yellow hairs and yellow underside.

Abdomen.—Dorsum violet, not intense, shining, and with a bluish tinge in certain lights; pale yellow pubescence. The colour covers all the surface except a narrow, irregular yellow border round the edges. Belly yellow, shortly pubescent.

Legs.—Wholly yellow, except a broad brown ring on distal half of hind femora, and a blackish hind metatarsus.

Wings.—Clear, stigmatic area pale yellow. Halteres deep yellow.

Described from two ♀ ♀ in good condition in the Indian Museum, from Margherita, Assam, and Paresnath (Chota Nagpur, 4400 ft.), May 1909 [*Dr. Jenkins*].

Eudmeta flavida, mihi, sp. nov.

Id. id., Big. nom. nud.

♂ Assam. Long. 8 mm.

Head.—Eyes contiguous for two-thirds the distance from the very small vertex to the frons; upper facets rich red brown, much larger than the lower ones, which are nearly black. Ocellar triangle small, black, slightly elevated, with a few hairs, lower margin of eyes white. Frons and face smooth, bare, livid yellow. Mouth and proboscis brown; palpi small, black, oval at tip. Antennae yellow, almost bare, except a few hairs at tips of the two first joints, which are very short; 3rd joint elongate, a little greyish shimmer towards the rather narrowed tip, ending in a distinct, moderately long, black, cylindrical style, which is 3-jointed and very closely black pubescent, the first two joints very short. Occiput not projecting beyond hinder margin of eyes, much invaginated in the middle; yellowish, with very short hairs.

Thorax.—Rather dull brownish yellow, sides, scutellum and metanotum concolorous, except that the scutellum is a little reddish. Whole dorsum, sides and scutellum covered with soft, dense, pale yellow hair.

Abdomen.—Rather shorter and more globose than Meijere's *brunnea*. Ferruginous brown, a little blackish on the edges and towards tip. Whole surface with close, short, yellow pubescence. Belly similar, pubescence very short.

Legs.—Brownish yellow, a dark brown ring on apical half of hind tibiae; tarsi tips black. The legs are minutely yellow pubescent, the colour brightest on the tarsi.

Wings.—Pale yellow, veins brownish; a stigma-like oval black spot towards tip of upper basal cell. The end of the wing mainly occupied by a brown suffusion which dies away towards posterior margin. Halteres yellow.

Described from a single ♂ in good condition in the Indian Museum collection from Margherita, Assam.

N.B.—Wiedemann (Auss. Zweifl., ii, 43) describes the antennae as 5-jointed and Macquart (Suite à Buff., i, 259) follows suit, both illustrating these organs. I describe them as 3-jointed, with a 3-jointed style; what the older authors regarded as a short 4th joint is really double. Moreover, in the present species the 3rd joint is the most robust and longest, the 3rd joint of the style being half as long as the true 3rd joint. Meijere's figure (Bijd. Dierk., xvii. 14, pl. viii. 10) more nearly represents that of my species, the ultimate joint in the latter being, however, shorter. The abdomen, as stated above, is much shorter and more rounded, which makes me doubtful as to whether it is well placed in *Eudmeta*.

Beris annulipes, mihi, sp. nov.

♀ Darjiling. Long. 6½ mm.

Head.—Frons nearly one-fourth the width of the head; brilliantly shining, dark blue, uniformly wide. Back of head shining black, with a little grey hair on posterior ocular orbits. Eyes very shortly but distinctly pubescent, antennae with first two joints black, with bristly hairs, 3rd joint yellowish on basal, black on apical half; a little grey hair about the base of the antennae. Proboscis reddish yellow.

Thorax.—Brilliantly shining violet blue, with yellow pubescence on dorsum. Scutellum brilliantly shining peacock (greenish) blue, with six strong equidistant shining darker green spines on hind margin.

Abdomen.—Violet, moderately shining, sides with brownish yellow pubescence. Belly darker with short yellow hairs.

Legs.—Yellow; tips of anterior femora with an indistinct brown band; hind femora and tibiae with a distinct broad brown apical band on each; tarsi marked extensively with brown.

Wings.—Grey. Upper part (except costal cell) as far hindwards as to include the anterior basal and first posterior cells, brown. Halteres yellow.

Described from one example taken by me at Darjiling (7000 ft.), 27-v-10. In the Indian Museum.

(?) Allognosta inermis, mihi, sp. nov.

♂. Darjiling. Long. 4½ mm.

Head.—Vertex very small, occupied by the three ocelli. Eyes with uniform, very small facets, bare, contiguous. Frons an equilateral triangle, moderately large, blackish seen from above, but with grey reflections viewed from other directions. Antennae black, normal, as in *Beris*, the 3rd joint, by seven annular impressions appearing as if composed of 8 closely compressed joints. Palpi and proboscis black; the underside of the large labella yellowish. Back of head blackish.

Thorax and scutellum blackish with a slight aenous tinge, microscopically roughened, and with microscopic yellow hairs. The anterior margin and shoulders with a very little short

yellowish hair, which extends also over the pleurae to some extent. Scutellum unspined, with microscopic yellow hairs.

Abdomen.—Dull black, barely shining, the sides with very short yellow hairs. Belly similar with very minute yellow hairs. Genitalia consisting of a pair of blackish, fairly thick claspers, each with a small narrow appendage; there being also an upper pair of yellow, hairy, finger-like appendages.

Legs.—Black, the knees distinctly but not broadly yellowish brown; pulvilli pale yellowish.

Wings.—Blackish brown; stigma large, well defined, brown. Halteres black.

Described from a unique ♂ in the Indian Museum taken by me at Darjiling (7,000 feet), 29-v-10, on the hillside.

N.B.—When first describing this species I considered it as representing a new genus differing from *Beris* only in having an unspined scutellum. A closer investigation of existing genera revealed its close affinity to *Allognosta*, Os. Sac., a genus which, curiously enough, does not appear to have ever been properly characterized. Its history is as follows: Macquart in 1847 set up *Metoponia* for an Australian species and Loew in 1863 described a North American species *similis* and in 1873 a species *vagans* from Siberia, both of which he placed in *Metoponia*. Osten Saeken in 1883 (Berl. Ent. Zeits., xxvii, 297) notes that Loew's idea of *Metoponia*, Macq., was incorrect, forming this opinion on an examination of Macquart's types in Bigot's collection and states that Loew's two species were not congeneric with *Metoponia*. He had at the moment no specimens of *Metoponia*, Lw., for comparison but suggested *Allognosta* as a *nom. nov.* for Loew's genus. No proper diagnosis or differentiation from any other genus seems to have appeared. I possess in my collection both "*Metoponia vagans*, Lw.," as actually identified by that author, and several of the rather common *Allognosta fuscitarsis*, Say, from North America, but unfortunately they are not available for comparison in this country.

The present species is therefore retained in *Allognosta*, and the name *Anacanthoberis* is suggested if it should prove generically distinct.

Chorisops tibialis, Mg.

One ♀ of this commonly distributed European species occurs amongst some diptera sent me for examination by Dr. A. D. Imms. There can be no possible doubt of the identity. It is from Binsar, Kumaon District, Western Himalayas, 28-v-12, and is in perfect condition.

TABANIDAE.

Diachlorus fulvescens, mihi, sp. nov.

♀ Western Himalayas. Long. 11 mm.

Head.—Eyes sparsely and shortly, but distinctly hairy; frons between one-seventh and one-eighth the width of the head, with

parallel sides, and covered with close greyish yellow tomentum; a small, low vertical tubercle, devoid of ocelli.

An indistinct median dark narrow slightly irregular line and, at the lowest point of the frons, immediately abutting on the antennal tubercle, a bare dull black spot or callus.

Frons rather sparsely covered with yellow and black hairs, intermixed. The antennal protuberance is placed immediately below, and contiguous to, the lower angles of the eyes, and is covered with cinereous grey tomentum, and is rather low but distinctly obvious.

Face greyish yellow with very short black hairs just below the eyes, and longer yellow hairs on the lower side. The cheeks, which extend only a little below the level of the eyes, are concolorous, with yellow hair; the back of the head similar in colour, with very sparse and short yellow hairs. Antennae with 1st and 2nd joints approximately cup-shaped, of moderate size, the 1st a little the larger and longer; both thickly beset with both yellow and black bristles. The 3rd joint a little longer than the first two together, elongate conical, quite bare, with (apparently) four indistinct annulations dividing the joint into five parts, of which the first is the broadest and stoutest, equalling in length two-thirds of the third joint; the remainder of the divisions subequal to one another. The antennae are reddish brown except the apical half of the 3rd joint, which is blackish. Palpi normally tabaniform, robust, acutely conical, proboscis normal, both a little pubescent.

Thorax.—Blackish grey, dorsum and scutellum covered with short light yellow hair; sides of same colour, with longer yellow hair.

Abdomen.—Blackish, covered with pale yellow hairs which are more numerous on the apical half, and are nearly absent on the basal corners. Hind margins of segment, after the 1st, narrowly brownish yellow. Belly similar to dorsum.

Legs.—Reddish yellow; all coxae dark grey, major part of fore femora at least on under side, and about the basal third of posterior femora dark grey or blackish; tarsal joints black tipped, the colour deeper on the fore pair. Legs normally pubescent, with a little yellowish hair on the femora, shorter bright yellow hairs on tibiae mixed with short rows of microscopic bristly hairs.

Wings.—Pale grey, a little brownish yellow at base and along the costa; all the veins very faintly but just perceptibly infuscated, a perceptible infuscation across the middle of the wing from the costa, in a line with the cross veins, and a slight infuscation at the fork of the 3rd vein, where there is no appendix. Venation typically tabaniform; halteres black; squamae dirty white.

Described from a single perfect ♀ in the Indian Museum from Dha Kuri, Kumaon District (8,900 ft.), 29-v-09, taken by Dr. A. D. Imms.

N.B.—The example, on which the present species is founded, was returned by Miss Ricardo to the Indian Museum marked

"? new genus." The species is at least provisionally referred to *Diachlorus*, as it complies more nearly with the more important characters of that than with those of any other genus. Between *Diachlorus* and *Udenocera*, Ricardo, the differences consist (1) of the lengthened 1st antennal joint (nearly as long as the 3rd), in the latter genus, and (2) in the absence (*Diachlorus*) or presence (*Udenocera*) of the antennal protuberance. In *Diachlorus* the fore tibiae should be curved and slightly broadened, in *Udenocera* they are not so. This latter character is of doubtful generic value unless quite pronounced. Such characters as the presence or absence of small callosities on the face, the exact point in the vertical height of the head at which the antennae are inserted; and the comparative shape and relative size of the proboscis and palpi must be employed with much reserve when applied to the validity of genera. In profile, the head of my species considerably resembles the figure of Macquart's *Diabasis* (= *Diachlorus*) *scutellata* (Dipt. Exot. 1.), except that the head is much shorter below the eyes in my species than in his, and the annulations of the 3rd antennal joint much less distinct.

Haematopota albofasciatipennis, mihi, sp. nov.

(Pl. xxxvii, fig. 1.)

♂ Western Himalayas. Long. 7 mm.

Head.—Eyes with the upper, large facet light coffee-brown, the lower, smaller ones black. Frons pale grey tomentose, with a conspicuous velvet black spot immediately above the antennae, and a short narrow black line above it. Under side of head, comprising the face and cheeks, bluish ash grey with whitish hairs and numerous small black dots on the face.

Antennal 1st joint about as long as first annulation of 3rd joint, oblong, slightly thickened in middle, moderately pale blackish brown with a slight dusting of grey, and appearing wholly brownish when viewed from certain directions. The 2nd joint paler, very short; 3rd joint a little longer than 1st and 2nd together, bare, the first annulation reddish brown, the remainder blackish; the 1st and 2nd antennal joints with a little greyish hair.

Palpi pale dirty yellowish brown, almost whitish at the tips, with pale pubescence. Proboscis blackish; back of head dark grey.

Thorax.—Dorsum dark brownish grey, the colour sometimes (in one example) not reaching the margin on hinder half, and with a trace of paleness towards the sides at the transverse suture, and (in one example) around the humeral space. In the type specimen the dorsum is entirely blackish grey, except slightly paler on the transverse suture towards the sides, but a little grey dust appears on the posterior margin only when viewed from behind. There are three indistinct but obvious very narrow whitish grey longitudinal stripes. Scutellum blackish grey, concolorous with dorsum, with a few black hairs.

Abdomen.—Dark brownish grey, with soft blackish hairs; extreme margins of segments pale; sides with whitish hairs; belly similar to dorsum.

Legs.—Dark brownish grey. A pale yellowish white ring just beyond base on fore tibiae; two rings, rather more whitish in colour, on middle tibiae, one placed beyond the base, the other beyond the middle; hind tibiae similarly banded. Major part of posterior metatarsi whitish.[1]

Wings.—Dark grey, stigma distinct but ill-defined. A whitish subapical streak across the wing from the tip of the 2nd longitudinal vein to that of the upper branch of the 4th vein; and the extreme tips of all the posterior cells (except, of course, the closed 6th cell) whitish.

The surface of the wing is covered with numerous small pale dots forming irregular and incomplete circles or rings. The most nearly complete of these rings is formed by two small spots just beyond and below the stigma, two each in both submarginal cells (beyond the furcation of the 3rd vein); these latter four being nearly in a line; two at about the middle of the 1st posterior cell, near its anterior margin, and two placed perpendicularly, before the middle of the 1st submarginal cell. In the centre of this ring is a triad of spots placed respectively before, beyond and above the basal section of the upper branch of the 3rd vein. A row of spots from just before the stigma stretching across the discal cell to the anal cell but not encroaching on it; a second row begins a little lower and more distad in the wings and runs nearly parallel to the first row. Another ring of spots lies over the first four posterior cells and the discal cell, enclosing in its centre a triad of spots placed respectively at the tip of the discal cell and at the base of both the 2nd and 3rd posterior cells. It must be noted that of this ring or rosette, the two spots forming its most proximal side also form part of the more distad row of spots crossing the discal cell.

A row of spots approximately parallel to the hind margin of the wing lies posterior to this second rosette of spots, constructed of about two spots in each posterior cell. Two continuous zigzag transverse lines across both anal and axillary cells; they being more or less continued anteriorly, in the form of subcontiguous spots, across the basal cells. Halteres blackish, squamae dirty grey.

Described from two ♂ ♂ in the Indian Museum from near Bhowali, Kumaon District (5700 ft.), July 1909, taken by Dr. A. D. Imms.

N.B.—According to Miss Ricardo's table of groups, this species falls in group V, but it is certainly distinct from any mentioned by her in that group. The wing-pattern has a great general

[1] Miss Ricardo erroneously uses the term "posterior tibiae" for "hind tibiae." The term "posterior" applies to the four hind legs taken together, as "anterior" legs refer only to the four front legs taken together and not to the first pair of legs alone. If not used in their correct sense these terms foster false conclusions.

resemblance to her figure of *latifascia*, Ric. The position of the two rosettes or rings, each with an inner triad of spots similarly situated; the two transverse rows across the discal cell, etc., the outer row parallel to the hind margin of the wing; the subapical whitish band and whitish extremities to the posterior cells, also the two zigzag lines across the anal and axillary cells, are all more or less distinctly traceable in *latifascia*.

It seems quite possible therefore that the present species may prove to be the ♂ of *latifascia*, in spite of the apparent discrepancies in the relative lengths of the antennal joints. However, as the species was returned by Miss Ricordo herself to the Indian Museum as being probably new, I venture to characterize it as such.

Haematopotas triatipennis, mihi, sp. nov.

(Pl. xxxvii, fig. 2.)

♂ Western Himalayas. Long. 8 mm.

Head.—Eyes with upper facets bright chocolate brown, lower ones greenish black, with a narrow violet horizontal stripe. Frons ash grey, with a pair of contiguous pale livid yellowish calli immediately above the antennae, and occupying nearly all the frons. Face ash grey, with black hairs; proboscis reddish brown; palpi pale dirty brownish yellow with black pubescence. Antennae bright yellowish; 1st joint half as long as 3rd, only moderately thickened; 3rd joint slender, elongate, constricted immediately beyond base (1st annulation); apical part (the last three annulations) narrow, tip black. The 3rd joint at its greatest width is less wide than the 1st joint.

Thorax (stained).—In life, evidently dark ash grey; no trace of any dorsal stripes, though these may have been present. Sides of scutellum a little yellowish.

Abdomen.—Basal half dull brownish with a little yellowish tinge towards sides, apical half blackish, the whole surface with blackish brown hair. Belly similar, but much less pubescent.

Legs.—Coxae dark grey, fore pair a little lighter. Femora dark brown; tibiae brownish yellow, fore pair with apical half black; fore tarsi black, posterior tarsi brownish yellow, a little darker on the emarginations.

Wings.—Grey, except at extreme base; the costal cell very pale yellowish. No trace of rosettes of the usual pattern in this genus, but the wing is crossed transversely by six narrow whitish streaks situated as follows :—

The two first streaks begin at the upper margin of the 1st basal cell, thence crossing the two basal cells at equidistant points, the 1st streak ending at the 7th longitudinal vein, and the 2nd very nearly reaching the wing border, crossing the anal and axillary cells at the centres. The 3rd streak begins at the upper margin of 2nd submarginal cell, passing through the discal cell where this section of the streak is "interrupted," being placed

a little but quite distinctly more proximad. The streak continues through the 4th posterior cell before the middle of the latter, and ends broadly in a widened state at the 5th longitudinal vein a little before the margin of the wing. The 4th streak begins on the costa, immediately beyond the stigma, crosses the 1st submarginal and 1st posterior cells about their centres, crosses the 2nd posterior cell before the middle, and the 3rd at its middle, where it becomes bifid; a small single elongate spot in the 4th posterior cell marking its termination. The 5th streak, which is rather narrower than the others, runs from the lower branch of the 2nd longitudinal vein, near the tip of the wing, to the upper branch of the 4th longitudinal, also near its tip, crossing the 2nd submarginal cell just before its middle. The 6th streak very short and subapical, from immediately before the tip of the 1st submarginal cell to about half way down the 2nd submarginal. Between the 4th and 5th and the 5th and 6th streaks is a small whitish elongate spot near the wing margin. Halteres black (apparently discoloured).

Described from a single ♂ in the Indian Museum from Dehra Dun (foot of Mussoorie Hills) taken 17-1-10, and presented by Dr. A. D. Imms.

N.B.—Easily known from all other oriental species in the genus by the six whitish narrow streaks on the wings in place of the usual rosettes.

It falls in Miss Ricardo's Division II.

LEPTIDAE.

Rhachicerus bicolor, mihi, sp. nov.

♀ Ceylon. Long. 8½ mm.

Head.—Frons nearly ⅓ width of head, shining black, bare; 3 small yellow ocelli at vertex; eyes blackish, bare. Proboscis bright yellow, palpi of similar colour, very small. A whitish triangular spot on each side between the eyes and the base of the antennae. Antennal 1st and 2nd joints black, 2nd with a circlet of black and yellow bristles around its tip; flagellar 1st joint much wider than the rest, which are blackish brown, the comb-like prolongations on the under side, bright yellow. (The antennae being incomplete, the exact number of joints cannot be given).

Thorax and scutellum, wholly shining black, practically bare, humeri conspicuous, bright yellow.

Abdomen black. Dorsum of first three segments mainly yellow, the borders being black, the 4th segment more or less yellow in the centre. Belly principally yellow on the first three segments; remainder blackish.

Legs.—Bright yellow, hind coxae black.

Wings.—Venation as in *Xylomyia*. Grey, a hardly perceptible darkening from the costa partly across the wing, and again towards the tip. Halteres bright yellow.

Described from one ♀ in good condition in my collection from Kandy, v-09, sent by Mr. E. E. Green.

DESMOMYIA, mihi, gen. nov.

Sub-fam. *Arthroceratinae.*

Apparently near, but quite distinct in several characters from *Arthroceras.*[1] Five posterior cells, 4th without any trace of contraction towards wing border; anal cell closed just before wing border. Remainder of venation in accordance with Williston's fig. of *Arthroceras* wing.[2] Antennae elongate, 1st joint as long as 2nd and 3rd together, cylindrical, 2nd broadly annular, 3rd elongate with an apical style-like prolongation. Eyes contiguous for a considerable distance, bare; 3 ocelli. Proboscis rather short, stout, cylindrical; palpi elongate, narrow. Face with two dividing furrows below antennae and rather bulbous cheeks, as in *Arthroceras.* General appearance of whole insect, that of a *Thereva*, soft pubescence on thorax and abdomen, the latter with seven distinct segments. Fore tibiae unarmed, posterior tibiae with two distinct pale spurs each. Legs slender, thereviform.

Desmomyia thereviformis, mihi, sp. nov.

♂ Western Himalayas. Long. 5—6 mm.

Head.—Vertex small, dark; three ocelli; occiput of a lighter grey than the dark blackish grey face. Proboscis and palpi blackish grey. The whole head with stiff black hairs Eyes bare. Antennae dark grey, 1st joint elongate, cylindrical, 2nd broadly annular, half the length of the 1st, the 3rd joint is best described as diamond shaped, with rounded angles, the greatest breadth beyond the middle; the tip produced into an elongate narrow style with blunted tip, the style as long as the whole antennae.

Thorax.—Dorsum dark grey, with three separated, moderately broad blackish stripes, the outer ones with a tendency to an interruption in front of the middle. Sides and scutellum moderately dark grey, with pale yellowish white soft pubescence.

Abdomen.—Seven segmented, the second the broadest, dark blackish grey with pale yellowish white soft pubescence. Genitalia small, inconspicuous.

Legs.—Black; knees and femora more or less at base brownish yellow, the colour on the fore pair extending beyond the middle. Hind tibiae widened towards tips, hind metatarsus distinctly incrassate. The whole of the legs shortly pubescent, anterior tibiae unarmed, posterior tibiae with two distinct yellowish spines.

Wings as in *Leptis*, except that the anal cell is closed just before the border, pale grey, stigma blackish, very elongate. Two

[1] The description of this genus is not accessible in this country.
[2] North American Diptera (3rd Ed.), p. 161, fig. 18.

indistinct pale blackish suffusions, the first, from the origin of the 2nd vien, embracing the anterior cross-vein, the base of the discal cell, and the posterior cross-vein. The second runs from the fork of the 3rd vein to the hinder side of the discal cell, along its outer side. Costal cell rather broad, the costa curving outwards slightly. Halteres brownish yellow.

Described from two ♂ ♂ in the Indian Museum, taken by Dr. A. D. Imms at Badrinath, Gahrwal District (10,200 ft.), 27-v-10.

Atherix caerulescens, mihi, sp. nov.

(Pl. xxxvii, fig. 3.)

♀ Darjiling District. Long. 6 mm.

Head.—Blackish, mainly bluish grey dusted. Frons, from the ocelli downwards for three fourths of the distance to the antennae, shining black, bare, in which colour is inset a deep dull velvet black triangle, its base on the lower margin of the shining part Antennae black, bluish grey dusted, 3rd joint dull reddish yellow. Mouth parts bluish grey dusted.

Thorax.—Blackish, a little shining bluish grey reflection. Two not very obvious whitish dorsal stripes, and there are greyish reflections on the shoulders, posterior corners and elsewhere, viewed in certain lights. A few soft black hairs on dorsum. Sides, pleurae and scutellum concolorous, a little yellowish behind the thoracic stigma.

Abdomen.—Blackish, barely shining, with short sparse greyish pubescence; 1st segment bluish grey dusted; 5th and 6th with light bluish grey hind margins. Belly mainly blackish.

Legs.—Black, minutely pubescent, coxae bluish grey dusted.

Wings.—Very pale grey. Across the centre a reversed triangular brown spot reaching from the costa to the hind margin, where its apex meets the tip of the closed anal cell. The colour fills most of the discal cell and crosses the tip of the upper basal cell. Following the discal margin of this brown triangle (at a distance leaving a moderately wide intermediate clear band) is the proximal margin of a second, large brown band which fills thence the whole of the discal part of the wing. A brown streak in the middle of each basal cell. Stigma dark brown, filling distal half of cell. Halteres yellow, clubs black.

Described from a perfect ♀ in the Indian Museum collection from Kurseong (5000 ft.), 6-ix-09 [*Annandale*].

Leptis discoidalis, mihi, sp. nov.

♀ Darjiling. Long. 3 mm.

Head.—Blackish, vertex black, frons blue-grey dusted; antennae and proboscis moderately dark brown, palpi black. Back of head bluish grey.

Thorax and scutellum clear shining brown, humeri, sides and metanotum a little lighter.

Abdomen darker brown, with short, pale pubescence, posterior margin of segments with a not very distinct blackish band. Genitalia small, short, cylindrical, with two small terminal lamellae.

Legs pale brownish yellow, microscopically pubescent.

Wings pale brown; discal cell, 2nd basal cell, 5th posterior cell and all the wing posterior to these cells, nearly clear. No distinct stigma but the region along both sides of the 1st longitudinal vein, blackish. Halteres dark brown.

Described from two ♀ ♀ in the Indian Museum, Kurseong (5000 ft.), 7-vii-08 (*type*), and Darjiling (7000 ft.), 7-viii-09, the latter taken by Mr. C. Paiva.

Leptis unicolor mihi, sp. nov.

♂ Darjiling. Long. 5 mm.

Head.—Eyes contiguous for half the distance from vertex to antennae. Frons dark blackish grey, ocellar triangle small, ocelli distinct, the vertex grooved each side of the middle, near the eye. Back of head grey, posterior ocular orbit with a fringe of delicate pale yellow hairs. Antennae yellow, tip of 3rd joint, with its arista, black; 1st and 2nd joints short, 3rd subconical. Proboscis relatively small, and much more slender than in most species; yellow, as are the rather distinct elongate palpi, bearing black bristly hair.

Thorax.—Uniformly light brownish yellow. In certain lights small quadrate grey reflections on the shoulders, and a distinct whitish grey broad horizontal stripe across the pleurae.

Abdomen.—Concolorous; both thorax and abdomen with very sparse short pale hairs; belly similar.

Legs.—Coxae and femora concolorous; knees narrowly brown; tibiae a little darker brownish yellow, becoming nearly or quite brown at the tips; tarsi dark brown. Legs minutely pubescent.

Wings.—Uniformly pale yellowish grey. The 2nd posterior cell narrow, the sides almost parallel; anterior cross-vein before one-fourth of the discal cell; branches of 4th longitudinal vein issuing from discal cell well separated; and cell widely open. Halteres light brownish yellow.

Described from a single perfect ♂ in the Indian Museum labelled simply "Darjiling." A very clean-looking, graceful yellow species.

Chrysopilus helvolus, Meig.

A specimen in the Indian Museum from Kurseong taken 8-vii-08 is very close to if not identical with this European species, so much so that I hesitate to give it a name even as a variety. The femora are nearly bare and more yellowish, with the slight greyish minute pubescence of *helvolus*, and their tips are narrowly blackish. The colour of the abdominal pubescence is a richer

deeper golden yellow and the wings are practically clear. In all other respects it agrees absolutely when placed side by side with a European specimen of Meigen's species.

Chrysopilus maculipennis, Walk.

(*Redescription.*)

♀ Borneo. Long. 6 mm.

Head.—Blackish grey; frons $\frac{1}{4}$ to $\frac{1}{5}$ the width of the head, with a distinct median groove; ocellar triangle concolorous, distinct. Proboscis blackish grey, labella arge, conspicuous, brownish yellow, a little pubescent; palpi black, pubescent. Antennae blackish grey; 1st joint nearly bare, 2nd with a few stiff black hairs, 3rd with soft grey hairs, arista long, black, microscopically pubescent.

Thorax.—Ground colour blackish; originally undoubtedly covered with bright golden yellow pubescence (greatly denuded in the present specimen). The surface is also clothed with small bright emerald green scale-like hairs, which also extend over the scutellum. Sides grey, pleurae with a rather bluish grey tinge. Scutellum black, brownish yellow on hind margin.

Abdomen blackish; posterior margins of segments with a moderately broad, yellowish brown, well-defined band, apical segments yellow, genital organ blackish, elongate.

Legs.—Fore coxae yellowish, posterior coxae blackish grey; femora brownish yellow, tibiae blackish yellow, tarsi black.

Wings.—Very pale grey, with blackish grey markings, in a general way resembling my *C. marmoratus.* Stigma black but not distinctly defined from the transverse median band that runs from the costa to the hind margin of the wing, gradually diminishing in width, embracing the base of the upper branch of the 3rd longitudinal vein, the distal third of the discal cell, crossing, in narrowed width, the 4th posterior cell, widening abruptly behind the last branch of the 4th longitudinal vein. A narrower band of similar colour and irregular width begins at the base of the 2nd longitudinal vein, crossing the anterior cross vein, the basal third of the discal cell, the posterior cross-vein, following the 5th longitudinal vein to the wing margin, and filling nearly the apical half of the anal cell. A third band begins on the costa near the wing tip, moderately broad, passing over the sub-marginal cell, which it fills, with the exception of the extreme base and tip, joining the median band proximally. Beyond the lower branch of the 3rd vein it abruptly becomes very narrow, and passes over the middle of the 2nd and 3rd posterior cells in widened form. The wing immediately in front of the stigma is distinctly yellowish. Halteres yellowish.

Redescribed from a single ♀ in the Indian Museum, perfect except for the denudation of the thorax. It was taken at Mujang, Sarawak, by Mr. C. W. Beebe, 12-vii-10.

N.B.—This specimen can hardly fail to be the *maculipennis* of Walker, the description agreeing exactly throughout except that he speaks of the proboscis as yellowish, for which I anticipate he has mistaken the conspicuous yellowish labella.

Chrysopilas humeralis, mihi, sp. nov.

♂. Darjiling. Long. 6 mm.

Head.—Eyes practically contiguous for the greater part of their length above the antennae, leaving a narrowly elongate frons of the shape of an isosceles triangle, which is bluish grey; ocellar protuberance blackish, occiput dark grey; face narrowly triangular, bluish grey. Antennae brownish yellow, proboscis and palpi similar, the latter rather darker, both with yellow hairs.

Thorax.—Shining blackish with pale yellow hairs; shoulders livid yellow; pleurae dark bluish grey varying to blackish; scutellum and metanotum blackish.

Abdomen.—Blackish, with pale pubescence; the major part of the basal half yellowish, leaving generally a narrow anterior and posterior blackish margin of varying width to each segment; about the apical half of the abdomen all black. Belly similar to upper side.

Legs.—Coxae and femora yellowish, apical half, more or less, of fore and hind femora blackish or quite black; remainder of legs dark brown.

Wings.—Grey, no stigma; a very slight brownish darkening about the fork of the 2nd longitudinal vein, continued in diminished intensity along a further or lesser part of the marginal cell. Halteres yellowish with blackish brown knobs.

Described from 3 ♂ ♂ in the Indian Museum from Chumbi, Darjiling District (4000 ft.), July 1911 [*Gravely*].

BOMBYLIDAE.

Hyperalonia semifuscata, mihi, sp. nov.

(Pl. xxxvii, fig. 4.)

♀ Bombay Presidency. Long. 10 mm.

Head much developed behind eyes. Frons one-third of head at level of antennae, narrowing at vertex to half this width; blackish, with yellowish scales and long black hairs. Face with brighter and thicker yellow hair, mouth border broadly orange yellow, with yellow hairs. Proboscis dark brown. Antennae reddish brown, 3rd joint very elongo-conical, with distinct style. Back of head blackish, with some pale yellow scales on orbital margin and with black and yellow hairs over the central part.

Thorax.—Black. Front part of dorsum and around and below shoulders with thick long bright yellow scale-like hairs; centre of dorsum with only sparse short yellow and black hairs. Below the wing the hair is nearly white and bristly, behind the

wing bright yellow and bristly. Some strong and very long black bristles on posterior corners of dorsum, and two or three (or thereabouts) before the wing. Scutellum dull reddish brown with sparse depressed short yellow hairs, erect short black hairs, and a row of black bristles along hind border.

Abdomen black, with uniformly distributed short black hairs, 3rd, 6th and 7th segments each with a band of dirty white small scales occupying the greater part of their dorsal surfaces, the bands on the 6th and 7th segments less conspicuous. Sides of 1st and 2nd segments with long scale like yellow hairs. Belly blackish with yellowish pubescence, the basal part a little paler with whitish hairs.

Legs.—Coxae black, femora brownish yellow, hind pair blackish towards tips; tibiae a little darker brown, hind tibiae and all tarsi black. The whole of the legs with minute sparse black bristles and microscopic pubescence.

Wings dark grey, the anterior half (about), except at tips, moderately dark blackish brown, the colour insensibly dying away along the veins behind the middle of the wing. Halteres yellowish.

Described from two ♀ ♀ from Mahabaleshwar, Satara District, Bombay Presidency, 4200 ft., 13—16-iv-12 [*Gravely*]. In the Indian Museum.

Notes on the **Exoprosopa vitrea**, Big., group.

At the time of publishing my revision of the Oriental species of this family (Jan. 1909), *E. vitrea*, Big., was the only species of the genus in the East with absolutely hyaline wings. However, a careful study of a number of specimens has led me to believe that either there are two or three closely allied species, or else *vitrea* is very variable. One form is therefore set up as a good species, with a certain amount of reservation. The points of difference between my interpretation of *vitrea*, my new species, and a third form, as they appear to me at present, are as follows:—

1. **E. vitrea**, Big. (1) Antennae black, reddish at base: (2) wings brownish yellow on anterior part, costal cell generally concolorous, but exceptions with practically clear wings occur: (3) yellowish hair on anterior part of thorax[1]: (4) scutellum practically, always wholly red: (5) sides of abdomen distinctly reddish or reddish brown, the colour varying in intensity and extent, spreading over more or less of the first four segments,[2] but exceptions occur in which no reddish colour can be perceived.
2. **E. vitripennis**, sp. nov. (1) Antennae wholly reddish brown: (2) wings wholly clear: (3) whitish grey

[1] This applies really to the whole thorax, but, although specimens are frequently more or less denuded of pubescence there is in most cases sufficient left along the anterior margin to decide its colour.

[2] Bigot said "first two" segments, but this is a character likely to be found a variable one.

hair on anterior margin of thorax: (4) scutellum wholly black: (5) sides of abdomen wholly black.

3. **E.** *form*, ? sp. nov. (1) Antennae wholly black: (2) wings quite clear, except for a little yellowish in the subcostal cell: (3) black hair on anterior margin of thorax: (4) scutellum very dark, reddish brown, nearly black: (5) sides of abdomen so closely covered with dense white scales that its ground colour is not properly visible, but I am under the impression that the sides are red, as in vitrea.

Unfortunately only one specimen each of my new species and the uncertain form is available but what I take to be *vitrea*, Big., is represented by several, including a pair taken *in cop*. The third form has the appearance of having been wetted (at least its head and thorax) so that I view it with some suspicion, but the abdomen appears in good condition.

On the assumption of my correct identification of *vitrea*, Big., I have ventured to redescribe it.

Exoprosopa vitrea, Big.

(Pl. xxxvii, fig. 5.)

Redescription.

♂ ♀ Bombay Presidency. Long. 7—12 mm.

Head.—Frons at level of antennae barely one-third of the head, narrowing to nearly one-third of that width at vertex in ♂ and to half that width in ♀; black with black hairs; the lower half with bright yellow short scales. Face with similar scales and a few short bright yellow hairs; facial bump fairly large; mouth border pale whitish yellow. Proboscis black, antennae black, no trace of lighter colour. Back of head moderately protruding, black, an irregular narrow fringe immediately behind the eyes of very small greyish white scales lying close to the surface; hind margin of head with a fringe of short yellow or yellowish white hairs.

Thorax.—Ground colour dark blackish brown. Anterior margin and shoulders with thick scale-like bright yellow hairs. This hair is continued around the whole of the prothorax, but in the ♂ it is *quite black* for a considerable space on the lower part (immediately below the mouth), whereas in the ♀ it is sometimes uniformly yellow and sometimes similar to the ♂ Surface of dorsum covered with short depressed brownish yellow hairs, pleurae with yellowish grey or grey hair, there is also some around the base of the wing.

Abdomen.—Black, with very short depressed bright yellow hairs and black pubescence in the ♂; the sides of the 2nd, 3rd and 4th segments are broadly and completely covered with small snow white depressed scales, which also form an entire band across the

basal half of the two latter segments. These scales are practically absent in the ♀ but a few are usually present. Belly blackish, the middle part a little paler, generally with a considerable space covered with soft short white hairs; tip inclined to be reddish. A considerable amount of white hairs in both sexes at anterior corners of abdomen.

Legs.—Wholly black, with the usual fine pubescence and very short black bristles.

Wings clear, costal and subcostal cells very pale yellowish grey; halteres pale yellow.

Redescribed from a ♂ and ♀ *in cop* from Helwak, Koyna Valley, Satara District, 2000 ft., 28—30-iv-12, and several others of both sexes from other localities in the same neighbourhood, up to 3500 ft. and from the 23rd to the 30th. The ♂ and ♀ taken *in cop* are only 7 mm. long, but the species varies up to 12 mm. The degree of yellow hair on the abdomen and the extent of the white scales are both variable.

Exoprosopa vitripennis, mihi, sp. nov.

♂ Bombay Presidency. Long. 10 mm.

Head.—Frons above antennae nearly one-third of the head lessening to one-third of that width at the vertex; shining black with short black pubescence and pale whitish yellow scales above the antennae and over the shining black face also. These scales show prismatic colours in certain lights. Antennae dark brownish yellow, 3rd joint ending in a fine point. Oral opening whitish yellow, bare, or with a few very short pale yellow hairs. Proboscis rather long, blackish, palpi black, curved, very slender, with short hairs. Occiput and under side of head black, a few scales closely pressed to the surface, behind the eyes.

Thorax.—Shining black, with milk-white bristly hairs on the sides, anterior border of dorsum and around the wings. Scutellum dull coffee brown, some small white scales below its hind margin, closely applied.

Abdomen black, moderately shining, almost bare; small milk-white scales at the bases of the segments towards the sides. Belly black, with the basal part of most of the segments covered with small snow-white scales.

Legs.—Wholly black, except for a little dull-brown reflection of the tibiae in certain lights.

Wings.—Absolutely clear, vitreous, highly iridescent, costal, auxiliary and 1st longitudinal veins and those at base of wing yellowish, the remainder black; halteres yellow.

Described from a single ♂ from Mahabaleshwar, Satara District, Bombay Presidency, 4200 ft., 13—16-iv-12 [*Gravely*].

N.B.—Very near *vitrea*, Big., differing by the wholly reddish brown antennae; the whitish hair on anterior margin of thorax; the wholly black scutellum; the wholly clear wings; and the absence of any reddish colour towards the sides of the dorsum.

Argyramoeba argentiapicalis, mihi, sp. nov.

(Pl. xxxvii, fig. 6).

♀ Bombay Presidency. Long. 5—7 mm.

Head.—Frons at level of antennae rather less than one-third width of head, black with black hairs, with which are intermixed on the lower part some dirty greyish scales. Antennae black, normal. Face black with thick black bristly pubescence and some greyish scales. Proboscis dark, mouth opening very narrowly pale. Back of head wholly black.

Thorax.—Blackish or blackish grey with very short black pubescence and with mainly black bristly hairs on anterior margin, around the wings, and about the shoulders and pleurae. A little grey hair intermixed adjacent to the head.

Abdomen.—Black, shortly black pubescent. A spot formed of silvery white scales towards the sides, on the hind borders of 1st and 2nd segments. A few intermediate scales suggest the possibility that in some specimens the whole hind border of at least the 2nd segment may be similarly scaled. The tip of the abdomen (two segments) is covered with very conspicuous, elongate, shining silvery white scales, which are sparser or nearly absent on the median line. Belly black, black pubescent; genitalia comparatively prominent, dull brown, consisting of a pair of large lamellae and other parts. Anterior corners of abdomen with copious greyish white hair; sides with black hair.

Legs.—Femora black, bearing a little sheen through the presence of very small greyish, closely impressed scales; tibiae and tarsi reddish brown. The usual pubescence.

Wings.—Clear, more than the basal half dark brown; the line of demarcation, which is emarginate at each of the veins it crosses, running from the tip of the 1st longitudinal vein to the middle (on wing margin) of the last posterior cell; thus passing distad of the base of the 3rd vein and the discal cell. Anal cell closed just before or actually on the wing margin. The endings of the 4th longitudinal vein are liable to variation, as in the type there is an extra cell formed below the discal cell (in one wing only), caused by the upper prong of the lower branch of the 4th vein curving towards and joining the lower prong, thus closing the 4th posterior cell. In the dark part of the wing are small lighter yellowish spaces irregularly disposed. Halteres black.

Described from three ♀ ♀ from Mahabaleshwar, Satara District, 4200 ft., 13—16-iv-12 [*Gravely*]. In the Indian Museum.

Argyramoeba gestroi, mihi, sp. nov.

(Pl. xxxvii, fig. 7).

♂. Bombay Presidency. Long. 6—8 mm.

Head.—Frons immediately above antennae one-third the width of the head, diminishing to half that width at vertex; covered

not very closely with elongate bright yellow hair-like scales, these being absent towards the vertex; also with stiff black hairs from vertex down to and below antennae. Antennae blackish grey, 3rd joint shortly conical, with rather long style, and the usual pencil of short hairs at tip. Underside of head black, some stiff black hairs and a small quantity of deeper yellow hair-like scales on each side below, but not contiguous to, base of antennae. Mouth opening small, black. Occiput rather widely produced behind eyes, black, with a patch of small yellow scales behind the middle of each eye, and a fringe of very thick short dark brown hair at hinder margin of occiput.

Thorax (somewhat denuded), black, with moderately thick bright yellow and whitish grey bristly scale-like hairs intermixed, around the shoulders, the sides and anterior margin of dorsum, the whitish grey scaly hairs in this latter part being more prominent. Surface of dorsum with very short recumbent bright yellow hair. The usual strong bristles towards the sides; a certain quantity of stiff black hairs on anterior and posterior parts of thorax, whilst the dorsum is lightly covered with softer sparser black pubescence. Scutellum blackish, sometimes dull reddish brown, with very short recumbent bright yellow hairs and soft black pubescence, and a row of about twelve long curved brownish yellow bristles on posterior margin.

Abdomen.—Blackish, with short bright yellow recumbent hairs and longer yellow bristly hairs more or less in a row towards the hind border of each segment. At each side at the base of the abdomen, a large bunch of milk-white long scale-like bristly hairs, the edges of the segments bearing rather thick yellow bristly hairs, with some long black similar hairs about the middle of the actual edges of each segment. The last three or four segments bear some large milk-white elongate scales and isolated similar scales are attached here and there towards the sides of the posterior margins of some of the other segments. Belly blackish, with rather thick yellow and white hairs on the posterior borders of all the segments. Genitalia rather large, concealed, brownish yellow, apparently consisting of a pair of plates.

Legs.—Coxae and femora dark brown; fore coxae, at least, with a little yellow hair and black bristles; tibiae and tarsi brownish yellow, both, with the femora also, with very short bristles.

Wings hyaline. Basal half of wing blackish brown, the limits of the colour forming an irregular diagonal line from the fork of the 2nd longitudinal vein (which is immediately above the anterior cross-vein) towards the anal margin of the wing (though the colour dies away at the border), and just enclosing the base of the discal cell and the posterior cross-vein. Costal and subcostal cells blackish brown to their tips; a semi-hyaline elongate spot in marginal cell immediately proximad of fork of 2nd longitudinal vein, another similar spot just below it, in first basal cell, in which same cell there is a third similar spot towards its base.

An irregularly-shaped semi-hyaline spot of some little size at upper outer angle of 2nd basal cell. Halteres yellowish with whitish clubs.

Described from several specimens in the Indian Museum from Medha, Yenna Valley, Satara District, 2200 ft., 17–23-iv-12 [*Gravely*].

N.B.—This species is very near *A.* ("*Anthrax*") *carbo*, Rond., but Prof. Gestro has very kindly compared a specimen with the type of Rondani's *carbo* in the Genoa Museum and pronounced it quite distinct, in spite of the similarity of characters contained in the description of that species. It is with pleasure therefore that I name the present species after Prof. Gestro.

Systoechus nivalis, mihi, sp. nov.

♂ Western Himalayas. Long. 10 mm.

Head.—Frons and face blackish grey, darker above, both thickly covered with long black bristly hairs. Antennae rather long, black, 1st and 3rd joints subequal, each about three times as long as the 2nd; 1st two joints cylindrical, 3rd much slenderer on apical half. Proboscis very long, labium reaching to the middle of the abdomen (actually bent backwards to this distance below the body in the type), the tip bifid; labrum shorter; palpi extremely short and slender but distinct. Underside of head dark grey, with whitish hair.

Thorax and *abdomen* closely covered with pale yellowish grey hairs, which is more yellowish on anterior part of former, and whitish on the pleurae and apical part of abdomen. Underside of thorax and abdomen with whitish hair.

Legs black; tibiae from the base, for the major part of their length, brownish yellow.

Wings pale grey, costal cell a little darker grey; base of wing a little yellowish.

Described from one ♂ from Airadeo, Kumaon District, 31-v-12 [*Imms*].

Type in Indian Museum, presented by Dr. Imms.

CYRTIDAE.

Pialea auripila, mihi, sp. nov.

♂ Darjiling District. Long. 12 mm.

Head.—About half the full height of the thorax. Eyes closely touching from the extremely small vertex to the base of the antennae, rather densely covered with long brownish yellow hair. Vertical triangle with three ocelli, slightly elevated. Occiput much flattened, with brownish yellow hairs. Proboscis very short, subconical, blackish, with some yellow hairs at tip; palpi not obvious. Frontal triangle black, very small, projecting over

basal joints of antennae; which are short, a little broader at tip, blackish, with black bristles; the 3rd joint of the shape of an elongated leaf, flattened, with obtuse tips, three times as long as the two basal joints together, yellowish, with dark brown lower margins.

Thorax.—High, robust, nearly quadrate; ground colour dark shining brown, closely covered with rather long thick bright golden yellow hair. Scutellum and metanotum concolorous in ground colour and hair with the dorsum. Sides of thorax dull yellowish, with long thick golden yellow hair. A little brownish hair is intermixed here and there with the yellow hair of the thorax.

Abdomen.—Robust, thickened, longer than thorax, oblongo-conical, tip jointed. Brownish yellow, 1st segment very short; the dorsum of each segment mainly occupied by a large semi-circular dark brown spot at the base, and extending in the middle of the segment to the hind margin, leaving the sides of the segments mainly yellow; 5th and 6th segments all black, the latter very small. Belly blackish brown, practically bare, emargination of segments narrowly yellow. The whole upper side of the abdomen with bright golden yellow hair, which is brownish towards the tip.

Legs.—Coxae half as long as femora, yellowish with pale yellow hairs. Tibiae (which are a little longer than the femora) and tarsi black, with blackish brown hair; under side of tibiae brownish yellow, and emarginations of the tarsal joints below, narrowly yellowish. Tibiae a little broadened at tips, where they end in a small blunt tooth-like projection on the outer side. Tarsi a little longer than tibiae, base of metatarsus (which is equal in length to the rest of the tarsus) pale yellow.

Wings.—Barely as long as abdomen, rather broad, tip rounded, pale grey, costal vein very distinct, ending at tip of lower branch of 3rd vein, immediately before the extreme tip of the wing. Auxiliary (subcostal) and 1st longitudinal veins thick, the former ending at about two-thirds of the wing, the latter a little beyond it, both nearly straight, distinctly separate (though approximate) from just beyond the humeral cross-vein. The 2nd and 3rd longitudinals with the anterior cross-vein have the appearance of springing from a common stem (or else the 3rd longitudinal and the anterior cross-vein spring simultaneously from the 2nd vein at a little beyond its base). The 2nd vein is nearly straight, but curved upward at its tip, to the costa. The 3rd vein is nearly straight, and in a straight line with the basal section (the "common stem") of the 2nd, and, at about two-thirds of its length, it forks widely; the upper branch (which becomes suddenly much thinner) being again forked before half its length, the two prongs ending in the costa distinctly before the wing tip. The lower branch is short and ends in the upper branch of the 4th vein. The anterior cross-vein is a little shorter than the basal section of the 2nd longitudinal vein (or the "common stem"). The 4th longitudinal vein forks just before the anterior cross vein, the upper branch nearly straight, turning up slightly on quitting the

discal cell, meeting the lower branch of the 3rd vein and just failing to reach the wing margin.

The lower branch of the 4th vein is also nearly straight, diverging slightly from the upper branch, so that the discal cell is broader distally than at its base (which is pointed); and it is forked at the middle of the discal cell, the upper prong turning upwards at an obtuse angle, forming the distal side of the discal cell; unless this section be regarded as a discal cross-vein whilst the lower prong is recurved upward at a sharp acute angle (where there is a very short appendix), meeting the angle of the upper prong which forms the distal lower corner of the discal cell.

The posterior cross-vein is very oblique, and placed at the forking of the lower branch of the 4th vein; and is about as long as the anterior cross-vein. The 5th longitudinal is thickened, rather suddenly bent at its junction with the posterior cross-vein; meeting the 6th a little before the wing border, with a trace of a very small appendix at their union; the 6th vein is slightly curved, the 7th is indistinct but present, short, not reaching the wing margin.

The first basal cell is rather large and broad, bounded distally by the anterior cross-vien, the 2nd basal cell is much longer and narrower, bounded distally by the posterior cross-vein; the discal cell elongate, about $3\frac{1}{2}$ times longer than its greatest breadth. The 1st submarginal cell nearly as long as the marginal, and narrowed at the wing margin, the 2nd submarg nal cell small, sub-conical, the 3rd submarginal cell of irregular shape, fairly large, bounded proximally by the two branches of the 3rd vein.

The 1st posterior cell is closed by the lower branch of the 3rd vein; the 2nd posterior cell is large, of irregular shape, nearly as large as the 3rd submarginal; the 3rd posterior cell is small, closed some distance before the border; the 4th posterior cell is large, much broader at the wing margin; the anal cell closed distinctly before the wing border; the axillary cell large, the 2nd axillary or spurious cell narrow

Alulae very small, squamae pale yellowish, the upper ones small, the lower ones very large and pubescent. Halteres yellowish.

Described from a single perfect ♂ in the Indian Museum from Kurseong (6000 ft.), 26-viii-09 [*D'Abreu*].

N.B.—There is little doubt that this species belongs to *Pialea*, although the venation offers a slight difference to Westwood's figure. That author also illustrates what appears to be three short basal joints to the antennae, and I can only suppose the first of these supposed joints is really the frontal triangle, which, projecting forwards, would from a side view appear much as an antennal joint. Westwood was however so careful and precise an observer that I may be mistaken in supposing him in error. The abdomen of *lomata*[1] is quite differently shaped to that of my species,

[1] Trans. Ent. Soc. Lond. (1876), pl. vi. *P. lomata*, Erichs (as *P. lutescens*, Westw. sp. nov.), the only other known species (from Brazil).

being much broader in the middle. The very peculiarly-shaped antennae however, the very short proboscis and head generally, in combination with a practically identical venation makes me refrain from setting up a new genus, and characters of structure are therefore included in the present description.

As regards the identity of the veins, it may be considered that my short lower branch of the 3rd vein is really an upper (erect if not slightly recurved) branch of the anterior branch of the 4th vein, but its thickness (corresponding with the major part of the 3rd vein) and its direction give every appearance of it belonging to the 3rd vein. The outer side of the discal cell may be regarded as the discal cross vein, and the small closed elongate cell below the discal cell, as being formed by the upper prong of the lower branch of the 4th vein turning down into the lower prong, thus closing what must be considered the 3rd posterior cell. As several of the veins fail to reach the wing margin it is clear that the 3rd submarginal, 2nd and 4th posterior and anal cells are all narrowly united at the wing margin.

Pterodontia dorsolineata, mihi, sp. nov.

(Pl. xxxvii, figs. 8, 9, 10).

♀. Upper Burma. Long. 7 mm.

Head.—Eyes very large, black, closely contiguous, rather thickly pubescent; occiput moderately puffed out, dark grey; vertex small, three dull red ocelli. Antennae yellowish, the three joints nearly equal in length, but the 3rd rather the longest, with three very long straight bristly hairs at tip. Proboscis distinct, but short, cylindrical, pale yellow.

Thorax.—Brownish yellow, the dorsum mainly occupied by a large black shining spot, which is continued forward as a stripe as far as the anterior margin. Sides of thorax below dorsum black, except the mesopleura, which is brownish yellow, with a square black spot in the middle. The whole thorax covered with brown or yellowish hair, concolorous with the colour of the surface. Scutellum brownish yellow, pubescent, a large basal nearly circular black spot.

Abdomen.—Brownish yellow, 1st segment all black; 2nd all black except towards the sides; 3rd, 4th and 5th with a black spot on each segment, widest in front, extending from fore to hind margin, except on the 5th segment, where the spot fails to reach the latter. These spots form, with the black colour of the 2nd segment, a conspicuous, clear-cut, dorsal band of irregular width. The 6th segment wholly black. On each of the 2nd, 3rd, 4th and 5th segments is a subquadrate black spot placed contiguous to the anterior and lateral margins. Belly yellowish, the segments faintly emarginate with brown, unmarked. The whole abdomen is brown or yellow pubescent, concolorous with the colour of the surface.

Legs.—Wholly yellowish, except the blackish coxae. The middle femora and tibiae are distinctly longer than the fore pair and the hind pair are proportionately longer than the middle pair. Tarsi long; the anterior ones about equal in length but the hind pair are distinctly longer, proportionately. The tibiae end in a well-developed (almost *Bibio*-like) blunt spine on the front side with a smaller one (easily seen on the hind legs only) on the inner side. The pulvilli, three in number, elongate, very greatly developed; the claws very long and strong, curved.

Wings.—Colourless, veins yellow, venation normal. Upper squamae quite small, nearly circular, lower pair very large, with a short yellow fringe, both practically colourless. Halteres black.

Described from a single perfect specimen in the Indian Museum from Maymyo (3800 ft.), near Mandalay, Upper Burma, taken in May 1910 by Mr. H. Andrewes.

Oncodes octomaculatus, mihi, sp. nov.

♂ Bombay Presidency. Long. 4 mm.

Head.—As usual, practically all eye, which is very dark reddish brown, bare, vertex and back of head blackish; two ocelli present. Antennae normal (apparently, as they are not properly visible), terminated by a long arista, which is slightly thickened at the base, and is thinnest in the middle, the tip provided with two minute stiff hairs.

Thorax.—Brownish yellow, with three dorsal, clear-cut black stripes of moderate and equal width, the median one attaining the anterior margin, the outer ones considerably foreshortened. Hinder part of dorsum all blackish, the colour extending to the scutellum; the metanotum brownish yellow. A short black streak (which in one specimen forms nearly a complete circle) on each side in front, below each shoulder, sometimes joined to the tips of the outer dorsal stripe. A small blackish mark at base of wing and the under side of the thorax mainly blackish. Thorax with a little light yellow pubescence generally distributed both on dorsum and sides.

Abdomen.—Mainly blackish; hind margins of segments narrowly pale yellowish white, the colour widest on 5th segment; 2nd segment with two large oval greyish white spots nearly filling the dorsum, but quite clear of the borders in all directions. The 3rd and 4th segments each with a pair of moderate-sized brownish yellow spots, one on each side of the middle; 5th segment with an elongated similarly coloured spot, clear of the borders in all directions, and nearly filling the segment; 6th segment much smaller, practically a replica of the 5th. Lateral margins of each segment occupied by a shining black elongate spot which does not overlap the pale hind margin. Belly pale yellowish; sometimes (in one example) a black spot towards the lateral margins as on dorsal surface. Abdomen with light yellowish pubescence.

Legs.—Brownish yellow; hind pair with coxae more or less at base, femora at base and with a broad subapical band, and tibiae and tarsi almost wholly brown or blackish.

Wings.—Yellowish grey; venation normal; squamae dirty grey, shortly and closely pubescent; and of the normal enormous size.

Described from two ♂♂ in the Indian Museum, from Igatpuri, Western Ghats, Bombay Presidency, 20-xi-09 [*Annandale.*]

Oncodes fuscus, mihi, sp. nov

? ♀ North India. Long. 3 mm.

Head.—Wholly blackish; eyes closely contiguous; vertex a little prominent; two ocelli; some black hair on the rather puffed-out occiput. Arista pale yellowish, nearly transparent, shaped as in *O. octomaculatus*, mihi.

Thorax.—Wholly dark shining brown, with greyish brown pubescence.

Abdomen.—Dark nut brown, with greyish-brown pubescence; the sides and belly a little darker; hind margins of segments with a trace of being narrowly black.

Legs.—Uniformly brownish yellow; coxae darker brown.

Wings.—Colourless, the stronger veins brownish yellow.

Described from a single perfect specimen in the Indian Museum from Sahelwa, Bahraich District, United Provinces, India, 2-iii-09.

N.B.—From the relatively smaller size of the head and the more puffed-out occiput I infer the present specimen is a ♀

SCENOPINIDAE.

Scenopinus fenestralis, L.

Several examples are in the Indian Museum of this common European species, taken at Kasauli, Naini Tal, and Simla.

They agree perfectly with European specimens except that the legs are brownish yellow rather than quite yellow.

NEMESTRINIDAE.

Atriadops nivea, mihi, sp. nov.

(Pl. xxxvii, fig. 11).

♂ Ceylon. Long. 12 mm.

Head.—Blackish grey; palpi thin, small, of same colour. Eyes brown, very large, contiguous for half the distance from the very small vertex, bearing the three small ocelli, to base of antennae, the first two joints of which are brown (third joint missing). Underside of head with some grey hair.

Thorax.—Thickly clothed with pale yellowish grey hair, which becomes white on the sides.

Abdomen.—Thickly clothed with pale yellowish white hair, which, seen from in front, appears silvery white. Belly dark grey, with grey hair.

Legs.—Dark reddish brown (tarsi missing).

Wings.—Clear, narrowly dark brown at base; also a narrow, irregular but clearly cut stripe across the middle from the costa nearly to the hind border; a second, wider, similar band towards tip, this band reaches the hind margin, spreading over both sides of the "diagonal" vein, and is connected along the costa with a small apical spot, and, less distinctly, proximally, with the median band; leaving a well-marked clear oblong spot between the 1st and 2nd longitudinal veins. A small brown spot on wing margin at tip of 5th longitudinal vein and a larger one at tip of 6th.

Described from one ♂, perfect as regards structure, except for the missing third antennal joint and all the tarsi, but otherwise not in very good condition, in my collection from Haldumulla, Ceylon, sent by Mr. E. E. Green. Evidently in life a most brilliant and conspicuous object.

MYDASIDAE.[1]

Leptomidas indianus, mihi, sp. nov.

id. id. Big. nom. nud.

(Pl. xxxvii, fig. 12).

♂ Assam. Long. 16. mm.

Head.—Much wider than thorax. Frons black, shining, with two narrow diagonal grooves on upper part; vertex consisting of two dark brown shining oval calli placed end to end, with a small recessed space between them. Face rather dark grey, smooth. Antennae missing, except the short, cylindrical, dark brown, slightly pubescent first joint, placed on a slight transverse ridge running from eye to eye. Eyes prominent, black, bare, shining. Proboscis and oral opening dark brown, shining, former very short. Back of head grey. The whole frons, face, back and underside of head with moderately thick (but not dense) grey hair.

Thorax.—Dorsum dull black, with a little dirty grey tomentum towards the sides and posterior part, and on the humeral calli, which bear a small bunch of concolorous hairs Similar hairs on posterior part of dorsum, in front of and below the wings. Sides of thorax more or less shining black, mostly bare. Prothorax and neck with silvery grey tomentum. Scutellum and metanotum blackish, with silvery grey tomentum.

Abdomen.—Cylindrical, slightly narrowed in middle, very dark blackish brown, shining; posterior borders of segments pale yellow, most distinct on 2nd to 5th segments, the bands on the 2nd, 3rd and 4th segments passing unbroken over the sides and across the belly; 4th segment light reddish brown, whole abdo-

[1] See end of this paper for *Cephalocera annulata*, sp. nov.

men minutely pubescent; 1st and 2nd segments with grey hair at sides. Genitalia small, partly withdrawn, dark shining brown; ultimate portion with a row of light brown scale-like spines on each side.

Legs.—Simple, no traces of bristles or longer hairs, except two apical bristles at the tips of the anterior tibiae (the hind tibiae and tarsi are missing); dark brown with minute grey pubescence, which is longer on the coxae, and short and thick on the tibiae; tarsal joints with black tips.

Wings.—Uniformly pale yellow, veins darker yellow, costa black, border of wing without a single hair; 3rd longitudinal vein with a minute appendix at base of upper fork. Abulae concolorous, bare; tegulae very small, bright yellow with a very narrow fringe. Halteres blackish, stem brown.

Described from a single ♂ in the Indian Museum from Sadiya, Assam.

N.B.—Bigot marked this specimen as a ♀ but, though the genital apparatus is much concealed, it looks to me more like that of a ♂

THEREVIDAE.

Phycus brunneus, W. (*Xylophagus*, id.)

(*X. canescens*, Walk.)

After a careful examination of a considerable number of specimens in the Indian Museum collection I can have no hesitation in pronouncing these two species as identical. Examples are present answering exactly to the descriptions of both authors, but certain characters are sufficiently variable to easily embrace both forms.

The whitish dorsal stripe on the thorax is marked by a very narrow still whiter median line (which is not always very distinct), and when this is distinct it fulfils Walker's description of "two hoary stripes side by side." The scutellum is nearly always reddish on the posterior margin to an obvious extent, but is sometimes practically all black. The colour of the abdominal bands varies from quite white to distinct yellow. The coxae and femora are always wholly yellow, sometimes lighter in colour, varying to deep chrome; and the *middle* tibiae are invariably much lighter than the others, sometimes as pale as the femora, and the fore and hind tibiae vary from brownish yellow to nearly black. The pubescence of the body is whiter and more conspicuous in the form Walker describes. The wing is often absolutely clear, but generally with either a pale brownish tinge towards the tips or with (more often in the ♂) the veins towards the tip distinctly brown suffused. All these characters vary irrespective of one another, which is convincing that the specimens all represent but a single species.

Localities.—Calcutta, 27-ii-07—12-iii-07 [*Annandale*]; Bhogaon, 19-iii-09, 18-x-07; Katihar, 26-iii-09 (both Purnea District, N. Bengal, both *Paiva*); Dhikala, Naini Tal District, 22-iv-08.

Two pairs taken *in cop.*; Tenmalai (Travancore, S. India), 22-xi-08, by Dr. Annandale, and also a pair taken by him in Calcutta, 27-ii-07, in the Indian Museum offices.

Phycus brunneus var. **brunnipes**, mihi, var. nov.

♀ Burma. Long. $5\frac{1}{2}$—$7\frac{1}{2}$ mm.

Three ♀ ♀ in the Indian Museum from Mandalay (12-iii-08) and Moulmein (28-ii-08) taken by Dr. Annandale appear to represent a variety, as they possess a broad brown ring on the posterior femora which leaves only a very narrow part yellow at both base and tip, the front femora being brownish yellow. The scutellum is wholly black, with a little greyish tomentum; the abdominal bands milk white, whilst the wings in one example are practically clear, in the second faintly brown tinged at tip, and in the third the veins are distinctly brown suffused towards the tips. The sex appears to be female.

Phycus nigripes, mihi, sp. nov.

? ♂ Darjiling District. Long. 10 mm.

Very near *brunneus* and *brunnipes* but differing as follows. Lower half of frons wholly shimmering silvery white, without the large shining jet black spot immediately above the antennae which is so conspicuous in both those forms; 3rd antennal joint cylindrical, much narrower than in the other species. Median dorsal stripe faint; abdominal bands very narrow, milk white, only the one on the 2nd segment really distinct. *Legs wholly black*, including coxae, which have a little bluish-white shimmer. Wings clear, with a distinct blackish suffusion towards tip, extending from the costa covering about the distal half of the 2nd longitudinal vein, reaching irregularly to the hind margin, just encroaching on the discal cell, and with a small irregular clear space in each of the two submarginal cells. Halteres knobs wholly black. From the narrow frons and the appearance of the abdomen I conclude the single specimen is a ♂. Kurseong, 27-iii-10 [Annandale]. Quite a distinct species.

Thereva flavolineata, mihi, sp. nov.

♂ Assam. Long. 10 mm.

Head.—Frons small, black, with black hairs, ocelli red. Eye facets larger in front. Face grey, with long stiff black hairs above the antennae and with long greyish hairs below them. Antennae 1st joint black (rest missing), oral orifice reddish yellow. Back of head grey, with greyish hairs; vertex and upper border of eyes with black hairs.

Thorax.—Dorsum dark brown, with two well-separated, moderately wide, chrome yellow stripes; dorsum covered with mixed brown and yellow hairs, the former mainly on the darker parts.

Sides of thorax blackish grey in front of wings, ashy grey on lower part with shaggy dirty white hair in front of and below shoulders, and in front of wing base. Some yellow hair above insertion of wings. A row of three bristles between the humerus and transverse suture, two supra alar bristles (others possibly broken off). Scutellum yellowish, with a brownish basal triangle, dorsum with brown and grey hairs, two preapical well-separated bristles.

Abdomen.—Ground colour blackish grey, posterior margins of segments very narrowly yellow, but more widely so on 3rd and 4th. The 1st segment wholly, 2nd, 3rd, and 4th wholly except posteriorly at the sides, 5th at base, black. Dorsum of abdomen with black hairs, which are thickest and longest on the black parts. Sides of abdomen with whitish yellow moderately long hair; posterior margins of segments with very short similarly coloured hairs. Belly bluish grey, posterior margins of segments more broadly yellow, especially on 3rd and 4th segments; the whole surface with soft white hairs. Genitalia distinct, shining brown, with brownish hair on upper, and with whitish hair on lower parts.

Legs (hind pair wanting).—Coxae and femora blackish grey, former with long greyish white hair in front; latter with grey hair below on proximal half, blacker hairs on distal half. Tibiae reddish yellow, blackish at tip, microscopically pubescent, with numerous rather short spines, tarsi darker.

Wings nearly clear, veins brownish yellow; tegulae dirty white; halteres brown and yellow.

Described from a unique in the Indian Museum from Shillong, in good condition except for the missing antennal joints and the hind legs.

LONCHOPTERIDAE.

Lonchoptera lutea, Panz.

Two specimens in the Indian Museum from Darjiling (7000 ft.) taken by me, 29-v-10, belong to this common European species. As *Cadrana*, Walk., referred originally to this family, was afterwards noted by its author as most probably belonging elsewhere; this is the first assured species from the East, of the Lonchopteridae.

PLATYPEZIDAE.

Platypeza orientalis, mihi, sp. nov.

id. id. Big. nom. nud.

♀ Assam. Long. barely 3 mm.

Very near *argyrogyna*, Meij. Frons and face mouse grey, a little whitish shimmer on face. Antennae, mouth and proboscis reddish yellow. Upper facets of eyes reddish brown, lower ones coffee brown.

Thorax light blue grey dusted, except on anterior part, which is moderately shining blackish, with a slight leaden reflection in

certain lights. The rows of minute dorso-central bristly hairs diverge until they meet two strong bristles, one placed towards each posterior corner of the dorsum. Three bristles on each side below the dorsum. Scutellum with the inner pair of bristles much longer than the outer pair.

Abdomen wholly rich dark reddish brown, unmarked, almost bare; stiff hairs along the sides, and no apical bristles. The 3rd and 4th joints of the hind tarsi are light brown, instead of wholly yellow as in *argyrogyna*, and the 2nd joint is more cut away at the base on the underside than in Meijere's species.

Stigmatic cell very pale yellow, but that is also the case to some extent in *argyrogyna*.

Described from a single ♀ in the Indian Museum from Sadiya.

Platypeza obscura, mihi, sp. nov.

♂ Darjiling District. Long. 2¼—3 mm.

Also considerably resembling *argyrogyna*. The eyes have the upper facets large and bright cherry red, the lower ones very much smaller, chocolate brown. Posterior margins of eyes with a distinct fringe of black hairs. Antennae bright yellow, arista distinctly thickened for some distance from base, bright yellow, the bristle black, mouth and palpi bright yellow.

Thorax.—Dorsum blackish grey in both sexes; without sign of any white shimmer. In addition to two or three bristles of different lengths close together, towards each side near hinder margin of dorsum there are three similar ones on the sides of the thorax, below the posterior calli. There are two on each humeral callus, and three stronger ones a little below them. Scutellar spines equal in size.

Abdomen blackish grey, without bands, and with seven or eight bristles at the tip. Legs rather paler than in *argyrogyna*; hind tarsi dull yellow, without the bright golden yellow pubescence of that species, posterior margins of segments with the black bristles more distinct, and continued further over the lateral edges. The first four hind tarsal segments more nearly equal in length than in the other species.

Described from a ♂ from Kurseong, 4—6-vii-08 [*Annandale*].

Notes on **Platypeza.**

Walker's *glaucescens*, ♂ ♀ was the first oriental species described (Proc. Linn. Soc. Lond., iv, 117), and this although very briefly diagnosed should be a good one. According to that author it is piceous black, with the disk of the thorax of a bluish cinereous tinge, the remainder of the thorax being presumably black as are also (presumably) the antennae.

The only other two species recorded are *P. wulpii*, Kert. (Termes. Fuzet., xxii, 179) and *P. argyrogyna*, Meij. (Tijd. Ent., 1, 257, ♂ ♀ , pl. vi, 23, wing).

It seems evident that all the species are more or less closely allied, and the meagre material upon which they have been set up makes great caution necessary in establishing new ones.

From a wing figure of *wulpii*, this species seems to differ from the other three before me (*glaucescens* I have not seen) by the 3rd longitudinal vein emerging abruptly from the 2nd at almost a right angle, forming almost another right angle on meeting the inner cross-vein. The antennae are blackish brown, whereas they are yellow in the other three species; in which moreover, the 3rd vein emerges gradually from the 2nd at a very acute angle, after which it continues without a further angle.

P. argyrogyna is the only species with pale borders to the abdominal segments; the hind tarsi also characterize this species by their brilliant golden-yellow pubescence.

P. orientalis is distinguished from all others by the rich dark reddish brown abdomen.

P. obscura is noteworthy from the blackish grey colour of the disc of the thorax, which is whitish grey shimmered in *argyrogyna*, *orientalis* and *glaucescens*. The ♂ has seven or eight stiff yellow bristles at the tip of the abdomen.

Platypeza argyrogyna, Meij.

As regards the mouth parts, these organs are very distinct in a ♀ specimen of *argyrogyna* in the Indian Museum. They consist of a pair of dark red, large, fleshy, hairy organs apparently forming the lower half of the proboscis, above which are a pair of dark reddish brown, flat, oval, similar organs, rather smaller, and placed close to the surface of the head, possibly capable of forming the upper part of the proboscis which might then be used for sucking. The palpi are small, slender, slightly enlarged at the end, bright reddish yellow, bare.

The Indian Museum has this species from Sukna (500 ft.), E. Himalayas, 1-vii-08; Calcutta, 18-vii-08; Bangalore, S. India (3000 ft.), 16-x-10 [all *Annandale*] and a ♂ and ♀ from Semarang, Java, 1-06; Peradeniya, Ceylon, 14-vii-10 [*Green*].

N.B.—A headless specimen (presumably typical) in that collection from Sadiya, Assam, is labelled *P. cothurnata*, Big., sp. nov. The name is probably a *nomen nudum* and the specimen cannot be differentiated from *argyrogyna*.

PIPUNCULIDAE.

In introducing several new species of this family, it seems advisable to reproduce Prof. Kertesz's useful table of oriental species of *Pipunculus*, and incorporate my new ones in their respective positions. The table must, however, be used with caution, as only one, or at most two, of the species are known to me other than my own. The expression "stigma, present" or "absent," is adopted in preference to costal border, "coloured" or "uncoloured."

Table of oriental species of **Pipunculus.**

A	Stigma present: i.e., 3rd costal segment more or less distinctly darkened.	
B	Anterior cross-vein distinctly before middle of discal cell.	
C	The 4th longitudinal vein with a distinct appendix	*appendiculatus*, sp. nov.
CC	The 4th longitudinal vein without appendix.	
D	Claws and pulvilli exceptionally developed ..	*hepaticolor*, Beck.
DD	Claws, normal.	
E	Wings distinctly brownish.	
F	3rd antennal joint exceptionally small. .	*fumipennis*, Kert.
FF	3rd antennal joint with a blunt tip.	*sauteri*, Kert.
EE	Wings clear or nearly so.	
G	Femora in greater part black, always darker than remainder of legs.	
H	Abdomen all black, or at most, a little greyish, never marked with yellow.	
I	Femora black to the extreme tips.	*beckeri*, Kert.
II	Femora with tips always distinctly broadly or narrowly pale.	
J	Tibiae all yellow .	*biroi*, Kert.
JJ	Tibiae with apical half black .	*campestris*, Latr. var. nov. *himalayensis.*
HH	Abdomen with basal half yellow, the colour continued over the sides and belly .. .	*flavocinctus*, sp. nov.
GG	Femora not darker than remainder of legs, uniformly yellow.	
K	Abdomen with 3rd, 4th and 5th segments yellow; 3rd antennal joint with long black apical bristle	*filicornis*, sp. nov.
KK	Abdomen without yellow marks, and antennae without apical bristle.	
L	Antennae yellow, and cell comparatively short . ..	*cinereo-aeneus*, sp. nov.
LL	Antennae black, anal cell reaching nearly to the wing margin. .	*nigro-nitens*, sp. nov.
BB	Anterior cross-vein distinctly beyond middle of discal cell.	*brevis*, sp. nov.
AA	Stigma absent; i.e., 3rd costal segment clear, or practically so; wing entirely clear.	

M	Anterior cross-vein practically at, or distinctly beyond, middle of discal cell.	
N	Abdomen distinctly pubescent	*aeneiventris*, Kert.
NN	Abdomen bare	
O	4th longitudinal vein forming towards its tip a distinct angle, which bears a long appendix .	*amboinalis*, Walk.
OO	4th longitudinal vein without angle or appendix.	
P	Abdomen with a greenish tint.	
Q	Ambient vein absent; femora blackish brown to extreme tips.	*singalensis*, Kert.
QQ	Ambient vein distinctly present, microscopically spinose; femora tips very broadly pale	*limpidipennis*, sp. nov.
PP	Abdomen shining bluish black	*nitens*, sp. nov.
MM	Anterior cross-vein very distinctly before middle of discal cell.	
R	Anterior cross-vein though distinctly before middle of discal cell, yet not remarkably so, i.e., situated in the second fourth of its length.	
S	Abdomen light grey, covered with very distinct pubescence; pulvilli and claws remarkably developed	*mirabilis*, sp. nov.
SS	Abdomen black or blackish, bare, pulvilli and claws normal.	
T	Hind femora without long hair on under side .	*javanensis*, Meij.
TT	Hind femora with long yellow hair below, along their entire length	*ciliatus*, Meij.
RR	Anterior cross-vein remarkably near base of discal cell.	
U	Anterior cross-vein situated at one-sixth of the discal cell; femora blackish brown to extreme tips.	*angustipennis*, Kert.
UU	Anterior cross-vein placed almost exactly at one-fourth of the discal cell; femora tips distinctly and moderately broadly pale	*quartarius*, sp. nov.

N.B.—Possibly *limpidipennis* and *nitens* are the same species.

Pipunculus appendiculatus, mihi, sp. nov.

♀ Assam. Long. 3 mm. (without head, or ovipositor).

Head.—(Wanting.)

Thorax.—Bluish grey with light brown reflections, but with no distinct marks; humeri distinct, rather large, brownish. Sides of thorax dark bluish grey, with whitish reflections seen from behind. Scutellum bluish grey, tinged with pale brown; metanotum bluish grey with whitish reflections.

Abdomen.—Bluish ash-grey; rather more than the basal half of each segment rich velvet black, extended hindwards in the centre until it nearly meets the next segment; these black bands extending over the sides and right across the ventral surface so that the belly is practically a replica of the dorsum. Last segment (6th) all bluish grey, bent under the belly and carrying a moderately long reddish brown shining process bearing a bunch of hairs near the tip.

Legs.—Dark blackish brown, extreme base and tips of femora pale yellowish brown; tibiae blackish brown, with bases rather broadly, and tips rather narrowly yellowish brown; tarsi dark brown above, light brown below; femora with silvery white shimmer, when seen in certain lights. Legs microscopically pubescent, hairy but without distinct bristles.

Wings.—Distinctly pale brown. Second costal segment quite clear and transparent; third twice as long as the fourth, the stigma distinct, but ill-defined on inner side. The 4th longitudinal vein curved outwards in a bow after quitting the posterior cross-vein and possessing an appendix, commencing as far from the junction of the 4th longitudinal with the posterior cross-vein as the length of that cross-vein, this appendix extends more than half way to the wing border. Anterior cross-vein exactly over centre of discal cell. Basal part of wing rather clear but extreme base pale yellowish. Halteres brownish yellow.

Described from a single ♀ in the Indian Museum collection from Margherita, in perfect condition, except that the head is missing. I would not have described as new a decapitated specimen, but for the strikingly distinctive characters of this species, in which the furcation of the 4th longitudinal vein makes it impossible for it to be confounded with any other oriental species except *amboinalis*, Walk.

N.B.—This species must be near *furcatus*, Egg., occurring in Europe but that species has all yellowish tibiae and tarsi.

Walker's species *amboinalis* would be almost unrecognizable from the brief description, except for the appendiculation of the "praebrachial" vein (4th longitudinal), a character I do not know of as occurring in any other eastern species but these two.

Herr Kertesz does not mention this character in his notes on *amboinalis* (Ann. Mus. Hung., I, 470), founded on an examination of Walker's type by Miss Ricardo, but I presume he would have called attention to the fact had Walker's description been in error on the point.

My *appendiculatus* is therefore distinguished by the mainly black legs and the slightly different (but, I should think, consistent) colouration of the abdomen. The latter might equally well

be described as black, with grey posterior borders (interrupted in the middle) to the segments, this colour being continued over the sides and across the belly, and which colour is, moreover, of uniform width at all times except being rather wider on the 1st segment.

Pipunculus biroi, Kert.

Specimens of this species are in the Indian Museum from Rangoon, taken by me 23-xii-04 to 3-i-05; Calcutta, where it appears to be not uncommon from at least the middle of August to the end of November; Puri (Orissa Coast), 18—19-i-08; and Port Canning, near Calcutta, 6-xii-07; Bhagalpur (Bengal), on sandy banks of R. Ganges, 16-ii-10 [*Chaudhuri*]; Paresnath, Chota Nagpur (4,500 ft.), 11-iv-09 [*Annandale*]. I also took a few at Darjiling, 23-ix-08 to 2-x-08, on the hillsides in grass and weeds.

Pipunculus campestris, Latr. **himalayensis**, mihi, var. nov.

♂ Darjiling. Long. 2¾ mm.

Head.—Frons blackish grey, with a little grey shimmer above the antennae. Vertex shining black. Antennae black, somewhat short, 3rd joint with a grey shimmer; arista only twice as long as the antennae. Eyes contiguous for a considerable distance, facets almost uniform in size. Back of head dark grey.

Thorax.—Blackish, sides lighter. Scutellum shining blackish, metanotum with silvery grey tinge.

Abdomen.—Blackish; the segments greyish towards the sides, the colour with a tendency to extend a little along the margins of the segments. Hypopygium black, short, wide, with distinct depression in centre.

Legs.—Black, dull; femora brownish yellow at base and tip, with some traces of a greyish shimmer. Basal half of tibiae and under side of part of the tarsi brownish yellow.

Wings.—Clear; stigma pale brown; 3rd costal segment a little longer than the 4th; anterior cross vein at about one-third of the discal cell; 4th longitudinal vein slightly curved after quitting the posterior cross vein. Halteres black.

Described from two males in the Indian Museum, taken by me at Darjiling, 29-v-10 (type) and 29-ix-08.

N.B.—These two specimens vary so little from typical *campestris*, which is one of the commonest European species, possessing a wide distribution and therefore likely to occur in the Himalayas, that it seems impossible to regard them as other than a variety. The length of the arista being only twice instead of thrice the length of the antenna, the absence of any shining black segment in the abdomen, and the almost bare thorax are the only differences.

The frons is about one-tenth the width of the head (measured immediately above the antennae), as is shown in Verrall's figure,[1]

[1] British Flies, viii, 99.

and as is the case in European specimens before me. Mr. Verrall, however, says in the text that the frons is only one-twentieth the width of the head.

This species in typically marked specimens is easily distinguished from *biroi* by the apical black half of the tibiae, and from my *cinereo-aenous* by its black antennae and halteres, and the mainly black legs. However, three specimens in the Indian Museum appear to show an intermediate form, which may possibly be a third species. The antennae are white tipped, the body colour dark grey, the abdomen quite similar to that of *biroi* but the tibiae show the black apical half in two specimens and distinct traces of them in the third, which would associate the form with my new variety *himalayensis*. The greyish thorax and abdomen and distinctly whitish-tipped antennae seem to prevent them being any form of *campestris*. Moreover in one of the two males (the third, the Sahelwa specimen, is a ♀), the tip of the antennae is produced into a long black bristle as in my new species *filicornis*. This specimen (the one from Theog) will be the type should the form be specific, as the bristle is absent in the second ♂ although the specimen is in good condition. They show the following data: Simla, 9-v-09; Theog, Simla Hills, 13-v-09 [both *Annandale*]; Sahelwa, Bahraich District, United Provinces, India, 11-iii-09.

Pipunculus flevocinctus, mihi, sp. nov.

♂ Darjiling District. Long. 2½ mm.

Head.—Eyes contiguous for a considerable distance. Back of head, frons and face wholly black. Antennae with 1st and 2nd joints black, 3rd brownish yellow, whitish towards tip when seen from above. Proboscis a little brownish yellow.

Thorax.—Black, mainly dull, bare, but dorsum a little shining. Sides inclined towards blackish grey. Scutellum and metanotum apparently concolorous.

Abdomen.—Black, barely shining; posterior margin of 1st segment, the whole of the 2nd, 3rd and 4th, and towards the sides of the 5th segment brownish yellow, the colour extending over the sides across the belly. Genitalia black.

Legs.—Yellow. Coxae (except tips); femora (except broadly at base and narrowly at tips) black.

Wings.—Clear, 3rd costal segment brown, the colour filling the apical three-fourths; 3rd segment about equal to the 4th in length, and much shorter than the 2nd. Anterior cross vein just before middle of discal cell; 4th longitudinal vein gently angled after quitting discal cell. Anal cell ending at a moderate distance before the margin. Halteres pale yellow.

Described from a type specimen in the Indian Museum taken by Dr. Annandale at Kurseong, 28-vi-10.

N.B.—A second specimen in the same collection appears to be a variety of this species, the differences consisting in the antennae

being all black; a greater contrast between the scutellum and metanotum, the former being shining black, bare, the latter distinctly grey; and the presence of a wide dorsal black band, connecting the basal and apical black parts, although the yellow colour extends over the sides and across the belly, as in the type. The legs and wings are identical, except that the third costal segment is relatively a little longer. Size identical. One specimen, a male, taken by Mr. C. W Beebe at Tonglu, Darjiling District (10,000 ft.), 22-iv-10.

Pipunculus filicornis, mihi, sp. nov.

♀ Darjiling District. Long. 4 mm.

Head.—Frons and face very narrow, still narrower at the level of the antennae, almost wholly with a greyish white reflection. Antennae bright yellow, 3rd joint very elongate, pointed, and the tip bearing a *long straight black bristle.* Arista thickened considerably on the yellow base, thence black and long, thus giving the appearance of the antennae bearing two aristas, one pointing upwards and one downwards. Facets of eyes immediately in front very greatly enlarged. Back of head very slightly puffed out, grey with a narrow fringe of pale hair.

Thorax.—Dark aenous black, moderately shining with microscopic pale pubescence; humeral calli yellowish grey dusted, rather more prominent than usual in this genus. Sides dirty yellowish, scutellum livid yellow, microscopically grey dusted; metanotum dark grey.

Abdomen.—Pale yellow, microscopically pale haired with a black rather wide dorsal stripe on the 2nd, 3rd and 4th segments, which has a tendency to form a narrow transverse line at the bases of these segments; 5th and 6th segments wholly black, posterior corners of former slightly yellowish. Belly dirty yellow, blackish towards tip. Genitalia large, blackish globular, shining, with a long, shining, brown ovipositor bent under the belly.

Legs.—Practically entirely yellow, coxae brownish on basal half; tibiae and tarsi microscopically beset with black bristles, on the former longitudinally, on the latter transversely. Claws long, pale yellow, black tipped; pulvilli apparently large, strong and reddish yellow. (The apical parts of most of the legs are damaged).

Wings.—Clear. Stigma pale yellow, stigmatic segment barely longer than 4th costal segment. Anterior cross-vein at two-fifth of the discal cell. The 4th longitudinal well curved.

Described from one specimen in the Indian Museum taken by Dr. Annandale, 5-vii-08, at Kurseong (5000 feet).

N.B.—A striking and abnormal species, the yellow abdomen and filiform 3rd antennal joint characterizing it sufficiently to ensure immediate recognition. The feet seem to be peculiarly constructed, but are too damaged to define accurately, the specimen being otherwise in good condition.

Pipunculus cinereo-aeneus, mihi, sp. nov.

♀ Lower Burma. Long. 4 mm. (without ovipositor).

Head.—Front narrowed towards vertex until the eyes nearly touch. Frons and face silver grey seen from above; antennae bright yellow; eye facets distinctly larger in the vicinity of the facial groove. Back of head too damaged to describe.

Thorax (somewhat damaged).—Blackish grey, sides light ash-grey with concolorous pleurae and metanotum. Scutellum aenous brown with some pale hairs on posterior border.

Abdomen.—Blackish grey; the posterior borders of the segments rather narrowly ash-grey, the colour widened at the sides and carried over to the underside; 6th segment bearing a large conical ash-grey process, ferruginous brown at tip, and from which projects a brown, pointed, shining, horny ovipositor. This appendage is curled under the belly and its tip reaches the middle of the 3rd segment.

Legs.—Coxae brown, legs entirely brownish yellow; upper side of tarsi tips blackish.

Wings.—Almost clear, stigma pale brown; internal transverse vein placed at one-third distance from the base of the discal cell; 4th longitudinal vein running almost straight to the wing tip after leaving the posterior cross-vein. Halteres pale yellow.

Described from one ♀ in the Indian Museum collection from Mergui, in fairly good condition. The species is quite distinct.

Pipunculus nigronitens, mihi, sp. nov.

♂ Darjiling. Long. 3 mm.

Head.—Vertex shining black, slightly elongated. Frons and face blackish, but if viewed from above the former appears greyish with a slight bluish tinge, and the latter nearly snow white. Antennae wholly black, but seen from above the tip of the 2nd joint and the apical part of the 3rd is more or less grey dusted. Arista black, thickened at base. Proboscis light brown.

Thorax and scutellum, shining black, bare. Sides grey dusted, the colour carried across the metanotum. Humeri brownish yellow.

Abdomen.—Shining black, 1st segment conspicuously grey dusted. Genitalia black, shining, belly black but less shining than the dorsum.

Legs.—Nearly wholly yellow. Coxae black, tarsi tips blackish brown.

Wings.—Clear. Third costal segment wholly brownish yellow; longer than 4th segment. Anterior cross-vein placed just before one-third of the discal cell. The 4th longitudinal vein forming a wide curve before the posterior cross-vein, and distinctly bisinuate beyond. The first posterior cell rather narrowly open.

Halteres dirty yellow, the clubs blackish.

Described from a single ♂ taken by me at Darjiling, 29-v-10. In the Indian Museum.

Pipunculus brevis, mihi, sp. nov.

♀ Lower Burma. Long. 3½ mm. (without ovipositor).

Head.—Frons moderately wide, of uniform width up to the vertex, blackish seen from in front, silver grey seen from above; face similar; antennae brown, arista black. Back of head blackish grey, only moderately produced hindwards.

Thorax.—Almost uniformly blackish grey, ash-grey at sides, humeri small, brown. Scutellum dark brown, bare, except for a few hairs on posterior border; metanotum ash-grey.

Abdomen.—Blackish grey, shortened; sides of segments, and almost the whole of segments 1 and 2 grey tinged, which colour goes over the sides to the belly. The abdomen appears discoloured, and probably in its natural state it is wholly dark grey. The last segment bears a long shining brown horny process which reaches under the belly almost to the base of the abdomen. This process is turned slightly to the left.

Legs.—Blackish brown; knees and base of tibiae light yellowish brown.

Wings.—Very pale grey, nearly clear; stigma brown; anterior cross-vein placed rather after two-thirds of the distance from base of discal cell, but distinctly before its middle; 4th costal segment very shortened, not half as long as 3rd; 3rd and 4th together about equal to the 5th. The 4th longitudinal vein, after quitting the posterior cross-vein, takes an outward curve before proceeding to the wing border. Halteres brown.

Described from 1 ♀ in the Indian Museum collection from Mergui, in good condition, except that, being gummed on cork, the underside cannot be properly examined.

Pipunculus limpidipennis, mihi, sp. nov.

♂ ♀ India. Long. 2 mm., very nearly.

Head.—Frons of uniform width, greyish, with a silvery white shimmer seen from above; face below antennae similar; antennae blackish, 3rd joint white with silver shimmer; arista black; eyes (in ♀) with the facets much larger on each side of the frontal space than those behind. Back of head prominent, grey with a whitish shimmer.

Thorax.—Dark aenous-grey, moderately shining, bare, sides and humeri a little lighter; scutellum aenous black, bare, shining.

Abdomen.—Concolorous, with a slight olive green tint, submetallic, bare, unmarked. Belly unicolorous. The last abdominal segment bears in the ♂ a knob-like process, and in the ♀ a long horny process bent under the belly.

Legs.—Femora blackish, base and tips yellowish brown, tibiae with a broad blackish ring, occupying the middle third or more, tarsi yellowish brown.

Wings quite clear; 4th longitudinal vein, after quitting the posterior cross-vein, runs almost straight to the wing border, with-

out being bent outwards in a bow. Anterior cross-vein almost exactly over centre of discal cell, no distinct stigma, but the costal vein is a little thickened along the 3rd and 4th segments; 3rd and 4th costal segments of about equal length, and taken together are only half the length of the 5th segment; wings barely pale yellowish at base. Halteres pale livid yellow.

Described from 5 ♂ ♂ and 1 ♀ in good condition in the Indian Museum collection.

Localities.—Calcutta, 4-ix to 20-xi-07 and 22-v-09; Puri (Orissa Coast, 20-1-08; Benikhola (Ind. frontier of Nepal), 7-ii-08; Igatpuri, Western Ghats, Bombay, 20-xi-09 [*Annandale*].

Pipunculus nitens, mihi, sp. nov.

♂ South India. Long. 2 mm.

Head.—Frons and face shining silvery white; eyes contiguous for some distance. Antennae black, 3rd joint, except at the base, reddish yellow. Back of head blackish grey, with silver shimmer at least round the edge.

Thorax.—Blackish, with a slight bluish tint, moderately shining. Sides dark bluish grey with a little whitish shimmer in certain lights. Thorax practically bare. Scutellum concolorous, with a few hairs; metanotum with a greyish white shimmer.

Abdomen.—Shining bluish black, with some short whitish hairs; 1st segment pale bluish grey. Genitalia rather small, clubbed, concolorous.

Legs.—Femora black except at tips, with a little grey shimmer. Rest of legs yellow; the tibiae with a broad band (apparently not always complete) occupying nearly their entire length; tarsi tips blackish on upper side.

Wings.—Clear, 3rd costal segment very short, 4th very slightly yellowish, practically clear. Anterior cross-vein exactly at middle of discal cell (in one specimen) or immediately before it (in the 2nd specimen).

Described from two specimens in the Indian Museum in good condition from Maddathoray, at the western base of the Western Ghats, Travancore State, South India, 19-xi-08, taken by Dr. Annandale.

N.B.—I suspect this and *limpidipennis* may represent but a single species, as some specimens show neither distinct greenish or bluish tinges, being moderately shining blackish.

Pipunculus mirabilis, mihi, sp. nov.

♀ Assam. Long. 4 mm. (without ovipositor).

Head.—Front rather narrower at vertex, which is black. Frons greyish white, face below antennae similar, and with a silvery white sheen seen from above; mouth light brown; eyes light brown; the facets in the vicinity of the antennae much larger. Antennae (missing).

Thorax.—Dorsum blackish aenous, humeri yellowish brown; edge of dorsum and sides of thorax greyish; a broad stripe of grey with silver reflections extends across the metanotum and embraces the metapleura on each side. Scutellum light yellowish brown; the posterior part and margin with pale long pubescence.

Abdomen.—Ash-grey; on the 2nd segment is a large brown round spot in the middle; on the 3rd, 4th and 5th are back basal bands, very narrow in the centre, and much widened at the sides of the segments. On the 6th the black band is of uniform width and very narrow. This segment bears a long ferruginous brown process bent under the belly, with hairs towards its tip. The whole abdomen is covered with rather long (but not dense) pale hairs, mixed with a number of black ones, these latter having no relationship to the black parts in the ground colour.

Legs.—Coxae brown, with a little silvery reflection in certain lights. Remainder of legs bright lemon yellow, practically bare, but the tibiae have several rows of almost microscopic spines towards the apices; tips of tarsi dark brown; claws and pulvilli much enlarged as is mentioned by Herr Becker in his species *hepaticolor*.

Wings.—Quite clear, extreme bare, very pale yellow. Anterior cross-vein placed at two-fifths from the base of the discal cell; 4th longitudinal vein taking an outward curve on quitting the posterior cross-vein; 3rd costal segment twice as long as 4th and about equal in length to the 5th. Halteres pale yellow.

Described from a perfect ♀ from Margherita, Assam, in the Indian Museum collection. A very striking and beautiful species and apparently closely allied to Becker's *hepaticolor*, from which I differentiate it as follows: there is no darkening of the stigma; the thoracic dorsum is blackish not greyish, the abdominal marks are somewhat different, the femora have no black streaks above; and the anterior cross-vein is placed distinctly before the centre of the discal cell.

Pipunculus quartarius, mihi, sp. nov.

♀ Calcutta. Long. 1¾ mm.

Head.—Frons shining black, wide, lower part with white shimmer seen from below. Face with white shimmer. Proboscis brownish yellow. Eyes with the facets contiguous to the region of the antennae, very much enlarged. Antennae blackish, 3rd joint yellowish white with long white style, arista very long, black. Back of head cinereous grey, with a tendency to whitish on post-ocular orbits, bearing a slight fringe of pale hairs.

Thorax.—Dark cinereous grey, slightly shining. Sides of thorax a little lighter. Scutellum concolorous with dorsum; metanotum light grey.

Abdomen.—Blackish grey, practically bare, but microscopically pubescent, slightly shining, 1st segment grey, 5th segment widest. Ovipositor of moderate length, shining brown, a little hair at its base. Belly cinereous grey, unmarked.

Legs.—Mainly black; tips of fore coxae, tips of all femora rather broadly, basal third and tips of tibiae, and apical part of all tarsi, black. Femora not shining and absolutely bare.

Wings.—Clear. Stigma absent but the 3rd costal space much reduced, and the veins limiting it somewhat thickened. Anterior cross-vein placed slightly before one-fourth of the discal cell. The 4th longitudinal runs nearly straight from its junction with the posterior cross-vein up to the 3rd vein which it almost meets rather sooner than usual, thence running parallel with it to the border for a longer distance than in most species. Halteres pale brownish yellow.

Described from a unique ♀ in perfect preservation in the Indian Museum collection, taken in Calcutta, 13-xii-07.

N.B.—A second specimen in the same collection is probably this species, varying only in being larger, the back of the head shining black instead of greyish, and the abdomen more blackish and more shining. Taken at Simla, 7-v-10 [*Annandale*].

Verrallia argentisegmentata, mihi, sp. nov.

♂ Lower Burma. Long. 3½ mm.

Head.—Frons black, face grey with silvery white shimmer seen from above. Antennae yellow, 3rd joint rounded at tip, arista black; 2nd joint bristly above and below. Eyes contiguous on vertex, small facets, uniform in size. Mouth reddish.

Thorax.—Blackish, moderately shining. Scutellum aenous black, metanotum grey. Sides of thorax dark grey.

Abdomen.—Velvet black; posterior borders of segments with a band (of varying width) of shining bright silvery leaden colour. Genitalia large and thick, light tawny-brown, shining and extended below the belly for some distance, the tip being pointed and bisected.

Legs.—Except the brown coxae, uniformly yellow; quite bare except for some minute spines on the tibiae; tarsi brown on upper side.

Wings.—Pale grey, iridescent; 4th longitudinal vein, after quitting the posterior cross-vein, running nearly straight to the wing border; anterior cross-vein placed at one-third of the discal cell. Stigma yellowish brown; 3rd costal segment nearly twice the length of the 4th, but is rather difficult to judge; 3rd and 4th together rather longer than the 5th. Halteres pale yellow.

Described from one ♂ from Mergui and one ♂ (*type*) taken by Dr. Annandale in jungle at the base of the Dawna Hills, 1-iii-08, both specimens in the Indian Museum collection in fairly good condition.

N.B.—The blunted 3rd antennal joint and non-puffed-out head behind makes me place this species in *Verrallia*, but I do not perceive the distinct ocellar bristles which should also character-

ize this genus. One of the specimens (from Mergui) is gummed on cork, the vertex being almost invisible, and the bristles are not present in the second example, but may have been accidentally broken off. The head of the Dawna Hills specimen is however otherwise in perfect condition.

Verrallia plumbella, mihi, sp. nov.

♀ Darjiling District. Long. 3¼ mm.

Head.—Vertex black; fronto-facial groove of uniform width, with white shimmer. Proboscis yellow. Facets in front considerably larger than the others. Back of head only just projecting beyond the post-ocular orbit, grey with a whitish reflection. Antennae (missing).

Thorax and scutellum black, moderately shining; sides and metanotum apparently concolorous. Scutellum with a row of minute hairs on posterior border.

Abdomen.—Shining lead colour, with a few microscopic hairs; the base of each segment, narrowly in the centre and more broadly towards the sides, dead jet black; 6th segment the longest, bearing a thick blackish grey pointed genital organ, terminating in a long shiny brown ovipositor.

Legs.—(Middle pair missing). Black, barely shining; tips of femora rather narrowly, and base of tibiae broadly, reddish yellow. Base of tarsi yellowish brown, tips black, with a few hairs; claws small, pulvilli distinct and white. Legs microscopically pubescent and the fore femora with a few very small bristles below, near the tip.

Wings.—Quite clear. Stigma pale brownish yellow, stigmatic segment barely longer than following segment, anterior cross-vein just before middle of discal cell; 4th longitudinal moderately sinuous after quitting the posterior cross-vein.

Described from a single specimen in the Indian Museum taken by Dr. Annandale at Kurseong (5000 ft.), 5-vii-08.

Herr Kertesz has removed both of Thomson's species, *armatus* and *abscissus*, to *Verrallia* (on Becker's authority), in Ann. Mus. Hung., 1, 465: yet Thomson in his lengthy description of *armatus* distinctly says of the 3rd antennal joint "apice nostrato acuminato" but does not mention any pilosity of the 2nd joint. He mentions the very narrow postocular orbit of *armatus*. My present species appears to be distinct from both of Thomson's; *armatus* having very short brown antennae, rather smoky anterior portion of the wings and mainly black femora, this last character also being present in *abscissus* also.

Chalarus spurius, Fln.

This rather uncommon European species was found by me at Darjiling, 29-v-10, represented by a perfect ♂, the specimen being now in the Indian Museum.

It agrees perfectly with Mr. Verrall's description, with the sole exception that the wings might be more suitably termed rather dark greyish than blackish.

CONOPIDAE.

Conops mundus, mihi, sp. nov.

♂ Orissa. Long. 12 mm.

Head.—Pale lemon yellow; frons nearly half the width of the head. Vertex with a triangular subtransparent shining piece. Cheeks with shining silvery white reflections, when seen from below and in front; cheeks seen from behind, with a slight but distinct rufous tint. Back of head brown with a brilliant golden yellow stripe behind the middle of the eyes. Antennae bright ferruginous, apical half of 3rd joint black above; 2nd joint twice as long as 3rd, very minutely black spinulose on upper side. Proboscis brownish yellow, tip black, extending forwards to about the middle of the 2nd antennal joint.

Thorax.—Vandyke brown, with (viewed from behind) the humeral calli and immediately behind them, and also towards hind margin of dorsum golden yellow dusted. Viewed from in front, the whole dorsum is seen covered with golden yellow dust, except a short median broad stripe from the anterior margin and just in front of the wing roots. Sides of thorax rather lighter brown, almost ferruginous, and more shining, with a silvery stripe from the edge of the dorsum, in front of the wings, to the hinder margin of the sternopleura. The whole dorsum beset with numerous minute black bristles. Scutellum vandyke brown, metanotum and metapleura rich golden yellow dusted.

Abdomen.—Bright ferruginous brown; slightly narrowed on 2nd segment, hind margins of first two segments with a little white dust, more obvious towards the sides; 3rd segment gold dusted at sides of hind margin; 4th and 5th segments with gold dust on hind margins, and 6th and 7th segments and genital organs wholly gold dusted. Pubescence of abdomen very short and inconspicuous.

Legs.—Coxae and femora bright ferruginous brown, the former with silvery white reflections. Tibiae lighter in colour, the basal part whitish, all the tibiae with a slight thickening about the middle followed by a slight constriction. All the tibiae in certain lights appear glistening yellow. Tarsi concolorous, with a few black hairs at sides of each segment; pulvilli pale brownish yellow.

Wings.—Clear, costal cell pale dirty yellow; a black, rather well-defined streak on anterior border extending posteriorly as far as the 3rd longitudinal vein, and distally to about one-third of the 1st posterior cell. Halteres pale yellow.

Described from one ♂ in the Indian Museum taken by Mr. Kemp at Puri, Orissa Coast, 6—13-xi-10.

Physocephala albofasciata, mihi, sp. nov.

(Pl. xxxvii, figs. 13, 14.)

♂ ♀ Bombay Presidency. Long. 10—12 mm.

Head and front yellow, epistome paler and more livid; vertex with a brown V-shaped mark; proboscis red, extreme tip black. Sides of front, seen from above, brilliantly silvery white. Eyes brown. Antennae reddish tawny, 2nd joint one and a half times as long as 3rd; apical half of 3rd joint black. Vertex and back of head yellow, posterior orbit of eyes silvery white.

Thorax.—Tawny brown, dorsum and humeral calli cinereous grey, middle of dorsum dark brown. Side-stripe and metanotum shining silver grey. Scutellum tawny brown.

Abdomen tawny; 2nd segment narrow, of uniform width, 3rd widening suddenly. Posterior borders of segments silvery white; last two segments entirely tawny, with some short, irregular black hairs. The ♂ has a moderate-sized process under the 4th segment. In the ♀ the abdomen is a little darker, with more brown in it.

Legs all reddish tawny, with silvery white reflections on the outside of the tibiae; hind femora very slightly thickened.

Wings.—Clear, pale brownish yellow from the anterior border as far back as about the posterior cross-vein. Discal cell quite clear.

Described from 2 ♂ ♂ and 4 ♀ ♀ in the Indian Museum collection from Karachi, west coast of India.

Physocephala nigrofasciata, mihi, sp. nov.

(Pl. xxxvii, figs. 15, 16.)

♂ Koygar (Central Asia). Long. 13 mm.

Head yellow, not shining and without silvery reflections; proboscis of considerable length, much more than double the length of the head, black. Antennae tawny, tip dark brown. Back of occiput yellow; eyes brown.

Thorax.—Brown, dorsum black. Humeri and posterior border just above scutellum yellowish; metanotum black with yellow sides. Scutellum tawny brown.

Abdomen.—Reddish tawny, 2nd segment only moderately contracted, with yellow posterior border; 3rd and 4th segments with broad black, posterior borders, and some black hairs. Rest of abdomen reddish tawny, with a few black hairs; tip black. Process under 4th segment.

Legs.—All reddish tawny; coxae black. *Wings* pale grey, with a blackish band reaching to the tip of the wing, and downwards into the discal cell; costal cell clear. Halteres reddish tawny.

Described from a single ♂ in the Indian Museum collection taken at Koygar, on the Yarkand Expedition.

N.B.—This might almost be put in the genus *Conops* so moderately contracted is the base of the abdomen.

Physocephala annulifera, mihi, sp. nov.

(*Conops annuliferus*, Big. nom. nud.)

♀ Assam. Long. 8 mm.

Head.—Deep yellow, slightly reddish above antennae, slightly livid on vertex. A large black triangular mark on frons, apex downwards, the base incurved. Antennae dark reddish brown; tips of 1st and 2nd joints a little pale below, 2nd joint minutely pubescent. Proboscis light shining brown, about twice the length of the head, tip shining black. Eyes bright chesnut brown, posterior margins silvery white tomentose. Back of head brown, livid towards vertex.

Thorax.—Wholly dull black; humeral calli and sides of thorax with a very little whitish dust. Scutellum and metanotum dark brown.

Abdomen.—Dark brown, lighter on 2nd and base of 3rd segment, these parts being much contracted; 3rd, 4th and 5th segments with a moderately wide gold-dusted posterior border; 6th segment gold dusted on dorsum. Genital apparatus somewhat withdrawn; consisting of an upper curved plate, a pair of claspers (apparently), and a narrow intermediate organ, all dark brown, shining and bare. Whole abdomen bearing minute black hairs.

Legs.—Coxae black, silvery white dusted. Femora reddish brown, hind pair somewhat thickened on basal half, apical half darker. Tibiae reddish brown, with silvery white dust; fore pair darker; posterior pairs attenuated towards base; hind pair lighter in colour on basal half. Tarsi dark brown. All the legs microscopically pubescent.

Wings.—Almost clear. A blackish colour from (on the costa) the base as far as just beyond tip of 2nd longitudinal vein; this colour extending posteriorly as far as the 3rd longitudinal vein where it sharply terminates but is continued into the basal half of the 1st posterior cell, the outer edge of the coloured part being perpendicular but without a clear-cut limit. The 1st posterior cell closed some distance before border. Anterior cross-vein just beyond centre of discal cell, which is just half as wide at base as at distal end. Halteres blackish.

Described from a single ♀ in good condition in the Indian Museum collection, from Margherita, Assam.

N.B.—I retain the specific name under which Bigot left it, but it seems inappropriate.

Physocephala sepulchralis, mihi, sp. nov.

♀ Assam. Long. 14 mm.

Head.—All black except the face and underside of the head, which are bright chrome yellow, the colour sharply delineated in a line across the base of the antennae. The extreme underside of the head, below the eyes, the mouth and the proboscis are black,

the latter extending barely beyond the epistoma. Antennae all black; 2nd joint two and a half times as long as the 1st; 3rd elongate, with a two-jointed style, the first joint cup-shaped, the second pointed; the 3rd antennal joint, with its style about two-thirds as long as the 2nd joint. Seen from in front and below, the 3rd joint is a little greyish on the inner side. A very dull dirty luteus yellow subtubercular oval piece on the vertex, most obvious from behind.

Thorax.—With scutellum, metanotum and sides wholly black.

Abdomen.—Wholly black; 1st segment with a few stiff black hairs at the sides; 2nd segment distinctly contracted (about half as wide as the 3rd and 4th segments), dull yellowish brown on hind margin and a little grey dusted at the sides; 3rd segment with hind margin barely whitened, and with a little grey dust at the sides posteriorly. Remainder of abdomen black, bare; genital organs small, black.

Legs.—Very dark reddish brown, nearly black. Coxae black; hind pair brilliantly shining silvery white, seen from behind; the colour to a great extent passing across the posterior part of the metasternum. Anterior coxae silvered to a less extent. Femora with a broad black median ring filling two-thirds of their length, the middle pair with distinct but short black hairs behind. Tibiae flattened behind at the tips, where they exhibit silvery reflections viewed from above. Tarsi black, pulvilli grey below.

Wings.—Dark grey; anterior part from costa to 3rd longitudinal vein more or less darker brown, varying in intensity in different parts. Halteres yellowish orange.

Described from one ♀ from the Lushai Hills (3600 ft.), 14-iv-(? 1909). In the Indian Museum.

Zodion, montanum, mihi, sp. nov.

♀ Darjiling. Long. 5 mm.

Head.—Frons above antennae dark reddish brown on upper part; when viewed from below two large oval whitish grey dust spots are visible. Vertex and back of head nearly black, the latter with black hairs, the whole of the frons, face and vertex being hairy. Face, cheeks, mouth and epistoma yellow, with (seen from below) a silvery white sheen. Proboscis black. Antennae black, underside of 2nd joint, which is bristly, yellow, underside of the bare 3rd joint red at base.

Thorax.—Ash-grey, covered (with the scutellum also) with short black hairs. Dorsum and scutellum in certain lights appear black, except humeral calli. Sides of thorax also appear partly black if viewed from different directions.

Abdomen.—Mainly ash-grey, covered with rather short black hair; forepart of most of the segments black, the colour extending round the sides and also posteriorly in the middle of the dorsum. Extreme tip of abdomen shining black. Genitalia small, black, shining, hairy.

Legs.—Black, pubescent. Coxae with silvery white sheen in front. Anterior femora yellow at base below, hind pair with more than the basal half yellow; knees and base of tibiae narrowly yellow. Anterior metatarsi rather yellow.

Wings.—Nearly clear, yellowish at base. Halteres yellow.

Described from a single perfect specimen captured by me a Darjiling, 30-ix-08, and now in the Indian Museum.

PHORIDAE.

Phora basalis, mihi, sp. nov.

♂ Assam. Long. 2⅓ mm.

Head.—Frons blackish from vertex downwards, the colour merged with the reddish brown lower part just above the antennae. Four rows of bristles, set in socket-like circles, the lowest row containing only the two middle ones; the others with four in each. Of these three rows the two middle bristles in the 1st (upper) row are nearer together, and those of the 3rd row further apart than the middle bristles of the 2nd row, where all four are equidistant. Antennae reddish yellow, dark, arista microscopically pubescent; palpi yellowish with 5 or 6 strong bristles towards the tips and some rows of stiff hairs on each side. Three strong bristles on each cheek, in a row, from just below the antennae, some smaller ones on the epistome. Eyes dark brown, microscopically pubescent, fringed with a row of moderately long bristles.

Thorax.—Reddish yellow, minutely pubescent, some strong bristles on each side of the dorsum and several towards the posterior margin, apparently irregularly placed. Scutellum concolorous, very broad, bare, except for a strong curved bristle near each end, and a very minute one immediately above it; no trace of other bristles.

Abdomen.—Basal third reddish yellow, slightly streaked with black, remainder blackish; moderately hairy especially towards the yellowish sides. Belly yellowish brown with some few hairs. Genitalia reddish yellow, small conical, tip narrowed, rather considerably hairy.

Legs.—Pale reddish yellow, minutely pubescent. Coxae bristly towards tips. Femora bare of strong bristles, but the hind pair bear a row of very small ones towards the tip below. This pair has a slight whitish reflection on the inner side in certain lights. Fore tibiae with 4 or 5 strong bristles on outer side; middle pair with two diverging bristles on hinder side, a little below the base, and also one or two at tip (possibly others may have been broken off). Hind tibiae with a row of very short bristles on front side, a row of longer ones on hinder side and several stronger ones on outer side, also two strong ones at tip.

Wings.—Pale yellowish; 3rd longitudinal vein reaches just beyond the middle of the wing, rather widely forked; 1st longitu-

dinal reaches to a little before the middle of the wing. The two upper light veins almost parallel, nearly straight, 3rd slightly curved, 4th parallel to hinder border of wing for some distance. Halteres yellowish brown.

Described from one ♂ in the Indian Museum collection taken by Major Hall at Sylhet, 23-ii-05.

Phora aequidistans, mihi, sp. nov.

♀ Darjiling District. Long. nearly 2½ mm.

Head.—Reddish yellow. Frons microscopically pubescent, with three straight rows of four strong bristles each, and a fourth row consisting of the two middle ones only. All the bristles almost equidistant and of uniform size; their insertion marked by a small circular impression on the frons. Eyes brown, posterior orbit with an almost complete row of rather short bristles, which are shortest on the vertex. Ocelli distinct, without tubercle; two strong bristles just below the lower corner of each eye. Antennae reddish yellow, shortly oval; arista apical, concolorous, barely thickened at base, microscopically pubescent. Palpi reddish yellow, with about six stiff bristles on each at the tip. Proboscis reddish, bare. Back of head reddish yellow, bare.

Thorax.—Reddish yellow, microscopically pubescent; a row of rather short bristles of unequal length round the sides and posterior edge of the dorsum. Scutellum concolorous, broad, quite bare, except for the four equidistant strong bristles on the posterior margin. Sides of thorax and metanotum concolorous. A pair of bristles on each side just below the shoulders and a second pair below these, adjacent to the fore coxae.

Abdomen.—Blackish; 1st segment reddish yellow with narrow black posterior margin; 2nd segment the longest; sides of segments showing a tendency to form pale spots; posterior margin of 6th (?) segment broadly yellow, with five or six bristles on under side. Ovipositor pale, conical, with a few hairs. Belly mainly blackish, bare.

Legs.—Yellow ochre, pale, microscopically pubescent throughout, the tarsi becoming brown towards the tips, and the tips of the hind femora above narrowly blackish. Fore coxae with black bristles about the broad tips, all femora destitute of bristles. Fore tibiae with a bristle on the outer side, a little below the base; middle pair with a bristle just below the base on the outer side and several at the tip; hind tibiae with two on the inner side, about the middle, and two strong ones at the tip, where, in addition, are some smaller ones, whilst there is a close-lying row of extremely short ones on the outer side, all the tarsi minutely spiny.

Wings.—Distinctly yellow, rather iridescent. Costal spines small, a double row to end of 1st longitudinal vein, the single row continued to end of 3rd longitudinal vein which terminates just before the middle of the wing and is so narrowly forked as to

appear simple unless very closely examined. The 1st longitudinal vein bent upwards beyond half its length, ending close to tip of 3rd. The four light veins about equidistant, very slightly sinuous. Halteres reddish yellow.

Described from a perfect ♀ in the Indian Museum collection, taken by Dr. Annandale at Kurseong (5000 ft.), 3-vii-08.

Phora rufithorax, mihi, sp. nov.

♀ Assam. Long. 2½ mm.

Head.—Front ferruginous brown, with three rows of equidistant bristles and a 4th (lowest) row of only the two middle ones placed rather closely together. Ocelli on a small blackish spot, not appreciably elevated, on vertex. Eyes black, microscopically pubescent, with a fringe of strong bristles, which in some places are longer than in others. Antennae and palpi yellow, latter with strong bristles at tips. Two or three bristles on cheek, pointing downwards.

Thorax.—Bright reddish brown, minutely pubescent; a row of six or seven strong bristles along the sides of the dorsum from the shoulders to the scutellum, and some others are placed, apparently irregularly, on the posterior part of the dorsum. Sides of thorax concolorous, with a few short bristles below the root of the wing. Scutellum of average size, concolorous, slightly blackish at base in the middle, with four strong, equidistant bristles on posterior margin. Metanotum reddish yellow at sides, blackish behind, lightly grey dusted.

Abdomen.—First two segments bright rufous brown, the second blackish towards the sides. Remaining segment mainly black, with a distinct, moderately wide pale yellow posterior border; the segments being a little reddish at the base, in the middle. Belly reddish brown, the black colour of the dorsum extended over the sides.

Legs.—Pale yellowish brown, microscopically pubescent. All coxae with several strong bristles at tip. Femora bare of bristles, hind pair black at tip. Fore tibiae with a single bristle in front, just before the middle, and a row of minute ones in front, towards the tip. Middle tibiae with a row in front of minute ones, and another similar row on outer side, in addition to two strong divaricate ones near the base on the outer side, and a few at tip. Hind tibiae with three less strong bristles on outer side, and two or three near tip. Tarsi minutely bristly, rather darker.

Wings.—Pale yellow, costal bristles, short, closely set, in two divaricate rows as far as the end of the 3rd longitudinal vein which attains the middle of the wing and is narrowly forked, the bifurcation somewhat elongated; 1st longitudinal with a sharp bend upwards at half its length, terminating beyond three-fourths of the costal cell. Of the discal veins the first 3 are only slightly sinuous, the first two being nearly parallel, slightly diverging towards the ends, but converging again at tips; 4th rather more

sinuous; none of them quite attain the wing margin. Halteres brownish.

Described from one ♀ in the Indian Museum collection from Sylhet, 10-iv-05, taken by Major Hall.

Phora bifasciata, Walk.

Redescription.

♀ Lower Eastern Himalayas and Celebes. Long. 3½ mm.

Head.—Frons entirely black, barely shining, with four rows of reclinate bristles; the upper row (vertical) of four nearly equidistant ones, the 2nd of four nearly equidistant ones, of which the middle pair are placed distinctly higher up on the frons, the row thus taking the form somewhat of a broad arch; the 3rd row of four equidistant ones forming a curve, the convex side downwards, the lowest row of only the two middle ones. Ocelli whitish, placed directly on the frons. Eyes microscopically pubescent, posterior orbit with a row of stiff, rather short bristles; two strong bristles below the lower corner of the eye. Antennae with 1st joint rather large, oval, reddish yellow, slightly darkened at tip, and with a slight microscopic grey pubescence; arista black, long, microscopically pubescent. Palpi reddish yellow, with six black bristles at tip. Proboscis reddish yellow, practically bare, large and fleshy. Face below level of antennae yellow; mouth border black, shining, with a shining black spot just above. Back of head blackish.

Thorax.—Coal black, finely pubescent, some strong bristles towards the sides of the dorsum, and a row of six on its posterior margin, directed horizontally backwards, as are also the four strong equidistant spines set on the extreme margin of the black scutellum, which is of average size, with a slight whitish reflection. A few bristles on the shoulders of the thorax and two just above each fore coxa.

Abdomen.—Dull black, almost bare, rather crumpled in appearance, but the segments distinctly visible. First segment wholly, basal half of 2nd (which is the longest segment) and the whole 5th segment, yellowish, with a little whitish reflection. Ovipositer long, conical, pale yellow, with some soft black hairs. Belly marked similarly to upper side.

Legs.—Pale dirty yellow, minutely and uniformly pubescent. Fore coxae with three strong, equal-sized bristles at tip, middle coxae with a number at tip of different lengths, those on the surface being also larger than on the fore pair, hind pair very large and flattened, nearly white, with only a few very small bristles at tip. Femora without any sign of a bristle; rather less than the apical half of hind pair, black on both outer and inner sides; extreme tip orange below. Fore tibiae with a single strong bristle on inner side, just before the middle; middle pair with longitudinal rows of very minute bristles, one of which is sinuous. There are two

divaricate bristles on the hinder or outer side, a little below the base, and both a long and a shorter spur at the tip. Hind tibiae deep black, minutely spinose, and with a strong bristle on outer side before the middle, and with two spurs at tip. Tarsi black, with some minute bristles.

Wings.—Rather deeply yellow; the double row of divaricate costal spines rather small. Costal vein distinctly thickened about its middle part; 1st and 3rd longitudinal veins approximately parallel, the latter attaining just the middle of the wing, where it is moderately widely forked; the 1st longitudinal ending close to the tip of the 3rd. The four discal veins nearly straight. nearly parallel and barely attaining the margin. Halteres pale yellow.

Redescribed from two perfect ♀ ♀ in the Indian Museum collection, one taken by Dr. Annandale at Sukna (500 feet), at the base of the Eastern Himalayas, 2-vii-08, the other by Lieut.-Col. Hall at Sylhet in Assam, 29-v-05.

N.B.—There can be practically no doubt that the examples described above are Walker's species, although Mr. Brues classes that with other species which he considers unrecognizable. One of Walker's apparent discrepancies is in that author stating it to be "yellowish white beneath." The very large pale yellow coxae cover up so much of the sides of the thorax and the bulk of the belly, that unless the legs are somewhat spread out, the species has the appearance described by Walker. I conclude that his remark as to the tip of the abdomen being yellow refers to the rather conspicuous ovipositer which is of this colour, but pale. The wings are distinctly yellow, not "cinereous"; this being the only real discrepancy, as his "elevated sides" to the abdomen are evidently caused by the sinking in of the middle part of the upper surface, for this is actually the fact with the Assam specimen and it probably is not a natural state.

PHORHYNCHUS, mihi, gen. nov.

Allied to *Phora*, but differing by the presence of a long elbowed proboscis; the 2nd joint rather longer and stouter than the 1st which is about as long as the width of the head. It is hard, cylindrical, 2nd joint slightly compressed, shining, tip bluntly conical. Palpi large, bristly. Frontal bristles wholly reclinate.

Phorhynchus ater, mihi, sp. nov.

♀ Ceylon. Long. 4½ mm.

Head.—Vertex and frons shining black. A vertical row of four bristles in a straight line, the middle two rather closer together, just behind the three conspicuous yellowish white ocelli; a 2nd row, straight, of four, across the middle of the frons; a 3rd slightly curved row of four (convexity downwards), and two others close together on the lowest extremity of the frons. Eyes black,

with a fringe of black bristles on posterior orbit. Antennae reddish yellow, 3rd joint very large, conical, with long yellow miscroscopically pubescent arista. Palpi reddish yellow, large, with six black spines. Proboscis reddish yellow.

Thorax.—Black, very slightly shining, minutely pubescent; shoulders and posterior corners at the edges narrowly tawny or yellow. Two humeral bristles, one post-humeral, two or three stiff ones on lower anterior corner of thorax; a pair of dorso-central, wide apart, a few on lateral margins, a strong one on each posterior corner of dorsum; and four on hind margin of scutellum, the outer pair placed towards the base.

Abdomen.—Wholly black, minutely pubescent; belly similar, genitals small, yellowish.

Legs.—Coxae and femora black, more or less yellowish at their juncture; tibiae and tarsi mainly yellowish, former (especially the hind pair) with a blackish tinge. Legs microscopically pubescent.

Wings.—Pale brownish yellow; viewed in certain directions vitreous and highly iridescent. Costa with minute spines as far as tip of 3rd vein, which is forked near its tip, which itself barely reaches beyond the middle of the wing. First discal vein very faint at base, rather strongly curved upwards, meeting anterior margin at upper corner of the rather squared wing tip; 2nd discal vein straight, ending at lower distal corner of wing; 3rd and 4th discal veins gently bisinuate.

Halteres, stem yellowish, clubs blackish.

Described from a few ♀ ♀ in my collection (including *type*) from Namunukuli, Ceylon, February 1910 [*Green*].

Table of oriental species of **Aphiochaeta.**

A	Scutellum with four distinct bristles (in *ferruginea* outer pair always weaker, sometimes very considerably so).	
B	Abdomen with first three segments black, the remainder yellow	*apicalis*, Brues.
BB	Abdomen mainly blackish or quite black: except in *ferruginea* which has it generally reddish or brownish yellow with an admixture of black of varying degree, sometimes to the extent of the whole surface.[1]	
C	Only two proclinate bristles	*tibialis*, Brues.
CC	Four proclinate bristles (the lower pair often weak in *ferruginea*).	
D	The 3rd longitudinal vein ending at about the middle of the wing: 1st longi-	

[1] This is an unsatisfactory definition, but the species is a difficult one on account of its great range of variation to include in a table, whatever characters are used.

tudinal vein ending near middle of costal cell.

E The 3rd row of frontal bristles in a nearly straight line and equidistant; costal spines very short and thickly placed. *limbata*, Brues.

EE The 3rd row of frontal bristles divided into two pairs, one pair each side, towards the eye corners; costal spines long and sparse.

F Wings nearly clear; legs brown *rustica*, Brues.

FF Wings yellowish; legs pale yellowish *ferruginea*, Brun.

DD The 3rd longitudinal vein ending much before the middle of the wing; 1st longitudinal vein ending near tip of 3rd vein.

G Abdomen blackish brown; 3rd longitudinal vein distinctly forked *approximata*, sp. nov.

GG Abdomen with whitish posterior margins to the segments; 3rd longitudinal barely forked, and at extreme tip only *subfurcata*, sp. nov.

AA Scutellum with only two strong bristles.

H Frontal groove and ocellar tubercle distinct.[1]

I Thorax reddish brown; brownish yellow never dark or blackish.

J Thorax without any distinct stripes.

K Abdomen yellow, with a large black spot towards each side *latifasciata*, sp. nov.

KK Abdomen black, only hind margins of segment very narrowly pale *flavifacies*. sp. nov.

JJ Thorax with three distinct dark longitudinal stripes. *trilineata*, sp. nov.

II Thorax blackish or brownish.

L The bristles in the side pairs forming the 3rd row placed vertically: long. ¾ mm. *minutissima*, Brues.

LL The above-mentioned bristles nearly transversely placed: long 1—1½ mm. *rufipes*, Meig.

HH Frontal groove and ocellar tubercle absent.

M The 3rd longitudinal vein ending considerably beyond middle of wing: two upper ocelli twice as far from each other as from the eyes . *planifrons*, Brues.

MM The 3rd longitudinal vein ending at middle of wing: two upper ocelli equi-

[1] This is a weak character as in some specimens, though present, both are less prominent. However, I follow Brues, having no better distinctive character to offer.

distant, placed so as to divide the vertex into three equal parts. *pallicornis*, sp. nov.

N.B.—Two species are not included in the above table.

(1) *A. inaequalis*, sp. nov., in the type specimen of which the scutellar bristles are broken off. If four are present it will separate from either, (*a*), *tibialis* (should my species have only two proclinate frontal bristles, a point I have been unable to decide with certainty), also by the black antennae and thorax; or from, (*b*), *rustica* (should my species have four proclinate bristles), by the yellow palpi and other characters. On the other hand, if there are only two scutellar bristles it will come near *minutissima* and *rufipes*.

(2) *A. flava*, Fln., recorded by Brues (as probably introduced) from Papua. No specimens are available for comparison and Schiner's description does not mention the scutellar bristles.

Aphiochaeta ferruginea, mihi.

Rec. Ind. Mus., vii, 83.

(Pl. xxxvii, figs. 17-23).

This species must be very near, perhaps identical with *A. circumsetosa*, Meij. (Tijd. v. Ent., liv, 348). I fully described my species only recently (Rec. Ind. Mus., vii, 83), but if it be synonymous with *circumsetosa* Dr. Meijere's name has priority. Some figures of this species are included in the plate accompanying this paper; these were by an oversight omitted when describing the species. In a short separate article in the present volume are embodied some notes of mine on the life-history of this species.

Aphiochaeta approximata, mihi, sp. nov.

♀ Calcutta. Long. 1 mm.

Head.—Blackish grey, frontal impressed median line distinct. The bristles are arranged as follows: two upper rows of four in each, the middle two in the upper row rather closer together: the 3rd row consists of two each side, forming a slightly curved line, the two middle ones wide apart. Barely below these middle ones are the upper two of a set of four proclinate smaller bristles arranged in a square, all the other bristles being declinate. Antennae dirty brownish yellow.

Thorax.—Blackish brown, rather thickly clothed with reclinate bristly hairs, the usual bristles about the wing bases and on the hind margin of the dorsum. Sides of thorax and the scutellum concolorous, the latter with four bristles on the hind margin.

Abdomen.—(Somewhat crushed by pin), dirty brown, apparently bare; belly lighter.

Legs.—Pale yellow, hind pair brown, tibial spines strong.

Wings clear. The 3rd longitudinal vein forks near its tip but very distinctly, and shortly after tip of 1st longitudinal vein. Of the discal veins the 1st ends about half-way between the tip

of the 3rd vein and the tip of the wing; the 2nd is very slightly curved upwards, ending some distance before the wing tip; the 3rd is slightly curved, ending just below the wing tip; the 4th is curved slightly downwards. Halteres pale yellow.

Described from a single ♀ in the Indian Museum taken in the Museum, 18-vi-08, by Dr. Annandale.

N.B.—Very near *subfurcata*, mihi, but easily distinguished by the very obvious forking of the 3rd longitudinal vein.

Aphiochaeta subfurcata, mihi, sp. nov.

♂ Bengal. Long. 1½ mm.

This species is considerably like *ferruginea*, yet structurally quite distinct. It will be sufficient to point out the points of difference.

The frons and face are mouse grey, occasionally reddish yellow in part or wholly; the arista is nearly bare. The thorax is mainly mouse grey, with two slightly darker but always indistinct, somewhat narrow dorsal stripes, and a large spot on each side exterior to them, these marks not being at all regular, there being, however, nearly always, some slightly darker markings.

The abdomen is almost consistently black, the segments having the posterior edges pale yellowish white, the 1st segment being sometimes considerably pale The most reliable character is in the always very narrow bifurcation of the 3rd vein which sometimes is so slight as to leave doubt as to its bifurcation at all. This vein moreover always ends very distinctly before the middle of the wing, the 1st longitudinal ending close to it. The auxiliary[1] vein (which I regard as the first faint vein close below the costa on the distal half of the wing) is always more distinct than in *ferruginea*. Of the four discal veins, the 1st is less curved than in *ferruginea*, it being parallel to the costa for the greater part of its length, the 2nd is nearly straight, the 3rd and 4th slightly sinuous. There are more small bristles round the root of the wing, and those on the palpi and fore coxae are relatively stronger. Lastly it is a very distinctly smaller species.

N.B.—A small series, representing apparently only the ♂ sex, bred in the Indian Museum simultaneously with specimens of *ferruginea* from examples of the same beetle, *Cybister limbatus*, F., emerging 20-vii-08.

Aphiochaeta latifasciata, mihi, sp. nov.

♂ Assam and Bengal. Long. 1⅔ mm.

Head.—Bright reddish ferruginous, including antennae and palpi, the latter bristly at tip. Front with 3 rows of 4 strong reclinate bristles each, with two anterior proclinate, rather smaller ones. Arista minutely pubescent, the usual post-ocular row of bristles, ocellar tubercle not obvious.

[1] Synonymous with "subcostal" or "mediastinal."

Thorax.—Concolorous, minutely pubescent. The usual bristles round the edge and posterior border of the dorsum, and at base of wing. Scutellum with two strong bristles.

Abdomen.—Concolorous, almost bare. Sides of 2nd, 3rd and 4th segment blackish, forming a large side spot. Sides of 2nd segment with a few short, bristly hairs, and some hairs at tip of abdomen. Belly almost a replica of the dorsal surface.

Legs.—Concolorous but paler. Coxae bristly at tip; femora bare of bristles, hind pair with a few short hairs below; tibiae (slightly damaged) apparently bearing only the apical spurs; hinder side of hind tibiae with a row of microscopic bristles.

Wings.—Very pale yellowish, strong veins yellow; costal spines of moderate length; 3rd longitudinal vein attaining fully the middle of the wing; 1st vein ending at middle of costal cell. Three or four bristles on extreme base of wing on posterior edge. The discal veins nearly as in *ferruginea*, the 2nd much more sinuous. Halteres reddish yellow.

Described from a ♂ from Sylhet taken by Lt.-Col. Hall, 8-iv-05, and a ♂ and ♀ from Madhupur, Bengal, 13 and 16-x-09 [Paiva], all in the Indian Museum.

N.B.—This species is closely allied to *ferruginea*, and at times I have thought it identical, as though nominally there should be only two proclinate bristles, there is in one of the above three specimens a lower very much smaller pair, hardly so large as the lower pair in *ferruginea*, a species in which this lower pair varies in size very considerably. The bristles are broken off the scutellum in two specimens, in the third they are present, only a single pair and of considerable size. The tips of the hind femora are not blackish but this is, of course, a weak character and specimens of this nature exist in *ferruginea*. The abdominal marking in the three specimens are consistent and the general appearance is that of a distinct though allied species.

Aphiochaeta flavifacies, mihi, sp. nov.

♀ Calcutta. Long. 1⅓ mm.

Head.—Frons (minutely pubescent), face, antennae, palpi, proboscis, bright yellow; ocellar tubercle distinct, black. Two pairs of frontal proclinate bristles; 1st and 2nd upper rows rather close together, 2nd row nearly straight; 3rd rather strongly curved, arranged in two pairs, the two central bristles converging, and barely above the line of the upper proclinate ones. Lower proclinate bristles very small.

Thorax.—Tawny yellow, minutely pubescent, the hairs barely longer towards posterior margin. Five marginal bristles, two dorso-central. Scutellum concolorous, two bristles.

Abdomen black, nearly bare; posterior margin of segments narrowly whitish; sides of abdomen here and there with a reddish tinge. Belly black. Ovipositor small, pale yellow, hairy.

Legs.—Uniformly pale dirty yellow, minutely pubescent. All tibiae practically without stronger bristles; middle pair with a single long apical spur, hind pair with two shorter ones of unequal length.

Wings clear; 1st longitudinal vein ends at three-fourths of the costal cell; 3rd vein distinctly but rather narrowly forked, ending distinctly before middle of wing. Costal spines long, about twelve in number, auxiliary vein lengthened, indistinct, quite clear of fore border; 1st discal vein very slightly curved, 2nd and 4th almost straight, barely bisinuate; 3rd considerably bisinuate; all attaining margin of wing. Halteres yellow.

Described from one ♀ in the Indian Museum from Calcutta, 5-ii-08, taken by Dr. Annandale.

Aphiochaeta trilineata, mihi, sp. nov.

♂. Calcutta. Long. 2 mm.

Head.—Entire frons (which is minutely pubescent), face, antennae, palpi, proboscis and back of head bright yellow. Ocellar tubercle distinct, black, frontal groove indistinct. Median pair of upper row of bristles close together; 2nd row slightly curved; 3rd row forming a gentle curve, on a level with the upper pair of the four proclinate bristles; the lower pair of the latter being much smaller. The various head bristles normal.

Thorax.—Wholly yellowish, minutely pubescent, with three wide longitudinal dark brown stripes, one central, the others running from the shoulders along the edge of the dorsum, but not quite meeting the central one on the posterior margin, where however, the middle stripe is continued on to the scutellum, leaving the latter with a wide yellow posterior border. Four or five strong marginal thoracic bristles; two dorso-central ones and two on the scutellum, with a minute stiff hair above each.

Abdomen.—Yellowish, nearly bare, with indistinct darker marks and two dorsal rows of squarish dark brown spots, two on each segment. Genitalia of two pieces (like two additional abdominal narrow segments), black, and a bilobed pale yellow appendage, the whole organ rather hairy.

Legs pale dirty yellow; posterior tibiae and tarsi slightly brownish. Middle tibiae with a row of close, minute black hairs and a single long apical spur, hind tibiae with an outer row of a few bristly hairs and two shorter apical spines.

Wings distinctly yellowish; a little iridescent towards tips. The 1st longitudinal vein ends midway between the humeral cross-vein and tip of 3rd vein, which is rather widely forked and ends just beyond middle of wing, both 1st and 3rd veins being distant from the border. Costal spines very short and close together. The auxiliary vein lengthened, rather indistinct, close to border of wing. Of the discal veins, the 1st is gently curved; 2nd and 3rd barely bisinuate, 4th nearly straight, all attaining wing-border but the 1st and 4th indistinct at base. Halteres brownish yellow.

Described from a unique ♂ in perfect condition in the Indian Museum taken by Dr. Annandale in Calcutta, 7-ii-08.

Aphiochaeta pallicornis, mihi, sp. nov.

♂ Darjiling District. Long. 1½ mm.

Head.—Frons shining black, very lightly pubescent; frontal groove and ocellar tubercle quite absent. First two rows of bristles with four each, the median pair of 2nd row placed much more forward than the outer ones. Third row consisting of a pair each side placed nearly vertically near the eyes, and only just above the level of the upper larger pair of the four proclinate bristles forming the 4th (lowest) row. Antennae and palpi bright reddish yellow. Eyes brown; post-ocular bristles normal.

Thorax shining black, with minute pale pubescence, and about 5 or 6 strong bristles on the sides of the dorsum in addition to a pair of dorso-central bristles. Scutellum concolorous with two bristles.

Abdomen dull black, with scarcely any pubescence. Genitalia withdrawn.

Legs black, minutely pubescent; broadly pale yellowish at junction of coxae and femora. Fore tibiae and tarsi yellowish, posterior tibiae and tarsi brownish yellow, with both a long and a short apical spur to each tibia. All the tibiae finely setulose, middle pair with a row of small bristles on outer side.

Wings brownish, posterior part rather lighter. The 1st longitudinal vein ending half-way between humeral cross-vein and fork of the 3rd longitudinal, which fork is very distinct and rather wide. Auxiliary vein merged in wing border; costal spines rather short. Discal veins gently curved, 2nd, 3rd and 4th barely bisinuate. Halteres black, stems yellow.

Described from a single specimen in the Indian Musem collection taken by Dr. Annandale at Kurseong (5000 ft.), 3-vii-08.

Aphiochaeta inaequalis, mihi, sp. nov.

♂ Nepal. Long. 1¼ mm.

Head.—Frons black, shining, slightly pubescent, frontal groove not obvious; ocellar tubercle distinct. Upper row of bristles normal, 2nd row curved, middle pair rather close together; 3rd row curved, middle pair apparently proclinate; two anterior bristles (small) proclinate. Antennae black; palpi yellowish.

Thorax.—Very dark brown, rather closely pubescent; with some marginal bristles. (Hind part of dorsum and the scutellum destroyed by the pin). Sides of thorax concolorous.

Abdomen.—Uniformly dull black, with short, very sparse pubescence. Genitalia small, retracted, yellowish.

Legs.—Fore pair light brownish yellow. Posterior legs brownish; hind femora blackish on outer side; yellowish brown on inner side, with black tips.

Wings.—Quite clear. Third longitudinal vein ends at middle of wing; fork rather small, but distinct; 1st longitudinal ends just beyond middle of costal cell, straight. Costa with a row of short bristles, and a second row of much longer ones set further apart. Auxiliary vein very indistinct. Of the discal veins, the 1st is moderately curved, 2nd gently bisinuate, 3rd and 4th nearly straight, all attaining border of wing. Halteres dark brown.

Described from a single specimen in the Indian Musem from Thamaspur, Nepal, 18—20-ii-08.

N.B.—This appears to be near the *A. sodalis* of Brues, described from New South Wales, and which he considers very close to, if not identical with, his *crassimana*, from New Guinea. My species differs in several characters from both of them and is conspicuous chiefly for the great difference in length of the two rows of costal bristles, from which it takes its name.

Hypocera marginata, mihi, sp. nov.

♀. South India. Long. 2½ mm.

Head.—Frons shining black, practically bare. The 1st row of bristles vertical; 2nd row of four equidistant ones curved upwards; 3rd row of only one each side; 4th row similar, the bristles placed one on each corner of the frons, which somewhat narrows in front Two smaller proclinate bristles in front. Frontal groove only visible for a short distance in front; ocellar tubercle absent. Antennae bright reddish orange, arista black, orange at base. Palpi pale yellow, with four or five strong bristles at tip. Eyes with the usual row of bristles, which continue round the lower corners. Back of head black.

Thorax.—Dorsum wholly black, except the posterior margin from one wing base to the other which is irregularly yellow; dorsum entirely covered with close short stiff black hairs, with several stronger bristles along the posterior margin, and a powerful long spiny bristle on each posterior corner. Sides dull black, with a faint bluish tinge. Scutellum blackish, with yellow margin and four spines, the outer upper pair less strong.

Abdomen dull black, bare, emarginations of segments barely pale; posterior border of 5th segment broadly yellow. Belly black. Ovipositor small, dark sub-conical, apparently of two segments.

Legs.—Uniformly yellowish, hind tarsi barely darker; hind femora towards the tips black. Fore tibiae with a row of very short bristles on outer side; posterior tibiae with a double row of longer ones, and some very small ones about the tips; the hind pair having some rows of microscopically small black hairs.

Wings.—Very pale brownish yellow, 3rd longitudinal vein barely reaching middle of wing. It is of uniform width to its tip where it is very slightly thickened, ending free, but with a faint fork issuing just before the tip, uniting it to the costa. The 1st longitudinal vein ends at two-thirds the length of the costal cell. Costal spines short. Of the discal veins, the 1st is

almost straight after its first bend; 2nd barely curved; 3rd nearly straight but very gently trisinuate; 4th straight; all attaining border but indistinct at base. Halteres white, stem yellow.

Described from a single specimen in the Indian Museum collection taken 21-xi-08 by Dr. Annandale at Tenmalai, Travancore State, S. India.

MYDASIDAE.

Cephalocera annulata, mihi, sp nov.

♂ Assam-Bhutan Frontier. Long. 15 mm.

Head.—Frons rather more than one-third of the head, with a small swelling each side of vertex, contiguous to the corners of the eyes. Proboscis short. The whole head moderately shining black, with rather thick and long whitish grey pubescence over frons and face except lower part of the latter. Occiput black, with whitish grey hair, which is longer on lower part of head. Antennae all black, long; 2nd joint very short, 3rd joint with an impressed constriction some distance before its tip; beyond the constriction the joint is slightly thickened. Style long, nearly as long as rest of antennae, black, with an impressed constriction at nearly one-third of its length, the style thickening apically except at extreme tip where it is slightly but obviously narrower.

Thorax black, a grey tomentose stripe at each side of the dorsum, a short one from each shoulder, narrowing rapidly and not reaching centre of dorsum; the middle of the posterior margin also grey tomentose. The whole dorsum covered with fine grey pubescence, which is a little longer below the shoulders and on the side stripes. Scutellum broad, extremely short, shining black, bare. Sides of thorax moderately shining black, with a little grey pubescence on the pleurae.

Abdomen shining black, posterior margins of all segments (indistinctly on the 1st segment) narrowly but clearly defined pale whitish yellow. Whole surface of abdomen with depressed pubescence, which is dark brown or blackish on basal half (or thereabouts) of each segment, and pale grey on apical half. Belly similar, the yellowish white bands passing over the sides of the segments and continued narrowly across the ventral surface. Genitalia comparatively small, black; a dorsal plate, a pair of moderately long finger-like claspers and some yellowish brown internal organs.

Legs black; shortly and normally grey pubescent; base of hind tibiae and tarsi slightly brownish yellow.

Wings pale grey, venation in exact agreement with Macquart's figure of *Cephalocera nigra* (Dipt. Exot. i, 2, pl. i, 3). Halteres black.

Described from 2 ♂♂ from Bhoirakund, Darrang District, Assam-Bhutan Frontier, 18—22-x-12 [*Kemp*]. In the Indian Museum.