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Himalayan Muscidae

(Diptera)

II. New Species of Hydrotaeini

By Adrian C. Pont

This second contribution to the taxonomy and faunistics of the Himalayan Muscidae deals with the tribe Hydrotaeini of the subfamily Muscinae. The scope of this tribe follows that given by the present author in the Catalogue of the Diptera of the Oriental Region (Pont, in Delfinado and Hardy, in press).

The genus *Pogonomyia* Rondani is not included in the present paper, as it contains a number of new Himalayan species and will be dealt with in the next paper of the series. Excluding *Pogonomyia* some 13 described species have been recorded from the Himalayas. 4 new species and 1 new subspecies of a Palaearctic species are described below, and a further 5 species are known to me but from material that is not adequate for identification or description. 23 species in 7 genera of Hydrotaeini are thus now known from the Himalayas, and their distribution within this region is as follows:

Azelia sp. Nepal.

Alloeostylus nepalensis nov. spec. Nepal.

A. rufisquamus (Schnabl, 1915), ssp. *himalayensis* nov. subspec. Nepal.

A. sp. Nepal.

Megophyra intraalaris Emden, 1965. India: West Bengal.

M. sp. India: West Bengal.

Ophyra capensis (Wiedemann, 1818). Pakistan. India: Uttar Pradesh, "N. E. frontier".

O. chalcogaster (Wiedemann, 1824). India: Himachal Pradesh, Uttar Pradesh, West Bengal, Assam. Nepal.

O. leucostoma (Wiedemann, 1817). India: Kashmir. Nepal.

O. obscurifrons Sabrosky, 1949. India: Assam. Upper Burma.

Hydrotaea armipes (Fallén, 1825). India: Kashmir.

H. cilifemorata Emden, 1965. India: Uttar Pradesh, West Bengal.

H. dentipes (Fabricius, 1805). India: Kashmir, Himachal Pradesh, Uttar Pradesh. Tibet. Nepal.

H. himalayensis nov. spec. India: Kashmir, West Bengal.

H. kashmirana nov. spec. India: Kashmir.

H. malaisei Emden, 1965. "India". Nepal.

H. nepalensis nov. spec. Nepal.

H. occulta (Meigen, 1826). "India".

H. sp. India: Kashmir.

H. sp. Nepal.

Muscina pascuorum (Meigen, 1826). Pakistan. India: West Bengal, Assam, Sikkim.

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M. stabulans (Fallén, 1817). Pakistan. India: Kashmir, Himachal Pradesh.

Passeromyia heterochaeta (Villeneuve, 1915). India: Himachal Pradesh.

The material discussed in this paper is located in the following Museums, and the abbreviations given in parentheses are those used in the lists of material examined: British Museum (Natural History), London (BMNH); California Academy of Sciences, San Francisco (CAS); and Canadian National Collection, Ottawa (CNC). For the generous loan of material in their care I am grateful to Drs. P. H. Arnaud and J. R. Vockeroth.

Genus *Hydrotaea* Robineau-Desvoidy, 1830

This is a predominantly Holarctic genus, and several Holarctic species are recorded from the Himalayas in addition to a few endemic species which have more or less pronounced affinities with the Holarctic fauna. The three species described in this paper are all obviously related to Palearctic species.

Key to males of Himalayan *Hydrotaea*

(♂ of *malaisei* Emden unknown)

All species have halteres dark and pre-alar seta short or absent.

1. Calcar strong, at least twice as long as depth of hind tibia. Eyes densely haired, or if bare then *ori* extending from lunula to ocellar tubercle. 2
 - Calcar weak or absent, at most as long as tibial depth. Eyes bare and *ori* only extending about halfway from lunula to ocellar tubercle 5
2. Eyes bare. Jowls with a strong upcurved seta towards front margin. *Stpl* 1+2—3. Hind femur unarmed ventrally. Vein 4 slightly curved towards vein 3 just before tip 3
 - Eyes densely haired. Jowls without a strong upcurved seta. *Stpl* 1+1. Hind femur with 1—2 stout erect ventral setae in basal half (as in fig. 2). Vein 4 running straight to wing-margin 4
3. Hind tibia with 3-4 *av* setae. Notopleuron without setulae around base of 2nd seta. Squamae white, with yellow fringes *dentipes* (Fabricius)
 - Hind tibia with 7-8 *av* setae. Notopleuron with numerous setulae around base of 2nd seta. Squamae dirty yellow, with brown fringes *kashmirana* nov. spec.
4. *Prst acr* well-developed. *Ori* extending from lunula to ocellar tubercle. Mid tibia with quite long fine *pv* setae in apical half *occulta* (Meigen)
 - *Prst acr* fine and hair-like. *Ori* extending only halfway from lunula to ocellar tubercle. Mid tibia without *pv* setae in apical half *nepalensis* nov. spec.
5. Hind femur slender and curved (fig. 4). Mid metatarsus with a mat of hairs along *a* to *av* surfaces (fig. 3). Notopleuron densely setulose around the base of both setae. *Prst acr* absent, not distinguishable from the ground-setulae. Arista virtually bare, the hairs shorter than aristal diameter *himalayensis* nov. spec.

- Hind femur normal in shape, not curved. Mid metatarsus without a mat of hairs. Notopleuron sparsely setulose, often bare around 2nd seta. *Prst acr* present even if weak, but if absent then longest aristal hairs longer than basal aristal diameter 6
- 6. Arista virtually bare, the longest hairs shorter than basal aristal diameter. Hind femur with an isolated strong erect ventral seta just beyond middle *armipes* (Fallén)
- Arista with the longest hairs longer than basal aristal diameter. Hind femur without an isolated ventral seta 7
- 7. Hind femur with *av* setae in basal half. *Prst acr* distinctly developed but short *cilifemorata* Emden
- Hind femur with *av* setae only before apex. *Prst acr* short and hair-like. (♂ unknown.) *malaisei* Emden

***Hydrotaea kashmirana* nov. spec.**

This species agrees very closely with *similis* Meade, 1887, which is known from Europe and Japan, and differs only in the following colour characters:

Thorax without any white or grey dust except on humeri and notopleura; appearing matt, very weakly subshining in dorsal view. Scutellum undusted, in posterior view with faint traces of brownish dust towards outer corners. Pleura virtually undusted. Squamae dirty yellowish, margins and fringes partially brown. Abdomen grey dusted, not so light-grey as in *similis*, and with the undusted median vitta very slightly broader.

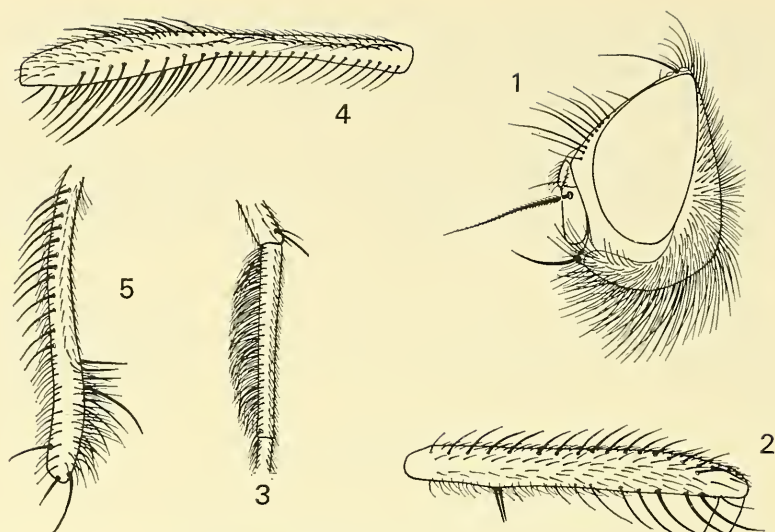
Holotype ♂, India, Kashmir: Gulmarg, 8500 feet, summer 1913 (F. W. T h o m s o n), in BMNH.

***Hydrotaea nepalensis* nov. spec.**

Male

Head (fig. 1). — Rather short, compressed and *Pogonomyia*-like. Ground-colour black, including antennae and palpi. Frons narrow, at narrowest point slightly broader than diameter of anterior ocellus. Eyes densely long-haired, the longest hairs over twice as long as diameter of anterior ocellus. Parafrontalia dark brown pruinose; parafacialia only silvery-white pruinose when seen from above, otherwise matt dark brown; genae light-grey to brownish, occiput dark brown. Interfrontalia linear on middle of frons, broadening considerably before lunula. 12-13 pairs of inclinate *ori* on lower $\frac{3}{5}$ of frons. 3rd antennal segment short, barely $1\frac{1}{2}$ times as long as broad. Arista pubescent, the hairs at most as long as its basal width. Parafacialia moderate, about as broad as width of 3rd antennal segment. Genae moderate, slightly broader than width of 3rd antennal segment. Peristomal setae long and dense; occipital dilation reaching almost to vibrissal angle, with several strong setae at anterior end that are directed forwards and slightly upwards. Palpi moderate, mentum of proboscis dusted.

Thorax. — Black, matt, with some thin brownish-grey dust: on humeri and notopleura, and extending on a *prst* fascia along suture to level of *dc*, and covering 2nd *prst dc*; behind suture with 2 weak



Figs. 1—2: *Hydrotaea nepalensis* nov. spec. 1. Head of male, lateral view (holotype). 2. Left hind femur of male, anterior view (paratype).

Figs. 3—5: *H. himalayensis* nov. spec. 3. Left mid metatarsus of male, dorsal view (holotype). 4. Right hind femur of male, anterior view (holotype). 5. Right hind tibia of male, anterior view (holotype).

vittae through *dc* and *ia* rows, broadening posteriorly and fusing just before scutellum. Scutellum and pleura undusted, matt. Spiracles dark brown. Setulae fine, hair-like, quite erect. *Acr* 0+1, the *prsc* pair fine; the *prst* setulae quite long and fine, in 4 rows. *Dc* 2+4. 2 *h*, 2 *ph*. 1 *sa*. 2 *pa*. Anterior *ia* fine. *Pra* absent, not distinguishable from the ground-setulae, but weakly present in one male. Prosteronum, propleural depression, pteropleuron and hypopleuron bare. Disc of notopleuron bare apart from the setae. *Stpl* 1+1. Scutellum with strong sub-basal lateral and apical setae; disc mainly covered with long fine setulae, extending on to upper part of lateral margins.

Legs. — Black; pulvilli and claws normal. Tarsi without modifications. Fore femur with 2 simple bluntly pointed projections before apex, on *av* and *pv* surfaces; *pv* surface with several moderate and spinose pointed setae on basal third. Fore tibia with some shallow notches on basal half; ground-setulae in apical part of *pd* and *pv* to *v* surfaces erect, but without setae; 1 (-2) fine *ad* setae. Mid femur with 1-2 short *pv* spinules just before middle, otherwise *av* surface without setae except for some fine ones at base; with a row of short fine *av* setae, none of which exceed femoral depth. Mid tibia with 3 strong and 2 weak *pd* setae; with or without an *ad* seta; without *v* setae or erect setulae. Hind femur (fig. 2) of normal shape; at basal third or two-fifths with 2 short closely placed spinules; without further ventral setae except for about 5 *av* on apical half. Hind tibia with the calcar long, 3 times tibial depth; *pd* ground-setulae quite erect; *ad* surface with a complete row, 2-3 setae in apical half

stronger; *p-pv* surfaces with several rows of fine setae on apical $\frac{3}{4}$, slightly longer than tibial depth; 5-7 *av* in apical half.

Wings. — Entirely smoky, especially dark costally and at base. Epaulet and basicosta black. Costal spine absent. All veins except costa bare. Vein 4 not inclined towards vein 3 just before apex. Squamae creamy to yellowish, with yellow margins. Halteres with knob and most of stalk black.

Abdomen. — Ground-colour black. Elongate and slender, like a *Thricops*-species. Tergites brownish-grey dusted, in posterior view with an undusted linear median vitta on all tergites, becoming narrower on each successive tergite. With long and quite dense setae at sides and at tip, for example marginals on tergite 5 much longer than length of the tergite, but with few developed marginal or discal setae. Sternite 1 setulose at sides.

Genitalia. — Not studied.

Measurements. — Length of body, 5.5-7.0 mm. Length of wing, 5.0-6.5 mm.

Female

Differs from the male as follows:

Head. — Frons broad, at middle as broad as an eye. Eye-hairs sparser but not shorter. Parafrontalia dark brown pruinose from all points-of-view, matt, without any shine; parafacialia when viewed from above brown pruinose above and silvery-white below, otherwise appearing matt dark brown like the parafrontalia; genae and occiput as in male; ocellar tubercle weakly subshining; frontal triangle hardly distinct, interfrontalia matt black. Parafrontalia moderate, at middle of frons a parafrontale $\frac{1}{4}$ to $\frac{1}{5}$ width of interfrontalia. 6-10 pairs of inclinate *ori*; 1 strong proclinate and 2 reclinate *ors*; 1 pair of crossed interfrontals. Peristomal setae shorter and sparser, the setae on occipital dilation especially short and sparse.

Thorax. — Pattern as in male, but markings at suture and vittae broader and more conspicuous than in male, the *dc* vittae reaching forwards to anterior *prst dc* seta and behind fusing together before scutellum. Ground-setulae short and sparse. *Pra* well-developed, subequal to 2nd *npl*.

Legs. — Without the modifications of the male. Fore femur with a thin *pv* row. Fore tibia without *p* setae, with 1 short *ad* in apical half and several setulae. Mid femur bare ventrally except for a few erect *av* and *pv* setulae in basal half. Mid tibia with 2 *ad* and 5 *pd*. Hind femur without *pv* or *v* setae; *av* surface with short setae on basal $\frac{2}{3}$ and 4 strong setae on apical third. Hind tibia with the calcar strong, as in the male; 2 *ad*, as part of a row of erect setulae; 4-6 *av*; 0 *p-pv*.

Wings. — Not smoky as in male, dark at base.

Abdomen. — Shorter and more pointed. Appearing matt, grey dusted, with a little shine from some angles, in posterior view with an undusted median vitta on tergites 1+2, 3 and 4. Without any striking setae.

Ovipositor. — Not studied.

Measurements. — Length of body, 6.0 mm. Length of wing, 5.5 mm.

Holotype ♂, Nepal: 27°58' N, 85°00' E, 11,100 feet, 18. VI. 1967 (Canadian Nepal Expedition), in CNC.

Paratypes, 8♂, 1♀. Nepal: 27°58' N, 85°00' E, 11,100 feet, 18. VI. 1967 (Canadian Nepal Expedition), 2♂, in CNC, and 2♂, in BMNH: 27°58' N, 85°00' E, 11,100 feet, 16. VI. 1967 (Canadian Nepal Expedi-

tion), 1 ♂, in CNC; 28°00' N, 85°00' E, Malaise trap 6, 10,500 feet, 27. V.—2. VI. 1967 (Canadian Nepal Expedition), 1 ♀, in CNC. East Nepal: ridge south of Barun River, 12,500 feet and 13,000 feet, 7. VI. 1954 (L. S w a n), 2 ♂, in CAS, and 1 ♂, in BMNH.

H. nepalensis is most closely related to *H. spinosa* Stein, 1907, from Tibet, and shares with this species characters such as the spinose hind femur, *Pogonomyia*-like head and densely haired eyes. However, *spinosa* has only 3 *post dc* setae and only a single spine on hind femur. Both species belong to the *occulta*-group of H e n n i g (1962: 701).

Hydrotaea himalayensis nov. spec.

Male

Head. — Ground-setulae black, including antennae and palpi. Frons narrow, at narrowest point equal to diameter of anterior ocellus. Eyes virtually bare. Parafrontalia apparently thinly brownish-grey pruinose, but not shining and possibly a little damp; parafacialia, genae and lower occiput silvery-white pruinose; remainder of occiput subshining black. Interfrontalia obsolete on median half of frons. 13-15 pairs of inclinate *ori*, on lower $\frac{3}{5}$ of frons, 3rd antennal segment short, barely $1\frac{1}{2}$ times as long as broad. Arista pubescent, the longest hairs subequal to its basal width. Parafacialia narrow, not tapering below, equal to one-third width of 3rd antennal segment. Genae narrow, slightly narrower than width of 3rd antennal segment. Peristomal setae short, dense and fine, without strong upcurved setae at anterior part of occipital dilation. Palpi moderate, mentum of proboscis dusted.

Thorax. — Black, matt, without any dusted pattern in dorsal or posterior views except for some thin grey dust on humeri and notopleura. Scutellum undusted, matt. Pleura virtually undusted. Spiracles dark brown. Setulae fine, dense, quite erect. *Acr* 0+1, the *prsc* pair fine, the *prst* setulae 8- to 10-serial. *Dc* 2+4. 2 *h*, 2 *ph*. 1 *sa*. 2 *pa*. 3 *ia*, the extra one between the 2 usual ones. *Pra* absent, not distinguishable from the ground-setulae. Prosternum, propleural depression, pteropleuron and hypopleuron bare. Disc of notopleuron densely setulose all over. *Stpl* 1+1. Scutellum with strong sub-basal lateral and apical setae; disc covered with fine erect setulae, extending on to upper part of lateral margins.

Legs. — Black; pulvilli and claws normal. Fore and hind tarsi without modifications. Fore femur with 2 preapical projections on *pv* surface, as typical for the *irritans*-group (H e n n i g, 1962: fig. 302), and with a finger-like process on *av* surface facing those on the *pv* surface; 2 long strong spinose setae close together at base of ventral surface. Fore tibia with extensive deep notches in basal half; *p* to *pv* surfaces on apical half with rather short dense setae, many of which are longer than tibial depth. Mid femur on *a* to *av* surfaces with long rather dense and bushy setae, the longest of which are much longer than femoral depth; *pv* surface with shorter dense fine setae along most of length, none longer than femoral depth; slightly ventrad of *pv* with a row of short stout setae on basal half. Mid tibia with 2 *pd* but 0 *ad* setae; *ad* and *a* ground-setulae erect on basal half, standing at right-angles to shaft of tibia. Mid metatarsus (fig. 3) with rows of fine erect rather curled setulae on *a* to *av* surfaces, longer than tarsal depth; the ventral bush-like ground-setulae rather longer than usual

but not as long as in *irritans*; segments 2-5 not modified. Hind femur (fig. 4) curved and swollen before apex; without *pv* setae; with a complete *a* row and, after middle, with an *av* row of quite strong setae. Hind tibia (fig. 5) rather bent; calcar absent; *ad* row more or less complete, the setae longer and stronger on basal half, rather short and fine on apical half; apical third of *p* to *v* surface with a brush-like group of fine hair-like setae, continued on to *av* and *a* surfaces but much stronger and sparser here; some short and 1 long strong ventral setae visible in the brush.

Wings. — Slightly yellowish tinged, strongly so at base. All veins except costa bare. Vein 4 not inclined towards vein 3 just before apex. Squamae yellowish, margins deeper yellow. Knob of halteres black.

Abdomen. — Ground-colour black. Tergites appearing matt in dorsal view, in posterior view with mainly grey dust: tergite 1+2 broadly undusted medially, brownish dusted at sides; tergite 3 with a broad undusted round median spot, the adjacent dust brown but becoming grey or bluish-grey towards sides; tergite 4 with a narrow undusted median vitta, otherwise tergites 4 and 5 only thinly dusted on either side of a broad median line. With rather long dense setae at sides, otherwise without any well-differentiated setae except for the marginal rows on tergites 4 and 5. Sternite 1 bare.

Genitalia. — Not studied.

Measurements. — Length of body, 7.0 mm. Length of wing, 6.5 mm.

F e m a l e

What is provisionally assumed to be the female of this species differs from the male as follows:

Head. — Frons broad, at middle not quite as broad as an eye. Parafrontalia thinly brown pruinose, but not shining; parafacialia, genae, and lower occiput grey rather than silvery-white pruinose, nowhere shining; occiput subshining black, as in male; ocellar tubercle shining on each side alongside posterior ocelli, otherwise this and frontal triangle weakly subshining as usual; interfrontalia matt brownish-black. Parafrontalia moderate, at middle of frons a parafrontale one-fifth width of interfrontalia. Frons rubbed; apparently 6 inclinate *ori*; 1 proclinate and 2 reclinate *ors*; 1 pair of crossed interfrontals. 3rd antennal segment fatter, and parafacialia appearing relatively narrower though in fact as wide as in male.

Thorax. — Appearing matt brownish-black in dorsal view, in posterior view with a faint pattern of dark brown dust as follows: a line along suture from notopleuron to inside *dc*; a pair of *post* vittae on each side running through *dc* and *ia* rows and fused together after 3rd *dc*. Scutellum and pleura as in male. Ground-setulae short and sparse. *Prst* *acr* setulae irregularly 3- to 6-serial. 3rd (median) *ia* very short. *Pra* present and well-developed, over half length of 2nd *npl*. Disc of notopleuron thinly setulose.

Legs. — Without the modifications of the male. Fore femur with a *pv* row. Fore tibia without setae. Mid femur without *av* setae, with a row of short *pv* setae none of which exceed femoral depth. Mid tibia with 3 *pd* setae. Hind femur with some very short *av* setae on basal half and strong *av* setae on apical half. Hind tibia with a short calcar, not as long as tibial depth; 1 *ad* and 1 *av*.

Wings. — Less yellowish tinged, and only weakly so at base. Veins 3 and 4 slightly convergent in apical part.

Abdomen. — Shorter and more pointed. Appearing matt in dorsal view, weakly subshining in posterior view, without any dust or pattern. Without any striking setae.

Ovipositor. — Not studied.

Measurements. — Length of body, 6.0 mm. Length of wing, 5.5 mm.

Holotype ♂, India, Kashmir: Gulmarg, 8500 feet, summer 1913 (F. W. Thomson), in BMNH.

Paratype ♀, India, West Bengal: Darjeeling, 10. X. 1920 (E. Brunetti), in BMNH.

H. himalayensis belongs to the *irritans*-group of Hennig (1962: 703) and is most closely related to the European *pandellei* Stein, 1899, from which it differs most obviously by the structure of the male mid tarsus: in *pandellei* the metatarsus lacks any trace of a ventral comb of stiff setulae, but the first 3-4 segments have on their *av-v-pv* surfaces rows of soft and often wavy sparse setulae.

Males of the other species of this group with an entirely dark abdomen differ from *himalayensis* as follows: *irritans* (Fallén, 1823), from Europe, has yellow halteres and a longer-haired arista; *penicillata* (Rondani, 1866), from Europe, has densely haired eyes; and *scambus* (Zetterstedt, 1838), a Holarctic species, has a *pv* seta on mid tibia.

H. himalayensis differs from males of the two endemic Chinese species as follows: from *mai* Fan, 1965, by the narrow frons and bare eyes; and from *hsiai* Fan, 1965, by having *av* setulae along the entire length of mid metatarsus, and numerous *ad* setae and *av* setulae on hind tibia.

Genus *Alloeostylus* Schnabl, 1888

This is an entirely Holarctic genus that contains 5 Palaearctic and 5 Holarctic species. The two taxa described in this paper are the first known from the Oriental region, but they are very closely related to the Holarctic *rufisquamus* (Schnabl, 1915) and *diaphanus* (Wiedemann, 1817) respectively. A third species in my material from Nepal is not described until further and better material is available.

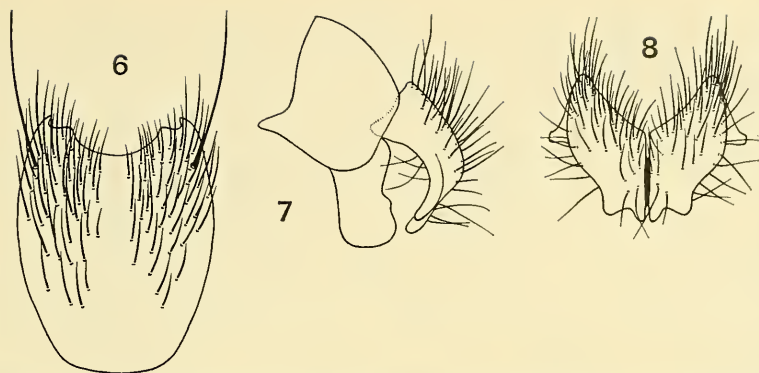
Key to species of Himalayan *Alloeostylus*

1. Legs, abdomen, thorax, palpi and antennae black. ♂: hind tibia without an apical ventral spur *rufisquamus* ssp. *himalayensis* nov. subspec.
- Femora, tibiae, most of abdomen, scutellum, humeri, palpi and basal 2 antennal segments yellow. ♂: hind tibia with an apical ventral spur (fig. 9) *nepalensis* nov. spec.

Alloeostylus rufisquamus Schnabl ssp. *himalayensis* nov. subspec.

Differs from typical *rufisquamus* (Schnabl, 1915), which is known from North Europe, Japan and North America, as follows:

Female with the parafrontal pruinosity not light grey, more dull grey or even much darker along interfrontal margin on upper part. Mesonotal dust much duller grey, almost tinged with yellow and not



Figs. 6—8: *Alloeostylus rufisquamus* ssp. *himalayensis* nov. subspec. 6. 5th sternite of male (paratype). 7. Hypopygium of male, aedeagus ommittad (paratype). 8. Cercal plate of male (paratype).

having the bluish appearance of ssp. *rufisquamus*; the median dusted vitta not just distinct at neck but running as far as scutellum, and a pair of narrow vittae through the *dc* setae, and a band along suture; female with a further pair of vittae through the *ia*. Scutellum much paler dusted in female. Male with anterior *prsc dc* hair-like. Both spiracles darker brown. Lower *stpl* seta hardly developed. Male with the *av* and *pv* setae on hind tibia much shorter and sparser. Wing often mostly smoky brown in male; wing-base brown to pale yellow, never intensely yellow. Squamae paler yellow, lower squama yellow outside (male) to wholly yellow (female), darker in female than in male but always paler than in the corresponding sex of ssp. *rufisquamus*. Knob and stalk of halteres black. Abdominal dust in male, like that of *mesonotum*, much duller grey and not at all tinged with bluish, and the median vitta rather broader; dust in female much denser and more extensive, tergites appearing mainly light grey dusted, almost bluish tinged. Male genitalia (figs. 6-8) as in ssp. *rufisquamus*, but in ssp. *rufisquamus* the cercal plate has the lateral teats as well-developed as the median ones.

Consistently smaller, wing length 6.0-7.0 in male, rarely 7.5 mm; 6.5-7.0 mm. in female, rarely 7.5 mm. Wing length in ssp. *rufisquamus* 9.0-9.5 mm. in male, 8.5-9.0 mm. in female.

All the specimens seen have been retrieved from alcohol, so there is some variation in the colour of the type-series because of the effects of slight bleaching.

Holotype ♂, Nepal: 27°58' N, 85°00' E, Malaise trap 1, 11,100 feet, 24. VI. 1967 (Canadian Nepal Expedition), in CNC.

Paratypes, 107 ♂, 95 ♀, all collected by the Canadian Nepal Expedition. Nepal: 27°58' N, 85°00' E, Malaise trap 1, 11,100 feet, 25. V. 1967, 1 ♂, in CNC; 27. V. 1967, 1 ♂, in CNC, & 2 ♂, in BMNH; 31. V. 1967, 1 ♀, in CNC; 2. VI. 1967, 1 ♀, in CNC; 24. VI. 1967, 1 ♂, in BMNH; 26. VI. 1967, 1 ♀, in BMNH. 27°58' N, 85°00' E, Malaise trap 2, 11,200 feet, 13-18. V. 1967, 1 ♂, in CNC; 18-22. V. 1967, 1 ♂, in CNC; 27. V. 1967, 2 ♂, in CNC; 28. V.-2. VI. 1967, 1 ♀, in CNC; 1. VI. 1967, 1 ♂, in CNC. 27°58' N, 85°00' E, Malaise trap 3, 11,400 feet, 12-16. V. 1967, 2 ♀, in CNC; 16-22. V. 1967, 1 ♂, 1 ♀, in BMNH, & 2 ♂, 2 ♀, in

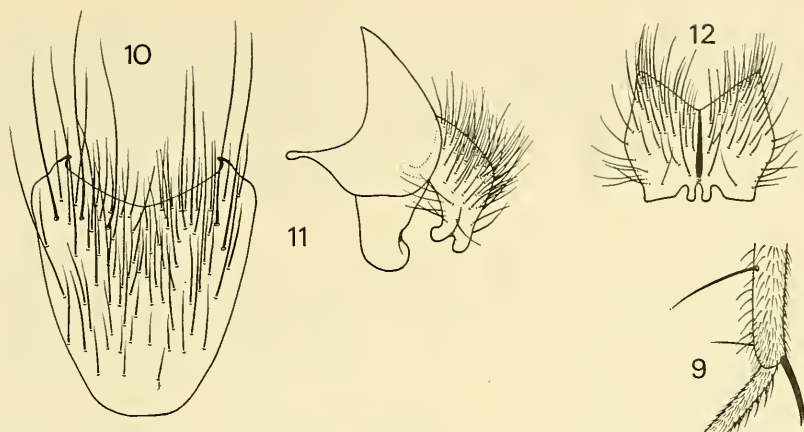
CNC; 22-26. V. 1967, 1 ♂, 1 ♀, in BMNH, & 2 ♂, 1 ♀, in CNC; 25. V. 1967, 1 ♂, in CNC; 26. V - 1. VI. 1967, 4 ♀, in BMNH, & 1 ♂, 9 ♀, in CNC. 27°58' N, 85°00' E, black light, 11,100 feet, 10. VI. 1967, 1 ♂, in CNC. 27°57' N, 84°59' E, Malaise trap 5, 10,100 feet, 13-19. V. 1967, 1 ♀, in CNC; 19-26. V. 1967, 1 ♂, 1 ♀, in CNC; 26-31. V. 1967, 2 ♂, 3 ♀, in BMNH, & 3 ♂, 7 ♀, in CNC. 27°56' N, 85°00' E, Malaise trap 8, CNC. 27°56' N, 85°00' E, oak forest, 9,900 feet, 16. VI. 1967, 1 ♀, in 10,100 feet, 17-23. V. 1967, 1 ♂, in CNC; 23-29. V. 1967, 1 ♂, in CNC; 25. V. 1967, 1 ♀, in BMNH, & 1 ♂, 1 ♀, in CNC; 28. V. 1967, 1 ♂, in CNC. 28°00' N, 85°00' E, Malaise trap 6, 10,500 feet, 2-27. V. 1967, 2 ♂, 3 ♀, in BMNH, & 9 ♂, 14 ♀, in CNC; 14-21. V. 1967, 7 ♂, 3 ♀, in BMNH, & 15 ♂, 10 ♀, in CNC; 20. V. 1967, 2 ♂, in CNC; 21-27. V. 1967, 1 ♂, 1 ♀, in CNC; 22. V-2. VI. 1967, 1 ♂, 1 ♀, in BMNH, & 3 ♂, 3 ♀, in CNC; 26. V-1. VI. 1967, 1 ♀, in BMNH, & 2 ♀, in CNC; 27. V-2. VI. 1967, 5 ♂, 3 ♀, in BMNH, & 8 ♂, 7 ♀, in CNC; 1. VI. 1967, 2 ♂, 1 ♀, in BMNH, & 3 ♂, 1 ♀, in CNC. 28°00' N, 85°00' E, Malaise trap 7, 9,900 feet, 14-21. V. 1967, 1 ♂, in BMNH, & 3 ♂, in CNC; 20. V. 1967, 1 ♂, in CNC; 21-27. V. 1967, 1 ♂, 1 ♀, in BMNH, & 5 ♂, 1 ♀, in CNC; 21-28. V. 1967, 2 ♂, in BMNH, & 4 ♂, in CNC; 27. V. 1967, 1 ♂, in BMNH, & 1 ♂, in CNC; 27. V-2. VI. 1967, 1 ♂, 2 ♀, in CNC. Gosainkunda, 14,800 feet, 27. VI. 1967, 2 ♀, in BMNH & CNC.

***Alloeostylus nepalensis* nov. spec.**

Male

Head. — Ground-colour mainly yellow, dark only on occiput. Frons narrow, at narrowest point half diameter of anterior ocellus. Eyes with short moderately dense hairs; upper inner facets enlarged, about twice as large as the lower ones. Parafrontalia, parafacialia, face and genae silvery-white pruinose, lower occiput light grey. Interfrontalia obsolete on median third of frons. 5-7 pairs of short inclinate *ori* on lower two-fifths of frons; *ors* absent. 1st and 2nd antennal segments orange-yellow; 3rd segment dark, $2\frac{1}{2}$ times as long as broad. Arista long-pubescent, the longest hairs rather longer than its basal width. Parafacialia narrow, at middle not much broader than diameter of anterior ocellus. Genae moderate, slightly broader than width of 3rd antennal segment. Peristomal setae moderate, not very dense. Mentum of proboscis orange-yellow, dusted. Palpi yellow, rather thin.

Thorax. — Ground-colour of mesonotum dark, only humeri and as far as *ph* and 1st or 2nd *npl* setae yellow; pleura yellow, only pteropleuron and mesopleuron mainly dark; scutellum yellow, with a dark streak over basal and sub-basal lateral setae. Mesonotum densely grey dusted, lighter grey before suture; with a pair of undusted *prst* vittae inside *dc*, each vitta half as wide as the dusted vitta separating them, and a pair of *prst* patches between *dc* and *ph*; more evenly dusted behind suture, but with traces of a pair of narrow undusted vittae outside *dc*. Pleura thinly whitish or grey dusted, scutellum apparently undusted. Anterior spiracle deep yellow, posterior one pale yellow. *Acr* 2-3 + 2-3, the *prst* ones not strong and the rows closer to *dc* than to each other. *Dc* 2+4. 2 *ia*. *Pra* very long, about twice as long as 2nd *npl*. Disc of notopleuron bare apart from the setae. *Stpl* 1+2. Hypopleuron bare. Scutellum with fine erect ground-setulae, which extend on to upper part of lateral margins; ventral surface bare.



Figs. 9—12: *Alloeostylus nepalensis* nov. spec. 9. Tip of hind tibia of male (paratype). 10. 5th sternite of male (paratype). 11. Hypopygium of male, aedeagus omitted (paratype). 12. Cercal plate of male (paratype).

Legs. — Yellow, tarsi brown to black. Tarsi without modifications. Fore femur without *av*, with a complete *pv* row. Fore tibia without *ad*, with 1 (–2) *pv* just beyond middle. Mid femur with rows of fine *av* and *pv* setae, the longest only slightly exceeding femoral depth, becoming shorter apically and absent in apical quarter; 2 *a* and (2–) 3 *d-p* preapical setae. Mid tibia with 0 *ad*, 3 *p*, and 2 *pv* in apical half. Hind femur with a complete row of *av* setae, rather finer and weaker in basal half; *v-pv-p* ground-setulae rather dense and erect in basal third, and a few short *pv* setae just before apex; 1–2 *d* and 1 *pd* preapical setae. Hind tibia with the calcar strong but no further setae on this surface; *ad* surface with a complete row of setae, 1–2 of which are much stronger; 4–6 *av* setae in apical half or just over; without *pv*, but with a long *pv* apical spur (fig. 9) consisting of 2 more or less fused setae.

Wings. — Faintly yellow tinged costally, otherwise clear. Epaulet orange, basicosta yellow. Costal spine absent; without strikingly longer setulae in the costal row. All veins except costa bare. Squamae yellowish to yellow. Halteres yellow.

Abdomen. — Tergite 1+2 yellow with a narrow dark mid-line; tergite 3 yellow with a broad dark median patch that broadens out behind to sides of tergite; tergite 4 dark, yellow narrowly or broadly at sides, and below; tergite 5 dark, yellow below. Sternites yellow. Tergites undusted in dorsal view, with thin grey dust in posterior view. Setae quite strong and erect: tergite 3 with lateral marginals; tergite 4 with lateral discals and a marginal row that is very weak medially; tergite 5 with more or less complete discal and marginal rows. Sternite 1 bare.

Genitalia. — As in figs. 10–12.

Measurements. — Length of body, 8.0 mm. Length of wing, 7.5 mm.

Female

Differs from the male as follows:

Head. — Slightly contracted through immaturity. Frons broad, at middle probably rather broader than an eye. Eye hairs rather shorter; facets all uniformly small. Parafrontalia only silvery-white pruinose below, grey and even tinged with yellowish above. Interfrontalia orange-yellow; frontal triangle not developed, reaching only a short distance beyond ocellar tubercle. Parafrontalia moderate, at middle a parafrontale probably a quarter width of interfrontalia. 4-5 pairs of inclinate *ori* on lower $\frac{2}{3}$ of frons; 1 strong proclinate and 2 reclinate *ors*; 1 pair of crossed interfrontals.

Thorax. — Sides of mesonotum yellow, outside *ph* and *sa*, and postalar callus yellow; mesopleuron and pteropleuron hardly darkened; scutellum faintly infuscated around basal lateral setae. Grey dust much reduced behind suture where 2 broad vittae on either side of *dc* from suture to 3rd *dc* are more or less fused, and the yellow areas at the sides are not dusted. All setae shorter. *Pra* shorter, subequal to 2nd *npl*.

Legs. — Mid femur bare ventrally; 1 *a* preapical seta. Mid tibia with 1 *pv* on one side, a second weak one on the other side. Hind femur bare ventrally except for 3-4 *av* on apical third. Hind tibia without an *ad* row, with 2 setae on apical half; 2 *av*; no *pv* apical.

Wings. — Squamae paler yellow.

Abdomen. — Slightly contracted and immature. Colour as in male. Setae shorter.

Ovipositor. — Not studied.

Measurements. — Length of body, 8.0 mm. Length of wing, 7.5 mm.

Holotype ♂, Nepal: 27°58'N, 85°00'E, Malaise trap 1, 11,100 feet, 26. VI. 1967 (Canadian Nepal Expedition), in CNC.

Paratypes, 1 ♂, 1 ♀. Nepal: 27°58'N, 85°00'E, Malaise trap 1, 11,100 feet, 29. VI. 1967 (Canadian Nepal Expedition), 1 ♂, in BMNH; 27°58'N, 85°00'E, 11,100 feet, black light, 10. VI. 1967 (Canadian Nepal Expedition), 1 ♀, in CNC.

There are only three species of *Alloeostylus* Schnabl that have an apical *pv* spur in the male sex. *A. albibasalis* (Zetterstedt, 1849) and *sudeticus* Schnabl, 1888, both have the thorax, scutellum, abdomen and palpi black in ground-colour, the mesonotal dust yellowish-brown, and the eyes more densely haired. *A. diaphanus* (Wiedemann, 1817), with which *nepalensis* agrees in most characters of colour and structure, is a rather larger and more robust species, the thorax and abdomen are entirely yellow, there are more numerous *av* setae on hind tibia, and the female has the *prst acr* in 3 rows between the strong outer rows.

Summary

The genus *Alloeostylus* Schnabl is recorded for the first time from the Oriental region, and the following 4 new species and 1 new subspecies of *Hydrotaeini* are described: *Hydrotaea kashmirana* from Kashmir, *Hydrotaea nepalensis* from Nepal, *Hydrotaea himalayensis* from Kashmir and West Bengal; *Alloeostylus rufisquamus* Schnabl ssp. *himalayensis* and *Alloeostylus nepalensis* from Nepal. All these taxa are closely related to Palaearctic species.

Zusammenfassung

Die Gattung *Alloeostylus* Schnabl wird zum erstenmal aus der orientalischen Region gemeldet, und die folgenden 4 neuen Arten und 1 neue Unterart aus dem Tribus Hydrotaeini werden beschrieben: *Hydrotaea kashmirana* aus Kashmir, *Hydrotaea nepalensis* aus Nepal, *Hydrotaea himalayensis* aus Kashmir und Westbengalen; *Alloeostylus rufisquamus* Schnabl ssp. *himalayensis* und *Alloeostylus nepalensis* aus Nepal. Alle diese Arten sind mit paläarktischen Arten eng verwandt.

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Author's Address:

Mr. Adrian C. Pont,
Department of Entomology,
British Museum (Natural History),
Cromwell Road,
London S. W. 7, England.

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